UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-Q

(Mark One)

☑ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the quarterly period ended: March 31, 2020

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from _____ to _____

Commission file number: 001-37599

LivaNova PLC

(Exact name of registrant as specified in its charter)

England and Wales	**98-1268150**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

20 Eastbourne Terrace, London, United Kingdom, W2 6LG
(Address of principal executive offices) *(Zip Code)*

Registrant's telephone number, including area code: **(44) (0) 203 325-0660**

Securities registered pursuant to Section 12(b) of the Act

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Ordinary Shares - £1.00 par value per share	LIVN	NASDAQ Global Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☑ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☑	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☑

Class	*Outstanding at April 27, 2020*
Ordinary Shares - £1.00 par value per share	48,579,023

LIVANOVA PLC

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In this Quarterly Report on Form 10-Q, "LivaNova," "the Company," "we," "us" and "our" refer to LivaNova PLC and its consolidated subsidiaries.

This report may contain references to our proprietary intellectual property, including among others:

- Trademarks for our VNS therapy systems, the VNS Therapy® System, the VITARIA® System and our proprietary pulse generator products: Model 102 (Pulse™), Model 102R (Pulse Duo™), Model 103 (Demipulse®), Model 104 (Demipulse Duo®), Model 105 (AspireHC®), Model 106 (AspireSR®), Model 1000 (SenTiva™) and Model 8103 (Symmetry®).
- Trademarks for our Cardiopulmonary product systems: S5® heart-lung machine, S3™ heart-lung machine, Inspire™, Heartlink™, XTRA® Autotransfusion System, 3T Heater-Cooler™, Connect™ and Revolution®.
- Trademarks for our line of surgical tissue and mechanical valve replacements and repair products: Mitroflow®, Crown PRT®, Solo Smart™, Perceval®, Miami Instruments™, Top Hat®, Reduced Series Aortic Valves™, Carbomedics® Carbo-Seal®, Carbo-Seal Valsalva®, Carbomedics Standard™, Orbis™ and Optiform®, Memo 3D®, Memo 3D ReChord™, MEMO 4D®, MEMO 4D® ReChord™, AnnuloFlo®, AnnuloFlex®, Bicarbon Slimline™, Bicarbon Filtline™ and Bicarbon Overline®.
- Trademarks for our advanced circulatory support systems: TandemLife®, TandemHeart®, TandemLung®, ProtekDuo®, and LifeSPARC™.
- Trademarks for our obstructive sleep apnea system: ImThera® and Aura6000®.

These trademarks and trade names are the property of LivaNova or the property of our consolidated subsidiaries and are protected under applicable intellectual property laws. Solely for convenience, our trademarks and tradenames referred to in this Quarterly Report on Form 10-Q may appear without the ® or ™ symbols, but such references are not intended to indicate in any way that we will not assert, to the fullest extent under applicable law, our rights to these trademarks and tradenames.

NOTE ABOUT FORWARD LOOKING STATEMENTS

Certain statements in this Quarterly Report on Form 10-Q, other than purely historical information, are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). These statements include, but are not limited to, LivaNova's plans, objectives, strategies, financial performance and outlook, trends, the amount and timing of future cash distributions, prospects or future events and involve known and unknown risks that are difficult to predict. As a result, our actual financial results, performance, achievements or prospects may differ materially from those expressed or implied by these forward-looking statements. In some cases, you can identify forward-looking statements by the use of words such as "may," "could," "seek," "guidance," "predict," "potential," "likely," "believe," "will," "should," "expect," "anticipate," "estimate," "plan," "intend," "forecast," "foresee" or variations of these terms and similar expressions, or the negative of these terms or similar expressions. Such forward-looking statements are necessarily based on estimates and assumptions that, while considered reasonable by LivaNova and its management based on their knowledge and understanding of the business and industry, are inherently uncertain. These statements are not guarantees of future performance, and stockholders should not place undue reliance on forward-looking statements. There are a number of risks, uncertainties and other important factors, many of which are beyond our control, that could cause our actual results to differ materially from the forward-looking statements contained in this Quarterly Report on Form 10-Q, and include but are not limited to the risks and uncertainties summarized below:

- changes in our common stock price;
- changes in our profitability;
- regulatory activities and announcements, including the failure to obtain regulatory approvals for our new products;
- effectiveness of our internal controls over financial reporting;
- fluctuations in future quarterly operating results;
- failure to comply with, or changes in, laws, regulations or administrative practices affecting government regulation of our products, including, but not limited to, U.S. Food and Drug Administration ("FDA") laws and regulations;
- failure to establish, expand or maintain market acceptance of our products for the treatment of our approved indications;
- any legislative or administrative reform to the healthcare system, including the U.S. Medicare or Medicaid systems or international reimbursement systems, that significantly reduces reimbursement for our products or procedures or denies coverage for such products or procedures or enhances coverage for competitive products or procedures, as well as adverse decisions by administrators of such systems on coverage or reimbursement issues relating to our products;
- failure to maintain the current regulatory approvals for our products' approved indications;
- failure to obtain or maintain coverage and reimbursement for our products' approved indications;
- unfavorable results from clinical studies;
- variations in sales and operating expenses relative to estimates;
- our dependence on certain suppliers and manufacturers to provide certain materials, components and contract services necessary for the production of our products;
- product liability, intellectual property, shareholder-related, environmental-related, income tax and other litigation, disputes, losses and costs;
- protection, expiration and validity of our intellectual property;
- changes in technology, including the development of superior or alternative technology or devices by competitors;
- competition from providers of alternative medical therapies, such as pharmaceutical companies and providers of cannabis;
- cyber-attacks or other disruptions to our information technology systems;
- failure to comply with applicable U.S. laws and regulations, including federal and state privacy and security laws and regulations;
- failure to comply with applicable non-U.S. laws and regulations;
- non-U.S. operational and economic risks and concerns;

- failure to attract or retain key personnel;
- failure of new acquisitions to further our strategic objectives or strengthen our existing businesses;
- losses or costs from pending or future lawsuits and governmental investigations;
- changes in accounting rules that adversely affect the characterization of our consolidated financial position, results of operations or cash flows;
- changes in customer spending patterns;
- continued volatility in the global market and worldwide economic conditions, including volatility caused by the implementation of Brexit and/or changes to existing trade agreements and relationships between the U.S. and other countries;
- risks relating to the outbreak and spread of COVID-19 around the world;
- changes in tax laws, including changes related to Brexit, or exposure to additional income tax liabilities;
- harsh weather or natural disasters that interrupt our business operations or the business operations of our hospital-customers; and
- failure of the market to adopt new therapies or to adopt new therapies quickly.

Other factors that could cause our actual results to differ from our projected results are described in (1) “Part II, Item 1A. Risk Factors” and elsewhere in this Quarterly Report on Form 10-Q, (2) our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 (“2019 Form 10-K”), (3) our reports and registration statements filed and furnished from time to time with the Securities and Exchange Commission (“SEC”) and (4) other announcements we make from time to time.

Readers are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date hereof. We undertake no obligation to update or revise any forward-looking statements after the date they are made, whether as a result of new information, future events or otherwise. You should read the following discussion and analysis in conjunction with our unaudited condensed consolidated financial statements and related notes included elsewhere in this report. Operating results for the three months ended March 31, 2020 are not necessarily indicative of future results, including the full fiscal year. You should also refer to our “Annual Consolidated Financial Statements,” “Notes” thereto, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Risk Factors” contained in our 2019 Form 10-K.

Financial Information and Currency of Financial Statements

All of the financial information included in this quarterly report has been prepared in accordance with generally accepted accounting principles in the United States of America (“U.S.” and such principles, “U.S. GAAP”). The reporting currency of our condensed consolidated financial statements is U.S. dollars.

PART I. FINANCIAL INFORMATION

Item 1. *Financial Statements*

LIVANOVA PLC AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF INCOME (LOSS)
(UNAUDITED)
(In thousands, except per share amounts)

	Three Months Ended March 31,	
	2020	**2019**
Net sales	$ 242,397	$ 250,801
Costs and expenses:		
Cost of sales - exclusive of amortization	68,923	84,254
Product remediation	1,466	2,947
Selling, general and administrative	120,177	125,704
Research and development	35,902	43,575
Merger and integration expenses	3,474	3,251
Restructuring expenses	1,580	2,533
Amortization of intangibles	10,267	9,316
Operating income (loss) from continuing operations	608	(20,779)
Interest income	148	249
Interest expense	(4,849)	(1,662)
Foreign exchange and other (losses) gains	(1,914)	729
Loss from continuing operations before tax	(6,007)	(21,463)
Income tax benefit	(44,714)	(6,614)
Losses from equity method investments	(129)	—
Net income (loss) from continuing operations	38,578	(14,849)
Net loss from discontinued operations, net of tax	(995)	—
Net income (loss)	$ 37,583	$ (14,849)
Basic income (loss) per share:		
Continuing operations	$ 0.80	$ (0.31)
Discontinued operations	(0.02)	—
	$ 0.78	$ (0.31)
Diluted income (loss) per share:		
Continuing operations	$ 0.79	$ (0.31)
Discontinued operations	(0.02)	—
	$ 0.77	$ (0.31)
Shares used in computing basic income (loss) per share	48,485	48,246
Shares used in computing diluted income (loss) per share	48,769	48,246

See accompanying notes to the condensed consolidated financial statements

LIVANOVA PLC AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(UNAUDITED)
(In thousands)

	Three Months Ended March 31,	
	2020	**2019**
Net income (loss)	$ 37,583	$ (14,849)
Other comprehensive (loss) income:		
Net change in unrealized loss on derivatives	(1,356)	(10)
Tax effect	325	2
Net of tax	(1,031)	(8)
Foreign currency translation adjustment	(32,100)	(4,229)
Total other comprehensive loss	(33,131)	(4,237)
Total comprehensive income (loss)	$ 4,452	$ (19,086)

See accompanying notes to the condensed consolidated financial statements

LIVANOVA PLC AND SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS
(UNAUDITED)
(In thousands, except share amounts)

	March 31, 2020	December 31, 2019
ASSETS		
Current Assets:		
Cash and cash equivalents	$ 125,823	$ 61,137
Accounts receivable, net of allowance of $14,153 at March 31, 2020 and $13,105 at December 31, 2019	225,347	257,769
Inventories, net	170,256	164,154
Prepaid and refundable taxes	53,094	37,779
Prepaid expenses and other current assets	42,402	28,604
Total Current Assets	616,922	549,443
Property, plant and equipment, net	183,534	181,354
Goodwill	888,573	915,794
Intangible assets, net	586,988	607,546
Operating lease assets	52,677	54,372
Investments	30,040	27,256
Deferred tax assets	89,013	68,676
Other assets	6,689	7,356
Total Assets	$ 2,454,436	$ 2,411,797
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities:		
Current debt obligations	$ 223,314	$ 77,396
Accounts payable	91,224	85,892
Accrued liabilities and other	93,539	120,100
Current litigation provision liability	43,025	146,026
Taxes payable	7,884	12,719
Accrued employee compensation and related benefits	70,738	70,420
Total Current Liabilities	529,724	512,553
Long-term debt obligations	315,561	260,330
Contingent consideration	99,725	114,396
Litigation provision liability	11,545	24,378
Deferred tax liabilities	25,994	32,219
Long-term operating lease liabilities	43,369	46,027
Long-term employee compensation and related benefits	21,186	22,797
Other long-term liabilities	14,624	15,380
Total Liabilities	1,061,728	1,028,080
Commitments and contingencies (Note 10)		
Stockholders' Equity:		
Ordinary Shares, £1.00 par value: unlimited shares authorized; 49,413,610 shares issued and 48,578,610 shares outstanding at March 31, 2020; 49,411,016 shares issued and 48,443,830 shares outstanding at December 31, 2019	76,259	76,257
Additional paid-in capital	1,739,873	1,734,870
Accumulated other comprehensive loss	(52,523)	(19,392)
Accumulated deficit	(369,811)	(406,755)
Treasury stock at cost, 835,000 ordinary shares at March 31, 2020, 967,186 ordinary shares at December 31, 2019	(1,090)	(1,263)
Total Stockholders' Equity	1,392,708	1,383,717
Total Liabilities and Stockholders' Equity	$ 2,454,436	$ 2,411,797

See accompanying notes to the condensed consolidated financial statements

LIVANOVA PLC AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(UNAUDITED)
(In thousands)

	Three Months Ended March 31,	
	2020	**2019**
Operating Activities:		
Net income (loss)	$ 37,583	$ (14,849)
Non-cash items included in net income (loss):		
Amortization	10,267	9,316
Stock-based compensation	9,043	6,872
Depreciation	6,796	7,547
Deferred tax benefit	(22,884)	1,993
Remeasurement of contingent consideration to fair value	(17,283)	9,457
Other	1,711	4,765
Changes in operating assets and liabilities:		
Accounts receivable, net	24,336	7,064
Inventories, net	(12,513)	(8,292)
Other current and non-current assets	(25,700)	(23,377)
Accounts payable and accrued current and non-current liabilities	(1,349)	6,384
Litigation provision liability, net	(115,609)	—
Restructuring reserve	(443)	(4,906)
Net cash (used in) provided by operating activities	**(106,045)**	**1,974**
Investing Activities:		
Purchases of property, plant and equipment	(8,597)	(5,741)
Purchase of investment	(3,000)	—
Proceeds from asset sales	834	100
Other	(322)	—
Net cash used in investing activities	**(11,085)**	**(5,641)**
Financing Activities:		
Proceeds from long-term debt obligations	162,899	2,973
Proceeds from short term borrowings (maturities greater than 90 days)	46,115	—
Closing adjustment payment for sale of CRM business	(14,891)	—
Payment of contingent consideration	(4,604)	—
Shares repurchased from employees for minimum tax withholding	(3,997)	(4,606)
Change in short-term borrowing, net	(2,477)	11,061
Debt issuance costs	—	(1,750)
Other	48	(89)
Net cash provided by financing activities	**183,093**	**7,589**
Effect of exchange rate changes on cash and cash equivalents	(1,277)	(350)
Net increase in cash and cash equivalents	**64,686**	**3,572**
Cash and cash equivalents at beginning of period	61,137	47,204
Cash and cash equivalents at end of period	**$ 125,823**	**$ 50,776**

See accompanying notes to the condensed consolidated financial statements

Note 1. Unaudited Condensed Consolidated Financial Statements

Basis of Presentation

The accompanying condensed consolidated financial statements of LivaNova as of, and for the three months ended March 31, 2020 and 2019, have been prepared in accordance with U.S. GAAP for interim financial information and the instructions to Form 10-Q and Article 10 of Regulation S-X. The accompanying condensed consolidated balance sheet of LivaNova at December 31, 2019 has been derived from audited financial statements contained in our 2019 Form 10-K, but does not include all of the information and footnotes required by U.S. GAAP for complete financial statements. In the opinion of management, the condensed consolidated financial statements reflect all adjustments (consisting of only normal recurring adjustments) considered necessary for a fair statement of the operating results of LivaNova and its subsidiaries, for the three months ended March 31, 2020, and are not necessarily indicative of the results that may be expected for the year ending December 31, 2020. The financial information presented herein should be read in conjunction with the audited consolidated financial statements and notes thereto accompanying our 2019 Form 10-K.

Recent Developments Regarding COVID-19

In recent months, a new strain of coronavirus (COVID-19) has spread to many countries in the world and the outbreak has been declared a pandemic by the World Health Organization. The U.S. Secretary of Health and Human Services has also declared a public health emergency in the United States in response to the outbreak. Considerable uncertainty still surrounds the COVID-19 virus and its potential effects, and the extent of and effectiveness of responses taken on international, national and local levels. Measures taken to limit the impact of COVID-19, including shelter-in-place orders, social distancing measures, travel bans and restrictions, and business and government shutdowns, have already resulted in significant negative economic impacts on a global basis.

Due to these impacts and measures, we have experienced and may continue to experience significant and unpredictable reductions in the demand for our products as healthcare customers divert medical resources and priorities towards the treatment of COVID-19. In addition, our customers may delay, cancel, or redirect planned purchases in order to focus resources on COVID-19 or in response to economic disruption related to COVID-19. For example, in the last two weeks of the quarter ended March 31, 2020, we experienced a significant decline in volumes in the U.S. and Europe, as healthcare systems diverted resources to meet the increasing demands of managing COVID-19. In addition, public health bodies have recommended delaying elective surgeries during the COVID-19 pandemic, which may continue to negatively impact the usage of our products, including the number of Neuromodulation procedures.

Liquidity

As of March 31, 2020, the Company had cash and cash equivalents of $125.8 million. In connection with our assessment of going concern considerations in accordance with ASU 2014-15, Disclosures of Uncertainties about an Entity’s Ability to Continue as a Going Concern, the Company determined that the projected reduction in sales primarily in the second quarter of 2020 would result in our inability to comply with certain debt covenants as of the end of the second and fourth quarters of 2020, which represents a condition that raises substantial doubt about our ability to continue as a going concern within one year after the date that these condensed consolidated financial statements are available to be issued. In April 2020, the Company entered into amendments that modified the maximum consolidated net debt to EBITDA and the interest coverage ratio covenants in its debt agreements for the remainder of 2020. The Company also implemented cost-cutting measures, including reduced hiring, marketing, travel, capital expenditures and certain research and development activities. Management has concluded that the amendments to modify the covenants in its debt agreements, when combined with current and anticipated future operating cash flows, alleviates the substantial doubt about the Company’s ability to continue as a going concern over the twelve-month period from the issuance date of these condensed consolidated financial statements.

Regardless, COVID-19 continues to create uncertainty in relation to its impact on future revenues, the ability of the Company to access supplies and personnel to continue the production of inventory to meet customer needs, and ultimately, the amount of time necessary for elective surgeries to return to previous levels. If current market conditions deteriorate further as a result of COVID-19, or management’s judgments and assumptions regarding future industry, market or operating conditions change, including our assumptions regarding the timing of when elective surgeries may be rescheduled, or if there are government interventions impacting our areas of operation, there is a risk of breaching the Company’s debt covenants in future periods and a risk that the Company may not have sufficient funds to meet future obligations as they fall due. If this were to

occur, the Company may pursue further or more substantial cost-cutting measures. Also, while not entirely in our control, we may:

- Execute additional amendments or waivers to existing debt covenants,
- Obtain additional bank financing or alternative sources of liquidity,
- Renegotiate the terms of our existing debt facilities, and
- Explore additional funding options such as accounts receivable factoring.

Goodwill and Indefinite-lived Intangible Assets

As of March 31, 2020, the Company has a goodwill balance of approximately $888.6 million, of which, $489.8 million and $398.8 million are allocated between the Cardiovascular and Neuromodulation segments, respectively. The Company performs its annual goodwill impairment test as of October 1st of each year. Our 2019 goodwill impairment test indicated head room of 584% and 24% for our Neuromodulation and Cardiovascular segments, respectively.

Despite the excess fair value for our Cardiovascular reporting unit identified in our 2019 goodwill impairment assessment, we assessed whether the delay of elective surgeries, reduced cash flow projections, and the significant decline in LivaNova's market capitalization as a result of the COVID-19 pandemic indicate that it is more likely than not that the goodwill was impaired as of March 31, 2020. Our assessment included review of our previous forecasts and assumptions based on our current projections that are subject to various risks and uncertainties, including: (1) forecasted revenues, expenses and cash flows, including the estimated duration and extent of impact to our business from the COVID-19 pandemic, (2) current discount rates, (3) the reduction in our market capitalization, (4) observable market transactions and (5) changes to the regulatory environment.

As of March 31, 2020, the Company has IPR&D assets with a balance of $115.8 million. The Company tests these assets for impairment as of October 1st of each year. In evaluating whether it is more likely than not that these IPR&D assets were impaired as of March 31, 2020, we assessed whether the COVID-19 pandemic would delay clinical trials or impact the estimated commercialization timelines.

Based on the consideration of all available evidence, we have determined that an interim impairment test of goodwill and indefinite-lived intangible assets is not required as of March 31, 2020 as it is not more likely than not that these assets are impaired. However, we are unable to predict how long these conditions will persist, what additional measures may be introduced by governments or private parties or what effect any such additional measures may have on our business. If current market conditions deteriorate further as a result of COVID-19, or management's judgments and assumptions regarding future industry, market or operating conditions change, including our assumptions regarding the timing of when elective surgeries may be rescheduled, or if there are government interventions impacting our areas of operation we may recognize an impairment of our goodwill or indefinite-lived intangible assets in future periods.

Reclassifications

We have reclassified certain prior period amounts for comparative purposes. These reclassifications did not have a material effect on our financial condition, results of operations or cash flows.

Significant Accounting Policies

Our significant accounting policies are detailed in "Note 2. Basis of Presentation, Use of Accounting Estimates and Significant Accounting Policies" and "Note 3. Revenue Recognition" of our 2019 Form 10-K.

Note 2. Business Combinations

Miami Instruments

On June 12, 2019, we acquired the minimally invasive cardiac surgery instruments business from Miami Instruments, LLC ("Miami Instruments") for cash consideration of up to $17.0 million. The related operations have been integrated into our Cardiovascular segment as a part of our Heart Valves business. Cash of $10.8 million was paid at closing with up to $6.0 million in contingent consideration based on achieving certain milestones. In connection with this acquisition, we recognized $14.7 million in developed technology and in-process research and development ("IPR&D") intangible assets and $1.5 million in goodwill.

Note 3. Discontinued Operations

On April 30, 2018, we completed the sale of our Cardiac Rhythm Management ("CRM") business franchise to MicroPort Cardiac Rhythm B.V. and MicroPort Scientific Corporation ("MicroPort") for total cash proceeds of $195.9 million, less cash transferred of $9.2 million, subject to a closing working capital adjustment. In March 2020, we finalized the working capital adjustment and as a result, made a $16.4 million payment to MicroPort during the first quarter of 2020 and incurred an additional $1.1 million loss on sale.

The following table represents the financial results of our former CRM business presented as net loss from discontinued operations, net of tax on our condensed consolidated statements of income (loss) (in thousands):

	Three Months Ended March 31, 2020
Loss on sale of CRM	$ (1,080)
Operating loss from discontinued operations	(1,080)
Loss from discontinued operations before tax	(1,080)
Income tax benefit	(85)
Net loss from discontinued operations	$ (995)

Note 4. Restructuring

We initiate restructuring plans to leverage economies of scale, streamline distribution and logistics and strengthen operational and administrative effectiveness in order to reduce overall costs. Costs associated with these plans were reported as restructuring expenses in the operating results of our condensed consolidated statements of income (loss).

The following table presents the accruals and other reserves recorded in connection with our restructuring plans (in thousands):

	Employee Severance and Other Termination Costs	Other	Total
Balance at December 31, 2019	$ 4,097	$ 1,400	$ 5,497
Charges	1,487	93	1,580
Cash payments and other	(4,172)	(208)	(4,380)
Balance at March 31, 2020 [(1)]	$ 1,412	$ 1,285	$ 2,697

(1) Cumulatively through March 31, 2020, we have recognized a total of $113.1 million in restructuring expense from all of our restructuring plans.

The following table presents restructuring expense by reportable segment (in thousands):

	Three Months Ended March 31,	
	2020	2019
Cardiovascular	$ 686	$ 422
Neuromodulation	503	432
Other	391	1,679
Total	$ 1,580	$ 2,533

Note 5. Product Remediation Liability

On December 29, 2015, we received an FDA Warning Letter (the "Warning Letter") alleging certain violations of FDA regulations applicable to medical device manufacturing at our Munich, Germany and Arvada, Colorado facilities. On October 13, 2016, the CDC and FDA separately released safety notifications regarding 3T Heater-Cooler devices in response to which we issued a Field Safety Notice Update for U.S. users of our 3T Heater-Cooler devices to proactively and voluntarily contact facilities to facilitate implementation of the CDC and FDA recommendations.

At December 31, 2016, we recognized a liability for a product remediation plan related to our 3T Heater-Cooler device ("3T device"). The remediation plan we developed consists primarily of a modification of the 3T device design to include internal sealing and the addition of a vacuum system to new and existing devices. These changes are intended to address regulatory

actions and to reduce further the risk of possible dispersion of aerosols from 3T devices in the operating room. We concluded that it was probable that a liability had been incurred upon management's approval of the plan and the commitments made by management to various regulatory authorities globally in November and December 2016, and furthermore, the cost associated with the plan was reasonably estimable. The deployment of this solution for commercially distributed devices has been dependent upon final validation and verification of the design changes and approval or clearance by regulatory authorities worldwide, including FDA clearance in the U.S. It is reasonably possible that our estimate of the remediation liability could materially change in future periods due to the various significant assumptions involved such as customer behavior, market reaction and the timing of approvals or clearance by regulatory authorities worldwide.

In April 2017, we obtained CE Mark in Europe for the design change of the 3T device, and in May 2017 we completed our first vacuum canister and internal sealing upgrade on a customer-owned device. We are currently implementing the vacuum canister and internal sealing upgrade program in as many countries as possible until all devices are upgraded. In October 2018, after review of information provided by us, the FDA concluded that we could commence the vacuum canister and internal sealing upgrade program in the U.S., and on February 25, 2020, LivaNova received clearance for K191402, a 510(k) for the 3T devices that addressed issues contained in the 2015 Warning Letter along with design changes that further mitigate the potential risk of aerosolization. Concurrent with this clearance, (1) 3T devices manufactured in accordance with K191402 will not be subjected to the import alert and (2) LivaNova initiated a correction to distribute the updated Operating Instructions cleared under K191402.

As a second part of the remediation plan, we continue to offer a no-charge deep disinfection service (deep cleaning service) for 3T device users as we receive the required regulatory approvals. The deep disinfection service was rolled out in Europe in the second half of 2015, and in April 2018, the FDA agreed to allow us to move forward with the deep cleaning service in the U.S., thereby adding to the growing list of countries around the world in which we offer this service. Finally, we are continuing to offer the loaner program for 3T devices, initiated in the fourth quarter of 2016, to provide existing 3T device users with a new loaner 3T device at no charge pending regulatory approval and implementation of the vacuum system addition and deep disinfection service worldwide. This loaner program is available on a global basis.

The following table provides a reconciliation of the beginning and ending balance of the product remediation liability (in thousands):

Balance at December 31, 2019	$	3,251
Remediation activity		(1,538)
Effect of changes in foreign currency exchange rates		(77)
Balance at March 31, 2020 [(1)]	$	1,636

(1) At March 31, 2020, the product remediation liability balance is included within accrued liabilities and other on the condensed consolidated balance sheet.

We recognized product remediation expenses of $1.5 million and $2.9 million during the three months ended March 31, 2020 and 2019, respectively. Product remediation expenses include internal labor costs, costs to remediate certain inspectional observations made by the FDA at our Munich facility and costs associated with the incorporation of the modification of the 3T device design into the next generation 3T device. These costs and related legal costs are expensed as incurred and are not included within the product remediation liability presented above. At March 31, 2020, our balance sheet includes a $54.6 million provision related to litigation involving our 3T device. For further information, please refer to "Note 10. Commitments and Contingencies."

Note 6. Investments

The following table details the carrying value of our investments in equity securities of non-consolidated affiliates without readily determinable fair values for which we do not exert significant influence over the investee. These equity investments are reported at cost minus impairment, if any, plus or minus changes resulting from observable price changes in orderly transactions for the identical or similar investment of the same issuer. The below equity investments are included in investments on the condensed consolidated balance sheets (in thousands):

Equity Investments Without Readily Determinable Fair Values	March 31, 2020	December 31, 2019
Respicardia Inc. [1]	$ 17,706	$ 17,706
ALung Technologies, Inc. [2]	3,000	—
Ceribell, Inc.	3,000	3,000
ShiraTronics, Inc.	2,045	2,045
Rainbow Medical Ltd.	1,073	1,099
MD Start II	1,095	1,121
Highlife S.A.S.	1,039	1,064
Other	770	770
	29,728	26,805
Equity method investment	312	451
	$ 30,040	$ 27,256

(1) Respicardia Inc. ("Respicardia") is a privately funded U.S. company developing an implantable device designed to restore a more natural breathing pattern during sleep in patients with central sleep apnea by transvenously stimulating the phrenic nerve. We have a loan outstanding to Respicardia, with a carrying amount of $0.6 million and $0.6 million as of March 31, 2020 and December 31, 2019, respectively, which is included in prepaid expenses and other current assets on the condensed consolidated balance sheet.

(2) During the first quarter of 2020, we invested in ALung Technologies, Inc. ("ALung"). ALung is a privately held medical device company focused on creating advanced medical devices for treating respiratory failure. ALung's Hemolung Respiratory Assist System is a dialysis-like alternative or supplement to mechanical ventilation which removes carbon dioxide directly from the blood in patients with acute respiratory failure.

Note 7. Fair Value Measurements

We review the fair value hierarchy classification on a quarterly basis. Changes in the ability to observe valuation inputs may result in a reclassification of levels for certain securities within the fair value hierarchy. There were no transfers between Level 1, Level 2, or Level 3 during the three months ended March 31, 2020 and 2019.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The following tables provide information by level for assets and liabilities that are measured at fair value on a recurring basis (in thousands):

	Fair Value as of March 31, 2020	Fair Value Measurements Using Inputs Considered as: Level 1	Level 2	Level 3
Assets:				
Derivative assets - designated as cash flow hedges (foreign currency exchange rate "FX")	$ 6	$ —	$ 6	$ —
Derivative assets - freestanding instruments (FX)	6,630	—	6,630	—
	$ 6,636	$ —	$ 6,636	$ —
Liabilities:				
Derivative liabilities - designated as cash flow hedges (FX)	$ 931	$ —	$ 931	$ —
Derivative liabilities - designated as cash flow hedges (interest rate swaps)	276	—	276	—
Derivative liabilities - freestanding instruments (FX)	76	—	76	—
Contingent consideration	114,534	—	—	114,534
	$ 115,817	$ —	$ 1,283	$ 114,534

	Fair Value as of December 31, 2019	Fair Value Measurements Using Inputs Considered as: Level 1	Level 2	Level 3
Assets:				
Derivative assets - designated as cash flow hedges (FX)	$ 535	$ —	$ 535	$ —
Derivative assets - freestanding instruments (FX)	26	—	26	—
	$ 561	$ —	$ 561	$ —
Liabilities:				
Derivative liabilities - designated as cash flow hedges (FX)	$ 169	$ —	$ 169	$ —
Derivative liabilities - designated as cash flow hedges (interest rate swaps)	374	—	374	—
Derivative liabilities - freestanding instruments (FX)	3,137	—	3,137	—
Contingent consideration	137,349	—	—	137,349
	$ 141,029	$ —	$ 3,680	$ 137,349

Our recurring fair value measurements, using significant unobservable inputs (Level 3), relate solely to our contingent consideration liability. The following table provides a reconciliation of the beginning and ending balance of the contingent consideration liability (in thousands):

Total contingent consideration liability at December 31, 2019	$	137,349
Payments [1]		(5,323)
Changes in fair value [2] [3]		(17,283)
Effect of changes in foreign currency exchange rates		(209)
Total contingent consideration liability at March 31, 2020		114,534
Less current portion of contingent consideration liability at March 31, 2020		14,809
Long-term portion of contingent consideration liability at March 31, 2020	$	99,725

(1) During the three months ended March 31, 2020, we paid $5.0 million under the contingent consideration arrangement for the acquisition of TandemLife. Additionally, we made the final payment for the contingent consideration arrangement with Inversiones Drilltex SAS ("Drilltex").

(2) The change in fair value during the three months ended March 31, 2020 is primarily due to the impact of an increase in discount rates utilized in the valuation of contingent consideration. Refer to the tables below for further information regarding the fair value measurements of contingent consideration.

(3) During the three months ended March 31, 2020, the change in fair value resulted in a decrease of $8.8 million and $8.5 million recorded to cost of sales - exclusive of amortization and research and development, respectively.

The following table provides the fair value of contingent consideration arrangements by acquisition (in thousands):

	March 31, 2020	December 31, 2019
ImThera Medical, Inc. ("ImThera")	$ 98,863	$ 113,503
TandemLife	9,721	17,311
Miami Instruments	5,252	5,338
Drilltex	—	294
Other	698	903
	$ 114,534	$ 137,349

The ImThera business combination involved contingent consideration arrangements composed of potential cash payments upon the achievement of a certain regulatory milestone and a sales-based earnout associated with sales of products. The sales-based earnout is valued using projected sales from our internal strategic plan. Both arrangements are Level 3 fair value measurements and include the following significant unobservable inputs:

ImThera Acquisition	Valuation Technique	Unobservable Input	Ranges
Regulatory milestone-based payment	Discounted cash flow	Discount rate	6.5% - 6.6%
		Probability of payment	85% - 95%
		Projected payment years	2023 - 2024
Sales-based earnout	Monte Carlo simulation	Risk-adjusted discount rate	12.0%
		Credit risk discount rate	6.6% - 6.9%
		Revenue volatility	32.5%
		Probability of payment	85% - 95%
		Projected years of earnout	2024 - 2028

The TandemLife business combination involved a contingent consideration arrangement composed of potential cash payments upon the achievement of certain regulatory milestones. The arrangement is a Level 3 fair value measurement and includes the following significant unobservable inputs:

TandemLife Acquisition	Valuation Technique	Unobservable Input	Ranges
Regulatory milestone-based payments	Discounted cash flow	Discount rate	5.8% - 5.9%
		Probability of payments	75.0%
		Projected payment years	2020

The Miami Instruments business combination involved a contingent consideration arrangement composed of potential cash payments upon the achievement on certain regulatory milestones. The arrangement is a Level 3 fair value measurement and includes the following significant unobservable inputs:

Miami Instruments	Valuation Technique	Unobservable Input	Ranges
Regulatory milestone-based payments	Discounted cash flow	Discount rate	5.8% - 5.9%
		Probability of payments	82% - 95%
		Projected payment years	2020 - 2021

Note 8. Financing Arrangements

The outstanding principal amount of our long-term debt as of March 31, 2020 and December 31, 2019 was as follows (in thousands, except interest rates):

	March 31, 2020	December 31, 2019	Maturity	Interest Rate
2019 Debt Facility [1]	$ 345,096	$ 184,275	March 2022	1.40% - 3.33%
2017 European Investment Bank [2]	103,570	103,570	June 2026	2.82% - 2.87%
2014 European Investment Bank [3]	27,390	28,053	June 2021	1.04%
Mediocredito Italiano	6,088	6,222	December 2023	0.50% - 2.96%
Bank of America Merrill Lynch Banco Múltiplo S.A.	6,514	8,422	July 2021	7.55%
Bank of America, U.S.	2,020	2,004	January 2021	3.48%
Other	1,023	965		
Total long-term facilities	491,701	333,511		
Less current portion of long-term debt	176,140	73,181		
Total long-term debt	$ 315,561	$ 260,330		

(1) The facility agreement with Bank of America Merrill Lynch International DAC, Barclays Bank PLC, BNP Paribas (London Branch) and Intesa Sanpaolo S.P.A. provides a multi-currency term loan facility in an aggregate amount of $350 million and terminates on March 26, 2022 (the "2019 Debt Facility"). Principal repayments of 20% of the outstanding borrowings under the 2019 Debt Facility are due in September 2020, March 2021 and September 2021, with the remainder of the outstanding borrowings due in March 2022.

(2) The 2017 European Investment Bank ("2017 EIB") loan was obtained to support certain product development projects. The interest rate for the 2017 EIB loan is reset by the lender each quarter based on LIBOR. Interest payments are paid quarterly and principal payments are paid semi-annually.

(3) The 2014 European Investment Bank ("2014 EIB") loan was obtained in July 2014 to support product development projects. The interest rate for the 2014 EIB loan is reset by the lender each quarter based on the Euribor. Interest payments are paid quarterly, and principal payments are paid semi-annually.

Revolving Credit

The outstanding principal amount of our short-term unsecured revolving credit agreements and other agreements with various banks was $47.2 million and $4.2 million, at March 31, 2020 and December 31, 2019, respectively, with interest rates ranging from 2.72% to 7.55% and loan terms ranging from 30 days to 180 days, as of March 31, 2020.

Debt Covenant Amendments

In connection with our assessment of going concern considerations during the first quarter of 2020, the Company determined that the projected reduction in sales primarily in the second quarter of 2020 as a result of COVID-19 would result in our inability to comply with certain debt covenants as of the end of the second and fourth quarters of 2020. As a result, in April 2020, the Company concluded a series of debt covenant amendments which materially modify the status of our current credit agreements. These amendments temporarily amend financial covenants relating to consolidated net financial indebtedness to consolidated EBITDA and consolidated EBITDA to consolidated net interest payable, waive certain events of default through December 31, 2020 relating to COVID-19, and implement a test period of 12 months for certification purposes. Management has concluded that current and anticipated future operating cash flows will be sufficient to comply with the amended covenants as of the end of the second and fourth quarters of 2020.

Note 9. Derivatives and Risk Management

Due to the global nature of our operations, we are exposed to foreign currency exchange rate fluctuations. In addition, due to certain loans with floating interest rates, we are also subject to the impact of changes in interest rates on our interest payments. We enter into FX derivative contracts and interest rate swap contracts to reduce the impact of foreign currency exchange rate and interest rate fluctuations on earnings and cash flow. We measure all outstanding derivatives each period end at fair value and report the fair value as either financial assets or liabilities on the condensed consolidated balance sheets. We do not enter into derivative contracts for speculative purposes. At inception of the contract, the derivative is designated as either a freestanding derivative or a hedge. Derivatives that are not designated as hedging instruments are referred to as freestanding derivatives with changes in fair value included in earnings.

If the derivative qualifies for hedge accounting, changes in the fair value of the derivative will be recorded in accumulated other comprehensive income ("AOCI") until the hedged item is recognized in earnings upon settlement/termination. FX derivative gains and losses in AOCI are reclassified to our condensed consolidated statements of income (loss) as shown in the tables below and interest rate swap gains and losses in AOCI are reclassified to interest expense on our condensed consolidated statements of income (loss). We evaluate hedge effectiveness at inception. Cash flows from derivative contracts are reported as operating activities on our condensed consolidated statements of cash flows.

Freestanding FX Derivative Contracts

The gross notional amount of FX derivative contracts not designated as hedging instruments outstanding at March 31, 2020 and December 31, 2019 was $220.7 million and $338.0 million, respectively. These derivative contracts are designed to offset the FX effects in earnings of various intercompany loans, our 2014 EIB loan, the Euro-denominated borrowings under the 2019 Debt Facility and trade receivables. We recorded net gains for these freestanding derivatives of $8.1 million and $3.7 million for the three months ended March 31, 2020 and 2019, respectively. These gains are included in foreign exchange and other gains on our condensed consolidated statements of income (loss).

Cash Flow Hedges

The gross notional amounts of open derivative contracts designated as cash flow hedges at March 31, 2020 and December 31, 2019 were as follows (in thousands):

Description of Derivative Contract	March 31, 2020	December 31, 2019
FX derivative contracts to be exchanged for British Pounds	$ 10,568	$ 10,128
FX derivative contracts to be exchanged for Japanese Yen	20,283	25,342
FX derivative contracts to be exchanged for Euros	48,255	48,838
Interest rate swap contracts	21,912	22,442
	$ 101,018	$ 106,750

After-tax net loss associated with derivatives designated as cash flow hedges recorded in the ending balance of AOCI and the amount expected to be reclassified to earnings in the next twelve months are as follows (in thousands):

Description of Derivative Contract	After-Tax Net Loss in AOCI as of March 31, 2020	Amount Expected to be Reclassified to Earnings in Next 12 Months
FX derivative contracts	$ (453)	$ (453)
Interest rate swap contracts	(65)	(52)
	$ (518)	$ (505)

Pre-tax gains (losses) for derivative contracts designated as cash flow hedges recognized in other comprehensive income (loss) ("OCI") and the amount reclassified to earnings from AOCI were as follows (in thousands):

		Three Months Ended March 31,			
		2020		2019	
Description of Derivative Contract	Location in Earnings of Reclassified Gain or Loss	Losses Recognized in OCI	Losses Reclassified from AOCI to Earnings	Gains Recognized in OCI	Gains (Losses) Reclassified from AOCI to Earnings
FX derivative contracts	Foreign exchange and other (losses) gains	$ (2,080)	$ (605)	$ 1,309	$ 1,642
FX derivative contracts	SG&A	—	(91)	—	(310)
Interest rate swap contracts	Interest expense	—	(28)	—	(13)
		$ (2,080)	$ (724)	$ 1,309	$ 1,319

We offset fair value amounts associated with our derivative instruments on our condensed consolidated balance sheets that are executed with the same counterparty under master netting arrangements. Our netting arrangements include a right to set off or net together purchases and sales of similar products in the settlement process.

The following tables present the fair value and the location of derivative contracts reported on the condensed consolidated balance sheets (in thousands):

March 31, 2020	Asset Derivatives		Liability Derivatives	
Derivatives Designated as Hedging Instruments	Balance Sheet Location	Fair Value [1]	Balance Sheet Location	Fair Value [1]
Interest rate swap contracts			Accrued liabilities	$ 245
Interest rate swap contracts			Other long-term liabilities	31
FX derivative contracts	Prepaid expenses and other current assets	$ 6	Accrued liabilities	931
Total derivatives designated as hedging instruments		6		1,207
Derivatives Not Designated as Hedging Instruments				
FX derivative contracts	Prepaid expenses and other current assets	6,623	Accrued liabilities	76
FX derivative contracts	Accrued liabilities	7		—
Total derivatives not designated as hedging instruments		6,630		76
Total derivatives		$ 6,636		$ 1,283

December 31, 2019	Asset Derivatives		Liability Derivatives	
Derivatives Designated as Hedging Instruments	**Balance Sheet Location**	**Fair Value [1]**	**Balance Sheet Location**	**Fair Value [1]**
Interest rate swap contracts			Accrued liabilities	$ 313
Interest rate swap contracts			Other long-term liabilities	61
FX derivative contracts	Prepaid expenses and other current assets	$ 148	Accrued liabilities	169
FX derivative contracts	Accrued liabilities	387		
Total derivatives designated as hedging instruments		535		543
Derivatives Not Designated as Hedging Instruments				
FX derivative contracts	Accrued liabilities	26	Accrued liabilities	3,104
FX derivative contracts			Prepaid expenses and other current assets	33
Total derivatives not designated as hedging instruments		26		3,137
Total derivatives		$ 561		$ 3,680

(1) For the classification of inputs used to evaluate the fair value of our derivatives, refer to “Note 7. Fair Value Measurements.”

Note 10. Commitments and Contingencies

FDA Warning Letter

On December 29, 2015, the FDA issued a Warning Letter alleging certain violations of FDA regulations applicable to medical device manufacturers at our Munich, Germany and Arvada, Colorado facilities.

The FDA inspected the Munich facility from August 24, 2015 to August 27, 2015 and the Arvada facility from August 24, 2015 to September 1, 2015. On August 27, 2015, the FDA issued a Form 483 identifying two observed non-conformities with certain regulatory requirements at the Munich facility. We did not receive a Form 483 in connection with the FDA’s inspection of the Arvada facility. Following the receipt of the Form 483, we provided written responses to the FDA describing corrective and preventive actions that were underway or to be taken to address the FDA’s observations at the Munich facility. The Warning Letter responded in part to our responses and identified other alleged violations related to the manufacture of our 3T Heater-Cooler device that were not previously included in the Form 483.

The Warning Letter further stated that our 3T devices and other devices we manufactured at our Munich facility were subject to refusal of admission into the U.S. until resolution of the issues set forth by the FDA in the Warning Letter. The FDA had informed us that the import alert was limited to the 3T devices, but that the agency reserved the right to expand the scope of the import alert if future circumstances warranted such action. The Warning Letter did not request that existing users cease using the 3T device, and manufacturing and shipment of all of our products other than the 3T device were unaffected by the import limitation. To help clarify these issues for current customers, we issued an informational Customer Letter in January 2016 and that same month agreed with the FDA on a process for shipping 3T devices to existing U.S. users pursuant to a certificate of medical necessity program.

Finally, the Warning Letter stated that premarket approval applications for Class III devices to which certain Quality System regulation deviations identified in the Warning Letter were reasonably related would not be approved until the violations had been corrected; however, this restriction applied only to the Munich and Arvada facilities, which do not manufacture or design devices subject to Class III premarket approval.

On February 25, 2020, LivaNova received clearance for K191402, a 510(k) for the 3T devices that addressed issues contained in the 2015 Warning Letter along with design changes that further mitigate the potential risk of aerosolization. Concurrent with this clearance, (1) 3T devices manufactured in accordance with K191402 will not be subjected to the import alert and (2) LivaNova initiated a correction to distribute the updated Operating Instructions cleared under K191402.

We continue to work diligently to remediate the FDA’s inspectional observations for the Munich facility, as well as the additional issues identified in the Warning Letter. We take these matters seriously and intend to respond timely and fully to the FDA’s requests.

CDC and FDA Safety Communications and Company Field Safety Notice

On October 13, 2016, the CDC and the FDA separately released safety notifications regarding the 3T devices. The CDC's Morbidity and Mortality Weekly Report ("MMWR") and Health Advisory Notice ("HAN") reported that tests conducted by CDC and its affiliates indicate that there appears to be genetic similarity between both patient and 3T device strains of the non-tuberculous mycobacterium ("NTM") bacteria M. chimaera isolated in hospitals in Iowa and Pennsylvania. Citing the geographic separation between the two hospitals referenced in the investigation, the report asserts that 3T devices manufactured prior to August 18, 2014 could have been contaminated during the manufacturing process. The CDC's HAN and FDA's Safety Communication, issued contemporaneously with the MMWR report, each assess certain risks associated with 3T devices and provide guidance for providers and patients. The CDC notification states that the decision to use the 3T device during a surgical operation is to be taken by the surgeon based on a risk approach and on patient need. Both the CDC's and FDA's communications confirm that 3T devices are critical medical devices and enable doctors to perform life-saving cardiac surgery procedures.

Also on October 13, 2016, concurrent with the CDC's HAN and FDA's Safety Communication, we issued a Field Safety Notice Update for U.S. users of 3T devices to proactively and voluntarily contact facilities to aid in implementation of the CDC and FDA recommendations. In the fourth quarter of 2016, we initiated a program to provide existing 3T device users with a new loaner 3T device at no charge pending regulatory approval and implementation of additional risk mitigation strategies worldwide, including a vacuum canister and internal sealing upgrade program and a deep disinfection service. This loaner program is available on a global basis. We anticipate that this program will continue until we are able to address customer needs through a broader solution that includes implementation of the risk mitigation strategies described above. We are currently implementing the vacuum and sealing upgrade program in as many countries as possible until all devices are upgraded. On October 11, 2018, after review of information provided by us, the FDA concluded that we could commence the vacuum and sealing upgrade program in the U.S., and on February 25, 2020, LivaNova received clearance for K191402, a 510(k) for the 3T devices that addressed issues contained in the 2015 Warning Letter along with design changes that further mitigate the potential risk of aerosolization. Furthermore, we continue to offer a no-charge deep disinfection service (deep cleaning service) for 3T device users as we receive the required regulatory approvals. The deep disinfection service was rolled out in Europe in the second half of 2015, and on April 12, 2018, the FDA agreed to allow us to move forward with the deep cleaning service in the U.S. thereby adding to the growing list of countries around the world in which we offer this service.

On December 31, 2016, we recognized a liability for our product remediation plan related to our 3T device. We concluded that it was probable that a liability had been incurred upon management's approval of the plan and the commitments made by management to various regulatory authorities globally in November and December 2016, and furthermore, the cost associated with the plan was reasonably estimable. At March 31, 2020, the product remediation liability was $1.6 million. Refer to "Note 5. Product Remediation Liability" for additional information.

Litigation

Product Liability

The Company is currently involved in litigation involving our 3T device. The litigation includes a class action complaint in the U.S. District Court for the Middle District of Pennsylvania, federal multi-district litigation in the U.S. District Court for the Middle District of Pennsylvania, various U.S. state court cases and cases in jurisdictions outside the U.S. The class action, filed in February 2016, consists of all Pennsylvania residents who underwent open heart surgery at WellSpan York Hospital and Penn State Milton S. Hershey Medical Center between 2011 and 2015 and who currently are asymptomatic for NTM infection. Members of the class seek declaratory relief that the 3T devices are defective and unsafe for intended uses, medical monitoring, damages, and attorneys' fees.

On March 29, 2019, we announced a settlement framework that provides for a comprehensive resolution of the personal injury cases pending in the multi-district litigation in U.S. federal court, the related class action pending in federal court, as well as certain cases in state courts across the United States. The agreement, which makes no admission of liability, is subject to certain conditions, including acceptance of the settlement by individual claimants and provides for a total payment of up to $225 million to resolve the claims covered by the settlement. Per the agreed-upon terms, the first payment of $135 million was paid into a qualified settlement fund in July 2019 and the second payment of $90 million was paid in January 2020. Cases covered by the settlement are being dismissed as amounts are disbursed to individual plaintiffs from the qualified settlement fund.

Cases in state courts in the U.S. and in jurisdictions outside the U.S. continue to progress. As of April 29, 2020, including the cases encompassed in the settlement framework described above that have not yet been dismissed, we are aware of approximately 90 filed and unfiled claims worldwide, with the majority of the claims in various federal or state courts

throughout the United States. This includes cases that have settled but have not yet been dismissed. The complaints generally seek damages and other relief based on theories of strict liability, negligence, breach of express and implied warranties, failure to warn, design and manufacturing defect, fraudulent and negligent misrepresentation or concealment, unjust enrichment, and violations of various state consumer protection statutes.

At March 31, 2020, the provision for these matters was $54.6 million. While the amount accrued represents our best estimate, the actual liability for resolution of these matters may vary from our estimate.

The changes in the litigation provision liability during the three months ended March 31, 2020 are as follows (in thousands):

	Litigation Provision Liability
Total litigation provision liability at December 31, 2019	$ 170,404
Payments	(115,609)
FX and other	(225)
Total litigation provision liability at March 31, 2020	54,570
Less current portion of litigation provision liability at March 31, 2020	43,025
Long-term portion of litigation provision liability at March 31, 2020	$ 11,545

Environmental Liability

Our subsidiary, Sorin S.p.A. (“Sorin”) was created as a result of a spin-off (the “Sorin spin-off”) from SNIA S.p.A. (“SNIA”) in January 2004. SNIA subsequently became insolvent and the Italian Ministry of the Environment and the Protection of Land and Sea (the “Italian Ministry of the Environment”), sought compensation from SNIA in an aggregate amount of approximately $4 billion for remediation costs relating to the environmental damage at chemical sites previously operated by SNIA’s other subsidiaries.

In September 2011 and July 2014, the Bankruptcy Court of Udine and the Bankruptcy Court of Milan held (in proceedings to which we are not parties) that the Italian Ministry of the Environment and other Italian government agencies (the “Public Administrations”) were not creditors of either SNIA or its subsidiaries in connection with their claims in the Italian insolvency proceedings. The Public Administrations appealed and in January 2016, the Court of Udine rejected the appeal. The Public Administrations have also appealed that decision to the Supreme Court. In addition, the Bankruptcy Court of Milan’s decision has been appealed.

In January 2012, SNIA filed a civil action against Sorin in the Civil Court of Milan asserting joint liability of a parent and a spun-off company. On April 1, 2016, the Court of Milan dismissed all legal actions of SNIA and of the Public Administrations further requiring the Public Administrations to pay Sorin approximately €292,000 (approximately $319,915 as of March 31, 2020) for legal fees. The Public Administrations appealed the 2016 Decision to the Court of Appeal of Milan. On March 5, 2019, the Court of Appeal issued a partial decision on the merits declaring Sorin/LivaNova jointly liable with SNIA for SNIA’s environmental liabilities in an amount up to the fair value of the net worth received by Sorin because of the Sorin spin-off, an estimated €572.1 million (approximately $626.8 million as of March 31, 2020). Additionally the Court issued a separate order, staying the proceeding until a Panel of three experts can assess the environmental damages, the costs of clean-up, and the costs that the Public Administrations has already borne for the clean-up of the sites to allow the Court to decide on the second claim of the Public Administration against LivaNova, (i.e., to refund the Public Administrations for the SNIA environmental liabilities). In the interim, we are appealing the decision to the Italian Supreme Court (Corte di Cassazione).

We have not recognized an expense in connection with this matter because any potential loss is not currently probable or reasonably estimable. In addition, we cannot reasonably estimate a range of potential loss, if any, that may result from this matter.

Patent Litigation

On May 11, 2018, Neuro and Cardiac Technologies LLC (“NCT”), a non-practicing entity, filed a complaint in the United States District Court for the Southern District of Texas asserting that the VNS Therapy System, when used with the SenTiva Model 1000 generator, infringes the claims of U.S. Patent No. 7,076,307 owned by NCT. The complaint requests damages that include a royalty, costs, interest, and attorneys’ fees. On September 13, 2018, we petitioned the Patent Trial and Appeal Board of the U.S. Patent and Trademark Office (the “Patent Office”) for an *inter partes review* (“IPR”) of the validity of the ‘307 patent. The Patent Office instituted an IPR of all the challenged claims. The Court has stayed the litigation pending the outcome of the IPR proceeding. We have not recognized an expense in connection with this matter because any potential loss is not

currently probable or reasonably estimable. In addition, we cannot reasonably estimate a range of potential loss, if any, that may result from this matter.

Contract Litigation

On November 25, 2019, LivaNova received notice of a lawsuit initiated by former members of Caisson Interventional, LLC ("Caisson"), a subsidiary of the Company acquired in 2017. The lawsuit, Todd J. Mortier, as Member Representative of the former Members of Caisson Interventional, LLC v. LivaNova USA, Inc., is currently pending in the United States District Court for the District of Minnesota. The complaint alleges (i) breach of contract, (ii) breach of the covenant of good faith and fair dealing and (iii) unjust enrichment in connection with the Company's operation of Caisson's Transcatheter Mitral Valve Replacement ("TMVR") program and the Company's November 20, 2019 announcement that it was ending the TMVR program at the end of 2019. The lawsuit seeks damages arising out of the 2017 acquisition agreement, including various regulatory milestone payments. We intend to vigorously defend this claim. The Company has not recognized an expense related to this matter because any potential loss is not currently probable or reasonably estimable. In addition, we cannot reasonably estimate a range of potential loss, if any, that may result from this matter.

Tax Litigation

In a tax audit report received on October 30, 2009, the Regional Internal Revenue Office of Lombardy (the "Internal Revenue Office") informed Sorin Group Italia S.r.l. that, among several issues, it was disallowing in part (for a total of €102.6 million (approximately $112.4 million as of March 31, 2020), related to tax years 2002 through 2006) a tax-deductible write down of the investment in the U.S. company, Cobe Cardiovascular Inc., which Sorin Group Italia S.r.l. recognized in 2002 and deducted in five equal installments, beginning in 2002. In December 2009, the Internal Revenue Office issued notices of assessment for 2004. In December 2010 and October 2011, the Internal Revenue Office issued notices of assessment for 2005 and 2006, respectively. We challenged all three notices of assessment (for 2004, 2005 and 2006) before the relevant Provincial Tax Courts.

The preliminary challenges filed for 2004, 2005 and 2006 were denied at the first jurisdictional level. We appealed these decisions. The appeal submitted against the first-level decision for 2004 was successful. The Internal Revenue Office appealed this second-level decision to the Italian Supreme Court (Corte di Cassazione) on February 3, 2017. The Italian Supreme Court's decision is pending.

The appeals submitted against the first-level decisions for 2005 and 2006 were rejected. We appealed these adverse decisions to the Italian Supreme Court. On November 16, 2018, the Supreme Court returned the decisions for years 2005 and 2006 to the previous-level Court (Regional Tax Court) due to lack of substance of the motivation given in the 2nd level judgments that were appealed.

In November 2012, the Internal Revenue Office served a notice of assessment for 2007, and in July 2013, served a notice of assessment for 2008. In these matters the Internal Revenue Office claims an increase in taxable income due to a reduction (similar to the previous notices of assessment for 2004, 2005 and 2006) of the losses reported by Sorin Group Italia S.r.l. for the 2002, 2003 and 2004 tax periods, and subsequently utilized in 2007 and 2008. We challenged both notices of assessment. The Provincial Tax Court of Milan has stayed its decision for years 2007 and 2008 pending resolution of the litigation regarding years 2004, 2005, and 2006.

The total amount of losses in dispute is €62.6 million (approximately $68.6 million as of March 31, 2020). We have continuously reassessed our potential exposure in these matters, taking into account the recent, and generally adverse, trend to Italian taxpayers in this type of litigation. Although we believe that our defensive arguments are strong, noting the adverse trend in some of the court decisions, we have recognized a reserve for an uncertain tax position for the full amount of the potential liability. On May 31, 2019, we filed an application to settle the litigation according to law N. 136/2018 and paid the required settlement balance of €1.9 million. As per law N. 136/2018, the Italian Revenue Agency will review the settlement and decide to accept or reject the application by July 31, 2020. Until the settlement is accepted by the Italian Revenue Agency, we will continue to reserve for the full amount of the potential liability, by recognizing a €15.5 million reserve for uncertain tax position ($17.0 million as of March 31, 2020), net of the settlement payment.

Other Matters

Additionally, we are the subject of various pending or threatened legal actions and proceedings that arise in the ordinary course of our business. These matters are subject to many uncertainties and outcomes that are not predictable and that may not be known for extended periods of time. Since the outcome of these matters cannot be predicted with certainty, the costs associated with them could have a material adverse effect on our consolidated net income, financial position or liquidity.

Note 11. Stockholders' Equity

The tables below present the condensed consolidated statement of stockholders' equity as of and for the three months ended March 31, 2020 and 2019 (in thousands):

	Ordinary Shares	Ordinary Shares - Amount	Additional Paid-In Capital	Treasury Stock	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
December 31, 2019	49,411	$ 76,257	$ 1,734,870	$ (1,263)	$ (19,392)	$ (406,755)	$ 1,383,717
Adoption of ASU No. 2016-13 [1]	—	—	—	—	—	(639)	(639)
Stock-based compensation plans	3	2	5,003	173	—	—	5,178
Net income	—	—	—	—	—	37,583	37,583
Other comprehensive loss	—	—	—	—	(33,131)	—	(33,131)
March 31, 2020	49,414	$ 76,259	$ 1,739,873	$ (1,090)	$ (52,523)	$ (369,811)	$ 1,392,708
December 31, 2018	49,323	$ 76,144	$ 1,705,111	$ (1,462)	$ (24,476)	$ (251,579)	$ 1,503,738
Stock-based compensation plans	6	7	2,006	141	—	—	2,154
Net loss	—	—	—	—	—	(14,849)	(14,849)
Other comprehensive loss	—	—	—	—	(4,237)	—	(4,237)
March 31, 2019	49,329	$ 76,151	$ 1,707,117	$ (1,321)	$ (28,713)	$ (266,428)	$ 1,486,806

(1) Refer to "Note 17. New Accounting Pronouncements"

The table below presents the change in each component of AOCI, net of tax, and the reclassifications out of AOCI into net income for the three months ended March 31, 2020 and 2019 (in thousands):

	Change in Unrealized Gain (Loss) on Derivatives	Foreign Currency Translation Adjustments Gain (Loss) [1]	Total
As of December 31, 2019	$ 513	$ (19,905)	$ (19,392)
Other comprehensive loss before reclassifications, before tax	(2,080)	(32,100)	(34,180)
Tax benefit	498		498
Other comprehensive loss before reclassifications, net of tax	(1,582)	(32,100)	(33,682)
Reclassification of loss from accumulated other comprehensive loss, before tax	724		724
Reclassification of tax benefit	(173)		(173)
Reclassification of gain from accumulated other comprehensive loss, after tax	551	—	551
Net current-period other comprehensive loss, net of tax	(1,031)	(32,100)	(33,131)
As of March 31, 2020	**$ (518)**	**$ (52,005)**	**$ (52,523)**
As of December 31, 2018	$ (944)	$ (23,532)	$ (24,476)
Other comprehensive income (loss) before reclassifications, before tax	1,309	(4,229)	(2,920)
Tax expense	(314)	—	(314)
Other comprehensive income (loss) before reclassifications, net of tax	995	(4,229)	(3,234)
Reclassification of gain from accumulated other comprehensive loss, before tax	(1,319)	—	(1,319)
Reclassification of tax expense	316	—	316
Reclassification of gain from accumulated other comprehensive loss, after tax	(1,003)	—	(1,003)
Net current-period other comprehensive loss, net of tax	(8)	(4,229)	(4,237)
As of March 31, 2019	**$ (952)**	**$ (27,761)**	**$ (28,713)**

(1) Taxes are not provided for foreign currency translation adjustments as translation adjustments are related to earnings that are intended to be reinvested in the countries where earned.

Note 12. Stock-Based Incentive Plans

Stock-based incentive plans compensation expense is as follows (in thousands):

	Three Months Ended March 31,	
	2020	2019
Service-based restricted stock units (“RSUs”)	$ 4,478	$ 2,970
Service-based stock appreciation rights (“SARs”)	2,684	2,008
Market performance-based restricted stock units	896	551
Operating performance-based restricted stock units	695	971
Employee stock purchase plan	290	372
Total stock-based compensation expense	$ 9,043	$ 6,872

During the three months ended March 31, 2020, we issued stock-based compensatory awards with terms approved by the Compensation Committee of our Board of Directors. The awards with service conditions generally vest ratably over four years, subject to forfeiture unless service conditions are met. Market performance-based awards cliff vest after three years subject to the rank of our total shareholder return for the three-year period ending December 31, 2022 relative to the total shareholder returns for a peer group of companies. Operating performance-based awards cliff vest after three years subject to the achievement of certain thresholds of cumulative adjusted free cash flow for the three year period ending December 31, 2022. Compensation expense related to awards granted during 2020 for the three months ended March 31, 2020 was $0.4 million.

Stock-based compensation agreements issued during the three months ended March 31, 2020, representing potential shares and their weighted average grant date fair values by type follows (shares in thousands, fair value in dollars):

	Three Months Ended March 31, 2020	
	Shares	Weighted Average Grant Date Fair Value
Service-based SARs	1,133	$ 15.73
Service-based RSUs	459	$ 43.57
Market performance-based RSUs	93	$ 39.83
Operating performance-based RSUs	93	$ 43.57

Note 13. Income Taxes

Our effective income tax rate from continuing operations for the three months ended March 31, 2020 was 744.4% compared with 30.8% for the three months ended March 31, 2019. Our effective income tax rate fluctuates based on, among other factors, changes in pretax income in countries with varying statutory tax rates, changes in valuation allowances, changes in tax credits and incentives, and changes in unrecognized tax benefits associated with uncertain tax positions.

Compared with the three months ended March 31, 2019, the change in the effective tax rate for the three months ended March 31, 2020 was primarily attributable to a realized discrete tax benefit of $41.3 million related to the Coronavirus Aid, Relief, and Economic Security Act (“CARES Act”) as compared to the realized benefit from discrete tax items, including the release of an uncertain tax position, during the three months ended March 31, 2019.

We operate in multiple jurisdictions throughout the world, and our tax returns are periodically audited or subjected to review by tax authorities. As a result, there is an uncertainty in income taxes recognized in our financial statements. Tax benefits totaling $12.6 million and $12.9 million were unrecognized as of March 31, 2020 and December 31, 2019, respectively. It is reasonably possible that, within the next twelve months, due to the settlement of uncertain tax positions with various tax authorities and the expiration of statutes of limitations, unrecognized tax benefits could decrease by up to approximately $11.7 million.

We monitor income tax developments in countries where we conduct business. On March 27, 2020, the U.S. enacted the CARES Act which provided for a 5-year loss carryback for losses incurred in 2018-2020. We recorded a discrete tax benefit of $41.3 million to account for the effect of the CARES Act. Further regulations and notices as well as state legislative changes addressing conformity to the CARES Act are still pending.

Note 14. Earnings Per Share

Reconciliation of the shares used in the basic and diluted earnings per share computations for the three months ended March 31, 2020 and 2019 are as follows (in thousands):

	Three Months Ended March 31,	
	2020	2019
Basic weighted average shares outstanding	48,485	48,246
Add effects of share-based compensation instruments [(1)]	284	—
Diluted weighted average shares outstanding	48,769	48,246

(1) Excluded from the computation of diluted earnings per share were stock options, SARs and restricted share units totaling 1.5 million and 3.3 million for the three months ended March 31, 2020 and 2019, respectively, because to include them would have been anti-dilutive under the treasury stock method.

Note 15. Geographic and Segment Information

We identify operating segments based on the way we manage, evaluate and internally report our business activities for purposes of allocating resources, developing and executing our strategy, and assessing performance. We have two reportable segments: Cardiovascular and Neuromodulation.

The Cardiovascular segment generates its revenue from the development, production and sale of cardiopulmonary products, heart valves and related products and advanced circulatory support. Cardiopulmonary products include oxygenators, heart-lung machines, autotransfusion systems, perfusion tubing systems, cannulae and other related accessories. Heart valves include

mechanical heart valves, tissue heart valves, related repair products and minimally invasive surgical instruments. Advanced circulatory support includes temporary life support product kits that can include a combination of pumps, oxygenators, and cannulae.

Our Neuromodulation segment generates its revenue from the design, development and marketing of neuromodulation therapy systems for the treatment of drug-resistant epilepsy, difficult-to-treat depression (“DTD”) and obstructive sleep apnea. Neuromodulation products include the VNS Therapy System, which consists of an implantable pulse generator, a lead that connects the generator to the vagus nerve, and other accessories.

“Other” includes corporate shared service expenses for finance, legal, human resources, information technology and corporate business development.

Net sales of our reportable segments include revenues from the sale of products they each develop and manufacture or distribute. We define segment income as operating income before merger and integration, restructuring and amortization of intangibles.

We operate under three geographic regions: U.S., Europe, and Rest of World. The table below presents net sales by operating segment and geographic region (in thousands):

	Three Months Ended March 31,	
	2020	2019
Cardiopulmonary		
United States	$ 36,858	$ 39,123
Europe	34,234	35,561
Rest of World	45,275	46,886
	116,367	121,570
Heart Valves		
United States	3,373	4,356
Europe	9,529	10,513
Rest of World	12,309	10,804
	25,211	25,673
Advanced Circulatory Support		
United States	10,076	8,033
Europe	370	119
Rest of World	45	96
	10,491	8,248
Cardiovascular		
United States	50,307	51,512
Europe	44,133	46,193
Rest of World	57,629	57,786
	152,069	155,491
Neuromodulation		
United States	73,276	76,886
Europe	10,583	10,659
Rest of World	5,798	7,104
	89,657	94,649
Other	671	661
Totals		
United States	123,583	128,398
Europe [1]	54,716	56,852
Rest of World	64,098	65,551
Total [2]	$ 242,397	$ 250,801

(1) Europe sales include those countries in which we have a direct sales presence, whereas European countries in which we sell through distributors are included in Rest of World.

(2) No single customer represented over 10% of our consolidated net sales. No country's net sales exceeded 10% of our consolidated sales except for the U.S.

The table below presents a reconciliation of segment income (loss) from continuing operations to consolidated loss from continuing operations before tax (in thousands):

	Three Months Ended March 31,	
	2020	2019
Cardiovascular	$ 8,681	$ 989
Neuromodulation	33,858	21,631
Other	(26,610)	(28,299)
Total reportable segment income (loss) from continuing operations	15,929	(5,679)
Merger and integration expenses	3,474	3,251
Restructuring expenses	1,580	2,533
Amortization of intangibles	10,267	9,316
Operating income (loss) from continuing operations	608	(20,779)
Interest income	148	249
Interest expense	(4,849)	(1,662)
Foreign exchange and other (losses) gains	(1,914)	729
Loss from continuing operations before tax	$ (6,007)	$ (21,463)

Assets by segment are as follows (in thousands):

	March 31, 2020	December 31, 2019
Cardiovascular	$ 1,453,378	$ 1,546,520
Neuromodulation	685,190	749,069
Other	315,868	116,208
Total assets	$ 2,454,436	$ 2,411,797

Capital expenditures by segment are as follows (in thousands):

	Three Months Ended March 31,	
	2020	2019
Cardiovascular	$ 5,292	$ 3,551
Neuromodulation	5,239	403
Other	1,843	929
Total	$ 12,374	$ 4,883

The changes in the carrying amount of goodwill by segment for the three months ended March 31, 2020 were as follows (in thousands):

	Neuromodulation	Cardiovascular	Total
December 31, 2019	$ 398,754	$ 517,040	$ 915,794
Foreign currency adjustments	—	(27,221)	(27,221)
March 31, 2020	$ 398,754	$ 489,819	$ 888,573

Property, plant and equipment, net by geography are as follows (in thousands):

	March 31, 2020	December 31, 2019
United States	$ 64,473	$ 61,410
Europe	110,669	110,270
Rest of World	8,392	9,674
Total	$ 183,534	$ 181,354

Note 16. Supplemental Financial Information

Inventories, net consisted of the following (in thousands):

	March 31, 2020	December 31, 2019
Raw materials	$ 44,391	$ 45,225
Work-in-process	17,947	14,581
Finished goods	107,918	104,348
	$ 170,256	$ 164,154

Inventories are reported net of the provision for obsolescence. This provision, which reflects normal obsolescence and includes components that are phased out or expired, totaled $13.0 million and $12.7 million at March 31, 2020 and December 31, 2019, respectively.

Accrued liabilities and other consisted of the following (in thousands):

	March 31, 2020	December 31, 2019
Contingent consideration [(1)]	$ 14,809	$ 22,953
Operating lease liabilities	11,371	11,110
Legal and administrative costs	8,952	11,066
Contract liabilities	7,313	6,728
Research and development costs	5,896	5,160
Provisions for agents, returns and other	3,558	3,922
Restructuring related liabilities [(2)]	2,697	4,315
Product remediation [(3)]	1,636	3,251
Derivative contract liabilities [(4)]	1,245	3,173
Other amounts payable to MicroPort Scientific Corporation	597	1,340
CRM purchase price adjustment payable to MicroPort Scientific Corporation	—	14,891
Other accrued expenses	35,465	32,191
	$ 93,539	$ 120,100

(1) Refer to “Note 7. Fair Value Measurements”
(2) Refer to “Note 4. Restructuring”
(3) Refer to “Note 5. Product Remediation Liability”
(4) Refer to “Note 9. Derivatives and Risk Management”

As of March 31, 2020 and December 31, 2019, contract liabilities of $9.1 million and $8.6 million, respectively, are included within accrued liabilities and other long-term liabilities on the condensed consolidated balance sheets.

Note 17. New Accounting Pronouncements

Adoption of New Accounting Pronouncements

The following table provides a description of our adoption of new Accounting Standards Updates ("ASUs") issued by the FASB and the impact of the adoption on our condensed financial statements:

Issue Date & Standard	Description	Date of Adoption	Effect on Financial Statements or Other Significant Matters
June 2016 ASU No. 2016-13, Financial Instruments—Credit Losses (Topic 326)	The amendments in this update require a financial asset (or a group of financial assets) measured at amortized cost basis to be presented at the net amount expected to be collected. We adopted the update effective January 1, 2020, applying this standard to our accounts receivable by use of a provision matrix approach. This approach utilizes historical loss rates based on the number of days past due, adjusted to reflect current economic conditions and forecasts of future economic conditions.	January 1, 2020	We recognized the following cumulative-effect adjustments, including to retained earnings, upon adoption at January 1, 2020: Accounts receivable, net decreased $0.6 million and accumulated deficit increased $0.6 million.
January 2017 ASU No. 2017-04, Intangibles-Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment	This update removes step 2 of the goodwill impairment test that compares the implied fair value of goodwill with its carrying amount. Instead, an impairment test is performed by comparing the fair value of a reporting unit with its carrying amount. An impairment charge will be recorded by the amount a reporting unit's carrying amount exceeds its fair value.	January 1, 2020	There was no material impact to our consolidated financial statements as a result of adopting this ASU.
August 2018 ASU No. 2018-13, Fair Value Measurement (Topic 820): Changes to the Disclosure Requirements for Fair Value Measurement	This update removes, modifies and adds certain disclosure requirements related to fair value measurements.	January 1, 2020	There was no material impact to our consolidated financial statements as a result of adopting this ASU.
August 2018 ASU No. 2018-15, Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract	This update clarifies and aligns the accounting for implementation costs for hosting arrangements with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software.	January 1, 2020	There was no material impact to our consolidated financial statements as a result of adopting this ASU.

Future Adoption of New Accounting Pronouncements

The following table provides a description of future adoptions of new accounting standards that may have an impact on our financial statements when adopted:

Issue Date & Standard	Description	Projected Date of Adoption	Effect on Financial Statements or Other Significant Matters
August 2018 ASU No. 2018-14, Compensation—Retirement Benefits—Defined Benefit Plans—General (Subtopic 715-20): *Changes to the Disclosure Requirements for Defined Benefit Plans*	This update adds and removes certain disclosure requirements related to defined benefit plans. This ASU is to be implemented on a retrospective basis for all periods presented with early adoption permitted.	January 1, 2021	We do not expect the adoption of this update to have a material effect on our condensed consolidated financial statement disclosures.

Item 2. *Management's Discussion and Analysis of Financial Condition and Results of Operations*

The following discussion and analysis should be read in conjunction with our condensed consolidated financial statements and related notes which appear elsewhere in this document and with our 2019 Form 10-K. Our discussion and analysis may contain forward-looking statements that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of certain factors, including those set forth under "Risk Factors" in Item 1A of our 2019 Form 10-K, as supplemented by Part 2, Item 1A and elsewhere in this Quarterly Report on Form 10-Q.

The capitalized terms used below have been defined in the notes to our condensed consolidated financial statements. In the following text, the terms "LivaNova," "the Company," "we," "us" and "our" refer to LivaNova PLC and its consolidated subsidiaries.

COVID-19

In recent months, a new strain of coronavirus (COVID-19) has spread to many countries in the world and the outbreak has been declared a pandemic by the World Health Organization. The U.S. Secretary of Health and Human Services has also declared a public health emergency in the United States in response to the outbreak. Considerable uncertainty still surrounds the COVID-19 virus and its potential effects, and the extent of and effectiveness of responses taken on international, national and local levels. Measures taken to limit the impact of COVID-19, including shelter-in-place orders, social distancing measures, travel bans and restrictions, and business and government shutdowns, have already resulted in significant negative economic impacts on a global basis.

Due to these impacts and measures, we have experienced, and may continue to experience, significant and unpredictable reductions in the demand for our products as healthcare customers divert medical resources and priorities towards the treatment of COVID-19. In addition, our customers may delay, cancel, or redirect planned purchases in order to focus resources on COVID-19 or in response to economic disruption related to COVID-19. For example, in the last two weeks of the quarter ended March 31, 2020, we experienced a significant decline in volumes in the U.S. and Europe, as healthcare systems diverted resources to meet the increasing demands of managing COVID-19. In addition, public health bodies have recommended delaying elective surgeries during the COVID-19 pandemic, which may continue to negatively impact the usage of our products, including the number of Neuromodulation procedures.

While the ultimate health and economic impact of the COVID-19 pandemic is highly uncertain, we expect that our sales and operating results for the second quarter of 2020 will be materially adversely impacted. We currently expect to see stabilization in the third quarter of 2020 as elective surgeries are rescheduled and a recovery in the fourth quarter on a global basis. Further cancellations or delays could materially adversely impact our business, results of operations and overall financial performance.

Our business operations have been affected by a range of external factors related to the COVID-19 pandemic that are not within our control. For example, many jurisdictions have imposed a wide range of restrictions on the physical movement of our employees and vendors to limit the spread of COVID-19. If the COVID-19 pandemic has a substantial impact on our employees or vendors attendance or productivity, our operations may suffer, and in turn our results of operations and overall financial performance may be harmed.

Further as a result of the impact of COVID-19, due to the restrictions at surgical centers and clinical trial sites, we anticipate few new implants in our RECOVER clinical study during the next six months. Implants are expected to resume in the fourth quarter of 2020 and we believe that new implants will continue to increase into 2021. In the current COVID-19 environment, we are remotely collaborating with study sites to continue certain activities that maintain engagement, including activating more sites for enrollment and also, identifying and consenting patients at existing sites. Additionally, we continue to perform follow-up visits for all patients who have been enrolled and implanted to date.

Additionally, we have temporarily paused enrollment in our ANTHEM-HFrEF U.S. pivotal trial in accordance with site restrictions due to COVID-19 though we are supporting patients and physicians by using remote technology to remain engaged.

We have taken numerous steps, and will continue to take further actions, in our approach to addressing the COVID-19 pandemic. We have successfully implemented our business continuity plans, and our management team is in place to respond to changes in our environment quickly and effectively. We have not closed any of our manufacturing plants. Additionally, the supply of raw materials and the distribution of finished products remain operational with no known or foreseen constraints. As a result of the COVID-19 pandemic, we instructed employees at many of our facilities across the globe to work from home on a temporary basis and have implemented travel restrictions. We have incurred additional expenses in connection with our response to the COVID-19 pandemic, including manufacturing inefficiencies and costs related to enabling our employees to support our customers while working remotely. These additional expenses were not material to our results of operations during the first quarter of 2020.

We believe that implementing cost reduction efforts will help us mitigate the impact that reduced revenues may have on our fiscal 2020 operating income. We are reducing expenses through such methods as evaluation of which projects and initiatives are critical to meet the current needs of the Company and protect strategic priorities for future growth, reduction of discretionary spending and tighter management of personnel costs.

Given the dynamic nature of these circumstances, the full impact of the COVID-19 pandemic on our ongoing business, results of operations and overall financial performance cannot be reasonably estimated at this time.

For further discussion on COVID-19, refer to “Part II, Item 1A. Risk Factors” in this Quarterly Report on Form 10-Q.

Business Overview

We are a public limited company organized under the laws of England and Wales, headquartered in London, England. We are a global medical device company focused on the development and delivery of important therapeutic solutions for the benefit of patients, healthcare professionals and healthcare systems throughout the world. Working closely with medical professionals in the fields of Cardiovascular and Neuromodulation, we design, develop, manufacture and sell innovative therapeutic solutions that are consistent with our mission to improve our patients’ quality of life, increase the skills and capabilities of healthcare professionals and minimize healthcare costs.

LivaNova is comprised of two reportable segments: Cardiovascular and Neuromodulation, corresponding to our primary therapeutic areas. Other corporate activities include corporate shared service expenses for finance, legal, human resources, information technology and corporate business development.

For further information regarding our business segments, historical financial information and our methodology for the presentation of financial results, please refer to the condensed consolidated financial statements and accompanying notes of this Quarterly Report on Form 10-Q.

Cardiovascular

Our Cardiovascular segment is engaged in the development, production and sale of cardiopulmonary products, heart valves and advanced circulatory support products. Cardiopulmonary products include oxygenators, heart-lung machines, autotransfusion systems, perfusion tubing systems, cannulae and other related accessories. Heart valves include mechanical heart valves, tissue heart valves, related repair products and minimally invasive surgical instruments. Advanced circulatory support includes temporary life support product kits that can include a combination of pumps, oxygenators, and cannulae.

Product Remediation

On December 29, 2015, the FDA issued a Warning Letter alleging certain violations of FDA regulations applicable to medical device manufacturers at our Munich, Germany and Arvada, Colorado facilities and issued inspectional observations on FDA’s Form-483 applicable to our Munich, Germany facility.

The Warning Letter further stated that our 3T devices and other devices we manufactured at our Munich facility are subject to refusal of admission into the U.S. until resolution of the issues set forth by the FDA in the Warning Letter. The FDA informed us that the import alert was limited to the 3T devices, but that the agency reserved the right to expand the scope of the import alert if future circumstances warranted such action. The Warning Letter did not request that existing users cease using the 3T device, and manufacturing and shipment all of our products other than the 3T device were unaffected by the import limitation. To help clarify these issues for current customers, we issued an informational Customer Letter in January 2016 and that same month agreed with the FDA on a process for shipping 3T devices to existing U.S. users pursuant to a certificate of medical necessity program.

Finally, the Warning Letter stated that premarket approval applications for Class III devices to which certain Quality System regulation deviations identified in the Warning Letter were reasonably related would not be approved until the violations had been corrected; however, this restriction applied only to the Munich and Arvada facilities, which do not manufacture or design devices subject to Class III premarket approval.

On February 25, 2020, LivaNova received clearance for K191402, a 510(k) for the 3T devices that addressed issues contained in the 2015 Warning Letter along with design changes that further mitigate the potential risk of aerosolization. Concurrent with this clearance, (1) 3T devices manufactured in accordance with K191402 will not be subjected to the import alert and (2) LivaNova initiated a correction to distribute the updated Operating Instructions cleared under K191402.

We continue to work diligently to remediate the FDA’s inspectional observations for the Munich facility, as well as the additional issues identified in the Warning Letter. We take these matters seriously and intend to respond timely and fully to the

FDA's requests. For further information refer to "Note 10. Commitments and Contingencies" in our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q.

Product Liability

The Company is currently involved in litigation involving our 3T device. The litigation includes a class action complaint in the U.S. District Court for the Middle District of Pennsylvania, federal multi-district litigation in the U.S. District Court for the Middle District of Pennsylvania, various U.S. state court cases and cases in jurisdictions outside the U.S. The class action, filed in February 2016, consists of all Pennsylvania residents who underwent open heart surgery at WellSpan York Hospital and Penn State Milton S. Hershey Medical Center between 2011 and 2015 and who currently are asymptomatic for NTM infection. Members of the class seek declaratory relief that the 3T devices are defective and unsafe for intended uses, medical monitoring, damages, and attorneys' fees.

On March 29, 2019, we announced a settlement framework that provides for a comprehensive resolution of the personal injury cases pending in the multi-district litigation in U.S. federal court, the related class action pending in federal court, as well as certain cases in state courts across the United States. The agreement, which makes no admission of liability, is subject to certain conditions, including acceptance of the settlement by individual claimants and provides for a total payment of up to $225 million to resolve the claims covered by the settlement. Per the agreed-upon terms, the first payment of $135 million was paid into a qualified settlement fund in July 2019 and the second payment of $90.0 million was paid in January 2020. Cases covered by the settlement are being dismissed as amounts are disbursed to individual plaintiffs from the qualified settlement fund.

Cases in state courts in the U.S. and in jurisdictions outside the U.S. continue to progress. As of April 29, 2020, including the cases encompassed in the settlement framework described above that have not yet been dismissed, we are aware of approximately 90 filed and unfiled claims worldwide, with the majority of the claims in various federal or state courts throughout the United States. This includes cases that have settled but have not yet been dismissed. The complaints generally seek damages and other relief based on theories of strict liability, negligence, breach of express and implied warranties, failure to warn, design and manufacturing defect, fraudulent and negligent misrepresentation or concealment, unjust enrichment, and violations of various state consumer protection statutes.

At March 31, 2020, the provision for these matters was $54.6 million. While the amount accrued represents our best estimate, the actual liability for resolution of these matters may vary from our estimate.

Cardiopulmonary

In April 2020, the U.S. Food and Drug Administration issued guidance that permitted several of our cardiopulmonary products to be used for Extracorporeal Membrane Oxygenation ("ECMO") therapy greater than six hours to temporarily expand the availability of devices to address the COVID-19 pandemic. Product indications for use have been modified accordingly for many products within our Cardiopulmonary and Advanced Circulatory Support portfolios.

Also in April 2020, our Bi-Flow ECMO cannula earned CE Mark approval for ECMO procedures where femoral artery cannulation can be applied. Bi-Flow previously received CE Mark in 2019 for cardiac surgery procedures requiring femoral artery cannulation. Now validated for up to 29 days of use, Bi-Flow ECMO is designed to reduce the risk of limb ischemia for patients receiving ECMO and it allows for safe, easy and reproducible procedures.

Neuromodulation

Our Neuromodulation segment designs, develops and markets Neuromodulation therapy for the treatment of drug-resistant epilepsy, DTD and obstructive sleep apnea. We are also developing and conducting clinical testing of the VITARIA System for treating heart failure through vagus nerve stimulation.

Depression

In February 2020, we announced a research collaboration with Verily, an Alphabet company, to capture measures of depression within our RECOVER clinical study. Through this initial research collaboration, LivaNova and Verily aim to gather quantitative data on patient behavior using technology and analytics developed by Verily to further understand depressive episodes and a patient's response to treatment. RECOVER clinical sites will have the ability to offer patients the Verily Study Watch, a wearable device designed to capture physiological and environmental data for clinical research, and a Verily mobile phone application. These complementary approaches are expected to help investigators better understand the impact of depression and its treatment on study participants' lives in a more objective and multi-dimensional manner.

In March 2020, our VNS Therapy System, Symmetry received CE mark approval for DTD. Two patients in the UK were implanted at the Musgrove Park Hospital in Taunton, England, making them the first patients to receive Symmetry devices outside the U.S.

Significant Accounting Policies and Critical Accounting Estimates

In addition to our critical accounting policies provided in “Part II, Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” included in our 2019 Form 10-K, refer to “Significant Accounting Policies” within “Note 1. Unaudited Condensed Consolidated Financial Statements” included in this Quarterly Report on Form 10-Q.

The accompanying unaudited condensed consolidated financial statements of LivaNova and its consolidated subsidiaries have been prepared in accordance with U.S. GAAP on an interim basis.

New accounting pronouncements are disclosed in “Note 17. New Accounting Pronouncements” contained in the condensed consolidated financial statements in this Quarterly Report on Form 10-Q.

Other

Brexit

On January 31, 2020, the UK departed from the EU (in a move commonly referred to as “Brexit”), and the UK will now enter a transition period that is scheduled to end on December 31, 2020, unless requested to be extended before July 1, 2020. During the transition period, the UK will cease to be an EU member but the trading relationship will remain the same under the EU's rules. Although the long-term effects of Brexit will depend on any agreements the UK makes to retain access to the EU markets, Brexit has created additional uncertainties that may ultimately result in new regulatory costs and challenges for medical device companies and increased restrictions on imports and exports throughout Europe. This could adversely affect our ability to conduct and expand our operations in Europe and may have an adverse effect on our business, financial condition and results of operations.

Passage of the withdrawal bill does not change the application of existing tax laws and does not establish a clear framework for what the ultimate outcome of the transition period will be. Various tax reliefs and exemptions that apply to transactions between EU Member States under existing tax laws may cease to apply to transactions between the UK and EU Member States when the transition period is over. It is unclear at this stage if or when any new tax treaties between the UK and the EU or individual EU Member States will replace those reliefs and exemptions. It is also unclear at this stage what financial, trade and legal implications will ensue from Brexit and how Brexit may ultimately affect us, our customers, suppliers, vendors, or our industry.

We and several of our wholly owned subsidiaries that are domiciled either in the UK, various EU Member States, or in the U.S., are party to intercompany transactions and agreements under which we receive various tax reliefs and exemptions in accordance with applicable international tax laws, treaties and regulations. If certain treaties applicable to our transactions and agreements change materially, Brexit may have a material adverse impact on our future financial results and results of operations. We continue to monitor and assess the potential impact of this event and explore possible tax-planning strategies that may mitigate or eliminate potential adverse impacts.

We will not account for the impact of Brexit in our income tax provisions until there are material changes in tax laws or treaties between the UK and other countries.

European Union State Aid Challenge

On October 26, 2017, the European Commission (“EC”) announced that an investigation would be opened with respect to the UK’s controlled foreign company (“CFC”) rules for the period January 1, 2013 through December 31, 2018. Under the CFC rules, financing profits of entities controlled by UK parent companies are taxed when the funding originates in the UK, or Significant People Functions relating to the financing are located in the UK. The provisions under investigation provide group finance exemptions related to the profits of entities involved in financing of the non-UK group activities. On April 2, 2019, the EC concluded that “when financing income from a foreign group company, channeled through an offshore subsidiary, is financed with UK connected capital and there are no UK activities involved in generating the finance profits, the group finance exemption is justified and does not constitute State aid under EU rules.” However, in relation to Significant People Functions, “when financing income from a foreign group company, channeled through an offshore subsidiary, derives from UK activities, the group finance exemption is not justified and constitutes State aid under EU rules.” Her Majesty’s Revenue and Customs (“HMRC”) has stated that they do not consider the timing and form of the UK’s exit from the EU will have a practical impact on the requirement to recover the alleged aid. On June 14, 2019, the UK filed an appeal to the Commission’s decision. On July 5, 2019, HMRC began the first step in the recovery process to identify beneficiaries and sent letters asking for information.

Based upon our assessment of the technical arguments as to whether the exemption is State aid, together with no UK activities involved in our financing, no uncertain tax position reserve has been recognized related to this matter. Furthermore, in December 2019, we amended our 2017 tax return filing to avail ourselves of different rules to determine UK taxation, which are not subject to the EU decision. We filed our 2018 tax return similarly, and therefore, we do not believe that the EU state aid decision will result in a material liability.

Results of Operations

The following table summarizes our condensed consolidated results of operations (in thousands):

	Three Months Ended March 31,	
	2020	**2019**
Net sales	$ 242,397	$ 250,801
Costs and expenses:		
Cost of sales - exclusive of amortization	68,923	84,254
Product remediation	1,466	2,947
Selling, general and administrative	120,177	125,704
Research and development	35,902	43,575
Merger and integration expenses	3,474	3,251
Restructuring expenses	1,580	2,533
Amortization of intangibles	10,267	9,316
Operating income (loss) from continuing operations	608	(20,779)
Interest income	148	249
Interest expense	(4,849)	(1,662)
Foreign exchange and other (losses) gains	(1,914)	729
Loss from continuing operations before tax	(6,007)	(21,463)
Income tax benefit	(44,714)	(6,614)
Losses from equity method investments	(129)	—
Net income (loss) from continuing operations	38,578	(14,849)
Net loss from discontinued operations, net of tax	(995)	—
Net income (loss)	$ 37,583	$ (14,849)

Net Sales

The table below presents net sales by operating segment and geographic region (in thousands, except for percentages):

	Three Months Ended March 31,		
	2020	2019	% Change
Cardiopulmonary			
United States	$ 36,858	$ 39,123	(5.8)%
Europe	34,234	35,561	(3.7)%
Rest of World	45,275	46,886	(3.4)%
	116,367	121,570	(4.3)%
Heart Valves			
United States	3,373	4,356	(22.6)%
Europe	9,529	10,513	(9.4)%
Rest of World	12,309	10,804	13.9 %
	25,211	25,673	(1.8)%
Advanced Circulatory Support			
United States	10,076	8,033	25.4 %
Europe	370	119	210.9 %
Rest of World	45	96	(53.1)%
	10,491	8,248	27.2 %
Cardiovascular			
United States	50,307	51,512	(2.3)%
Europe	44,133	46,193	(4.5)%
Rest of World	57,629	57,786	(0.3)%
	152,069	155,491	(2.2)%
Neuromodulation			
United States	73,276	76,886	(4.7)%
Europe	10,583	10,659	(0.7)%
Rest of World	5,798	7,104	(18.4)%
	89,657	94,649	(5.3)%
Other	671	661	1.5 %
Totals			
United States	123,583	128,398	(3.8)%
Europe [(1)]	54,716	56,852	(3.8)%
Rest of World	64,098	65,551	(2.2)%
Total	$ 242,397	$ 250,801	(3.4)%

(1) Europe sales include those countries in which we have a direct sales presence, whereas European countries in which we sell through distributors are included in "Rest of World."

The table below presents segment income (loss) from continuing operations (in thousands, except for percentages):

	Three Months Ended March 31,		
	2020	2019	% Change
Cardiovascular	$ 8,681	$ 989	777.8 %
Neuromodulation	33,858	21,631	56.5 %
Other	(26,610)	(28,299)	(6.0)%
Total reportable segment income (loss) from continuing operations [1]	$ 15,929	$ (5,679)	(380.5)%

(1) For a reconciliation of segment income (loss) from continuing operations to income (loss) from continuing operations before tax refer to "Note 15. Geographic and Segment Information" in the condensed consolidated financial statements in this Quarterly Report on Form 10-Q.

Cardiovascular

Cardiovascular net sales for the three months ended March 31, 2020 compared to the three months ended March 31, 2019 decreased 2.2%. The decline in net sales for the three month period was due to declines in Cardiopulmonary sales of 4.3%, partially offset by a $2.2 million increase in Advanced Circulatory Support sales due to deeper penetration of existing accounts with Protek Duo kits and increased sales of TandemLung respiratory support kits. Cardiopulmonary sales of $116.4 million were negatively impacted by declines in HLM sales and the impacts of foreign currency, partially offset by growth in oxygenator sales. Heart Valves sales of $25.2 million declined by $0.5 million due to the impacts of foreign currency, partially offset by increased sales resulting from the transition to direct sales that occurred in certain markets in the Rest of World region in the second half of 2019.

Cardiovascular operating income for the three months ended March 31, 2020 compared to the three months ended March 31, 2019 increased primarily due to reduced legal costs associated with our 3T device and reduced product remediation expenses.

Neuromodulation

Neuromodulation net sales for the three months ended March 31, 2020 compared to the three months ended March 31, 2019 decreased 5.3%. The decrease in net sales for the three month period was primarily due to declines in new patient implants globally as patients and physicians began delaying implant procedures during the second half of the quarter due to COVID-19.

Neuromodulation operating income for the three months ended March 31, 2020 compared to the three months ended March 31, 2019 increased as declines in the U.S. and Rest of World revenues were more than offset by a $14.6 million reduction in the fair value of the contingent consideration liability associated with obstructive sleep apnea.

Cost of Sales and Expenses

The table below presents our comparative cost of sales and significant expenses as a percentage of sales:

	Three Months Ended March 31,		
	2020	2019	Change
Cost of sales - exclusive of amortization	28.4%	33.6%	(5.2)%
Product remediation	0.6%	1.2%	(0.6)%
Selling, general and administrative	49.6%	50.1%	(0.5)%
Research and development	14.8%	17.4%	(2.6)%
Merger and integration expenses	1.4%	1.3%	0.1 %
Restructuring expenses	0.7%	1.0%	(0.3)%
Amortization of intangibles	4.2%	3.7%	0.5 %

Cost of Sales - Exclusive of Amortization

Cost of sales consisted primarily of direct labor, allocated manufacturing overhead and the acquisition cost of raw materials and components. Cost of sales as a percentage of net sales for the three months ended March 31, 2020 compared to the three months ended March 31, 2019 decreased primarily due to the net impact of change in fair value of a sales-based contingent consideration arrangement of $14.8 million.

Research and Development (“R&D”) Expenses

R&D expenses consist of product design and development efforts, clinical study programs and regulatory activities, which are essential to our strategic portfolio initiatives, including DTD, obstructive sleep apnea and heart failure. R&D expenses as a percentage of net sales for the three months ended March 31, 2020 compared to the three months ended March 31, 2019 decreased primarily due to the net impact of changes in fair value of milestone-based contingent consideration arrangements of $11.9 million.

Amortization of Intangibles

Amortization of intangible assets for the three months ended March 31, 2020 and 2019, consisted primarily of the amortization of finite-lived intangible assets, primarily intellectual property and customer relationships.

Amortization of intangibles increased for the three months ended March 31, 2020 compared to the three months ended March 31, 2019 primarily due to reclassifying the Advanced Circulatory Support IPR&D asset to developed technology upon receiving FDA approval of the LifeSPARC system during the third quarter of 2019 and commencing amortization.

Income Taxes

LivaNova PLC is domiciled and resident in the UK. Our subsidiaries conduct operations and earn income in numerous countries and are subject to the laws of taxing jurisdictions within those countries, and the income tax rates imposed in the tax jurisdictions in which our subsidiaries conduct operations vary. As a result of the changes in the overall level of our income, the earnings mix in various jurisdictions and the changes in tax laws, our consolidated effective income tax rate may vary substantially from one reporting period to another.

Our effective income tax rate from continuing operations for the three months ended March 31, 2020 was 744.4% compared with 30.8% for the three months ended March 31, 2019. Our effective income tax rate fluctuates based on, among other factors, changes in pretax income in countries with varying statutory tax rates, changes in valuation allowances, changes in tax credits and incentives, and changes in unrecognized tax benefits associated with uncertain tax positions.

Compared with the three months ended March 31, 2019, the change in the effective tax rate for the three months ended March 31, 2020 was primarily attributable to a realized discrete tax benefit of $41.3 million related to the Coronavirus Aid, Relief, and Economic Security Act (“CARES Act”) as compared to the realized benefit from discrete tax items, including the release of an uncertain tax position, during the three months ended March 31, 2019.

Liquidity and Capital Resources

The consolidated financial statements have been prepared on the basis that LivaNova will continue as a going concern. As discussed in “Note 1. Unaudited Condensed Consolidated Financial Statements,” the Company has experienced and may continue to experience significant and unpredictable reductions in the demand for our products as healthcare customers divert medical resources and priorities towards the treatment of COVID-19. In connection with our assessment of going concern considerations in accordance with ASU 2014-15, the Company determined that a projected reduction in sales during the second quarter of 2020 would result in our inability to comply with certain debt covenants as of the end of the second and fourth quarters of 2020, which represents a condition that raises substantial doubt about our ability to continue as a going concern within one year after the date that these condensed consolidated financial statements are available to be issued. In April 2020, the Company entered into amendments that modified the maximum consolidated net debt to EBITDA and the interest coverage ratio covenants in its debt agreements for the remainder of 2020. The Company also implemented cost-cutting measures, including reduced hiring, marketing, travel, capital expenditures and certain research and development activities. Management has concluded that the amendments to modify the covenants in its debt agreements, when combined with current and anticipated future operating cash flows, alleviates the substantial doubt about the Company’s ability to continue as a going concern over the twelve-month period from the issuance date of these condensed consolidated financial statements.

Based on our current business plan and future mitigating actions, we believe that our existing cash and cash equivalents, future cash generated from operations and borrowing under our current debt facilities will be sufficient to fund our expected operating needs, working capital requirements, R&D opportunities, capital expenditures, and debt service requirements over the twelve-month period beginning from the issuance date of these condensed consolidated financial statements. Our liquidity could be adversely impacted by the factors affecting future operating results, including those referred to in “Part II, Item 1A. Risk Factors” in the 2019 Form 10-K as supplemented by the factors referred to in “Part II, Item 1A, Risk Factors” in this Quarterly Report on Form 10-Q.

Refer to “Note 8. Financing Arrangements” in the condensed consolidated financial statements in this Quarterly Report on Form 10-Q for additional information regarding our debt.

No provision has been made for income taxes on unremitted earnings of our foreign controlled subsidiaries (non-UK subsidiaries) as of March 31, 2020. In the event of the distribution of those earnings in the form of dividends, a sale of the subsidiaries or certain other transactions, we may be liable for income taxes. However, the tax liability on future distributions should not be significant as most jurisdictions with unremitted earnings have various participation exemptions or no withholding tax.

Cash Flows

Net cash and cash equivalents provided by (used in) operating, investing and financing activities and the net decrease in the balance of cash and cash equivalents were as follows (in thousands):

	Three Months Ended March 31,	
	2020	**2019**
Operating activities	$ (106,045)	$ 1,974
Investing activities	(11,085)	(5,641)
Financing activities	183,093	7,589
Effect of exchange rate changes on cash and cash equivalents	(1,277)	(350)
Net increase	$ 64,686	$ 3,572

Operating Activities

Cash used in operating activities during the three months ended March 31, 2020 increased by $108.0 million as compared to the same prior-year period. The increase is primarily due to $115.6 million in 3T litigation settlement payments made during the three months ended March 31, 2020.

Investing Activities

Cash used in investing activities during the three months ended March 31, 2020 increased $5.4 million as compared to the same prior-year period. The increase is primarily due to the purchase of an investment for $3.0 million and an increase in purchases of property, plant and equipment of $2.9 million.

Financing Activities

Cash provided by financing activities during the three months ended March 31, 2020 increased $175.5 million as compared to the same prior-year period. The increase is primarily due to an increase in net borrowings of $189.6 million, offset by a closing adjustment payment for the sale of our former CRM business of $14.9 million.

Off-Balance Sheet Arrangements

As of March 31, 2020, we did not have any off-balance sheet arrangements.

Contractual Obligations

We had no material changes in our contractual commitments and obligations from amounts listed under “Part II, Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations - Liquidity and Capital Resources” in our 2019 Form 10-K.

Item 3. *Quantitative and Qualitative Disclosures About Market Risk*

We are exposed to certain market risks as part of our ongoing business operations, including risks from foreign currency exchange rates, interest rate risks and concentration of procurement suppliers that could adversely affect our consolidated financial position, results of operations or cash flows. We manage these risks through regular operating and financing activities and, at certain times, derivative financial instruments. Quantitative and qualitative disclosures about these risks are included in this Quarterly Report on Form 10-Q in “Part I, Note 9. Derivatives and Risk Management,” “Part I, Item 2. Management’s Discussion and Analysis of Financial Conditions and Results of Operations” and “Part II, Item 1A. Risk Factors,” and in our 2019 Form 10-K in “Part II, Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Part I, Item 1A. Risk Factors.” There have been no material changes from the information provided therein.

Item 4. *Controls and Procedures*

Disclosure Controls and Procedures

(a) Evaluation of Disclosure Controls and Procedures

We maintain a system of disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act, that are designed to ensure that information required to be disclosed in our reports filed under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. This information is also accumulated and communicated to management, including our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), as appropriate, to allow timely decisions regarding required disclosure. Our management, under the supervision and with the participation of our CEO and CFO, evaluated the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the most recent fiscal quarter reported herein. Based on that evaluation, our CEO and CFO concluded that our disclosure controls and procedures were effective as of March 31, 2020.

(b) Changes in Internal Control Over Financial Reporting

No change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-5(f) under the Exchange Act) occurred during the quarter ended March 31, 2020 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. *Legal Proceedings*

For a description of our material pending legal and regulatory proceedings and settlements, refer to “Note 10. Commitments and Contingencies” in our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q.

Item 1A. *Risk Factors*

There have been no material changes in our risk factors from those disclosed in Part I, Item 1A to our 2019 Annual Report on Form 10-K, except as noted below. The risk factors disclosed in Part I, Item 1A to our 2019 Annual Report on Form 10-K, in addition to the other information set forth in this report, could materially affect our business, financial condition, or results of operations.

Our business, financial position and liquidity are, and may continue to be, adversely affected by the COVID-19 outbreak.

Our business, financial position and liquidity are, and may continue to be, adversely affected by the effects of a widespread outbreak of a respiratory illness caused by a novel coronavirus (COVID-19) first identified in China in December 2019. In January 2020, the virus spread to other countries, including the United States, and in March, the World Health Organization characterized the COVID-19 outbreak as a pandemic. The outbreak and any preventative or protective actions that governments or we may take in respect of COVID-19 will result in an uncertain period of business disruption, reduced customer traffic and reduced operations. The virus will have a negative impact on our near-term financial results as a result of the deferral of elective surgeries, pressure on our liquidity measures, and slowdown in patient enrollment in clinical trials such as RECOVER. The extent to which the virus impacts our long-term results will depend on future developments, which are highly uncertain and cannot be predicted, including new information which may emerge concerning the severity and duration of COVID-19 and the actions to contain the virus or treat its impact, among others.

Per “Recent Developments Regarding COVID-19” within “Note 1. Unaudited Condensed Consolidated Financial Statements” and “COVID-19” under “Item 2. Management’s Discussion and Analysis of Financial Condition and Results of Operations,” the recent COVID-19 pandemic has impacted our business operations, sales and operating results for the first quarter of 2020. In the last two weeks of the quarter ended March 31, 2020, we experienced a significant decline in volumes in the U.S. and Europe, as healthcare systems diverted resources to meet the increasing demands of managing COVID-19. In addition, public health bodies have recommended delaying elective surgeries during the COVID-19 pandemic, which may continue to negatively impact the usage of our products, including the number of Neuromodulation procedures.

We expect our sales and operating results for the second quarter of 2020 will be materially adversely impacted. While we currently expect to see stabilization in the third quarter of 2020 as elective surgeries are rescheduled and a recovery in the fourth quarter on a global basis, further cancellations or delays could materially adversely impact our business, results of operations and overall financial performance.

As we noted in Part I, Item 1A to our 2019 Annual Report on Form 10-K, COVID-19 could include disruptions or restrictions on our ability to distribute our products, as well as temporary closures of our facilities or the facilities of our suppliers or customers. At the end of February, for example, we temporarily closed a small administrative office in Milan, Italy and we continue to monitor the rapidly evolving situation. While we have not closed our manufacturing plants around the world, we have restricted access to production-critical employees only, encouraging the vast majority of our employees to work remotely. Regardless, there can be no assurance that any of our facilities will not need to shut down in the future. Also, while we work closely with our suppliers to ensure continuity of supply while maintaining high quality and reliability, the supply of components, raw materials and services may be interrupted or insufficient as a direct result of the COVID-19 outbreak. Any disruption of our operations or those of our suppliers could impact our sales and operating results.

The COVID-19 outbreak and the effects on the financial markets may materially and adversely affect our access to capital and cost of capital, including our ability to raise funds through equity or debt financings. We continue to evaluate potential sources of additional funds to strengthen our liquidity position and promote financial resiliency. There is no guarantee that we will be available in the future to obtain debt or equity financings to fund our obligations, or that any such financings will be on terms consistent with our expectations and past practice.

While senior management is continuously monitoring the situation, such a significant outbreak of contagious diseases in the human population has already resulted in a widespread health crisis. It has adversely affected the economies and financial markets of many countries, resulting in an economic downturn that could affect demand for our products and likely impact our operating results for an uncertain period of time. For more information on the impact of COVID-19 on the Company and LivaNova’s mitigation measures, please refer to “Recent Developments Regarding COVID-19” within “Note 1. Unaudited

Condensed Consolidated Financial Statements," "COVID-19" under "Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations," and Part I, Item 1A to our 2019 Annual Report on Form 10-K.

Item 2. *Unregistered Sales of Equity Securities and Use of Proceeds*

None.

Item 3. *Defaults Upon Senior Securities*

None.

Item 4. *Mine Safety Disclosures*

Not applicable.

Item 5. *Other Information*

Disclosure Pursuant to Section 13(r) of the Exchange Act of 1934

Section 13(r) of the Exchange Act requires issuers to disclose in their quarterly reports certain types of dealings with Iran, including transactions or dealing with government-owned entities, even when those activities are lawful and do not involve U.S. persons. Two of our non-U.S. subsidiaries currently sell medical devices, including cardiac surgery and cardiopulmonary products, to privately held distributors in Iran.

We have limited visibility into the identity of these distributors' customers in Iran. It is possible that their customers include entities, such as government-owned hospitals or sub-distributors, that are owned or controlled directly or indirectly by the Iranian government. To the best of our knowledge at this time, we do not have any contracts or commercial arrangements with the Iranian government.

Our gross revenues and net profits attributable to the above-mentioned Iranian activities were $0.5 million and $0.2 million for the three months ended March 31, 2020, respectively.

We believe our activities are consistent with applicable law, including U.S., EU, and other applicable sanctions laws, though such laws are complex and continue to evolve rapidly. We intend to continue our business in Iran.

Item 6. *Exhibits*

The exhibits marked with the asterisk symbol (*) are filed or furnished (in the case of Exhibit 32.1) with this Quarterly Report on Form 10-Q. The exhibits marked with the cross symbol (†) are management contracts or compensatory plans or arrangements filed pursuant to Item 601(b)(10)(iii) of Regulation S-K.

Exhibit Number	Document Description
3.1	Amended Articles of Association, incorporated by reference to Exhibit 3.1 of the Company's Current Report on Form 8-K, filed on June 15, 2017
31.1*	Certification of the Chief Executive Officer of LivaNova PLC pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification of the Chief Financial Officer of LivaNova PLC pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1*	Certification of the Chief Executive Officer and Chief Financial Officer of LivaNova PLC pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101*	Interactive Data Files Pursuant to Rule 405 of Regulation S-T formatted in Inline XBRL: (i) the Condensed Consolidated Statements of Income (Loss) for the three months ended March 31, 2020 and March 31, 2019, (ii) the Condensed Consolidated Statements of Comprehensive Income (Loss) for the three months ended March 31, 2020 and March 31, 2019, (iii) the Condensed Consolidated Balance Sheet as of March 31, 2020 and December 31, 2019, (iv) the Condensed Consolidated Statements of Cash Flows for the three months ended March 31, 2020 and March 31, 2019, and (vi) the Notes to the Condensed Consolidated Financial Statements
104*	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

LIVANOVA PLC

Date: April 30, 2020 By: /s/ DAMIEN MCDONALD

Damien McDonald
Chief Executive Officer
(Principal Executive Officer)

LIVANOVA PLC

Date: April 30, 2020 By: /s/ THAD HUSTON

Thad Huston
Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 31.1

CERTIFICATION

I, Damien McDonald, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020 of LivaNova PLC and its consolidated subsidiaries;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: April 30, 2020

/s/ DAMIEN MCDONALD

Damien McDonald

Chief Executive Officer

(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION

I, Thad Huston, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020 of LivaNova PLC and its consolidated subsidiaries;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: April 30, 2020

/s/ THAD HUSTON

Thad Huston

Chief Financial Officer

(Principal Financial Officer)

EXHIBIT 32.1

CERTIFICATION OF THE

CHIEF EXECUTIVE OFFICER AND

CHIEF FINANCIAL OFFICER

OF LIVANOVA PLC

PURSUANT TO 18 U.S.C. SECTION 1350

Each of Damien McDonald, Chief Executive Officer of LivaNova PLC (the "Company"), and Thad Huston, Chief Financial Officer of the Company, each hereby certifies pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of his knowledge:

(a) the Quarterly Report on Form 10-Q of the Company and its consolidated subsidiaries for the quarter ended March 31, 2020, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(b) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 30, 2020

/s/ DAMIEN MCDONALD

Damien McDonald
Chief Executive Officer
(Principal Executive Officer)

Date: April 30, 2020

/s/ THAD HUSTON

Thad Huston
Chief Financial Officer
(Principal Financial Officer)

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as a part of this report or on a separate disclosure document.