

# Business Development of Bioprocess Solutions

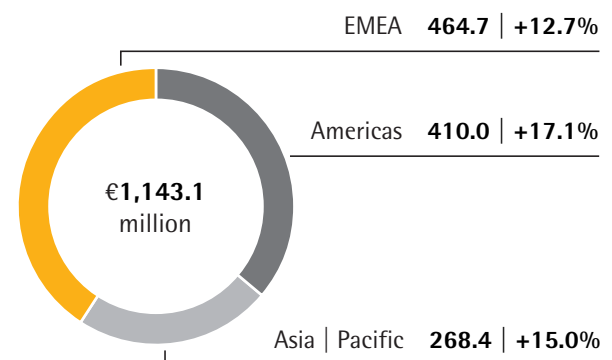
- > Double-digit growth in sales revenue and earnings
- > Momentum picked up considerably after moderate performance in 2017
- > Strong demand for all products categories in all regions

## Key Figures

€ in millions	2018	2017	Δ in %
Sales revenue	1,143.1	1,010.3	14.8 <sup>1)</sup>
Order intake	1,233.7	1,091.3	14.9 <sup>1)</sup>
Underlying EBITDA	326.9	282.4	15.7
as a % of sales	28.6	28.0	
Employees as of Dec. 31	5,498	4,980	10.4

## Sales Revenue and Growth<sup>1)</sup> by Region<sup>2)</sup>

€ in millions, unless otherwise specified



<sup>1)</sup> In constant currencies

<sup>2)</sup> Acc. to customers' location

## Products for Biopharmaceutical Manufacture



Filters for sterilization of biopharmaceutical media



Single-use bag for cell cultivation and storage of biopharmaceuticals



Single-use-based, multi-parallel bioreactor system for process development



Culture media and buffers for cell cultivation



Fully automated single-use centrifuge for cell harvesting



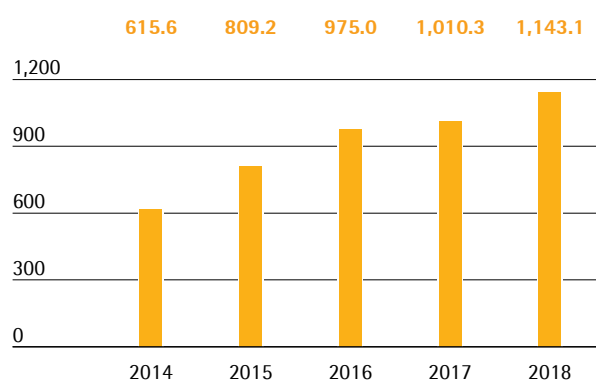
Single-use bioreactor systems for cell cultivation processes of up to 2,000 L

## Sales Revenue and Order Intake

In 2018, the Bioprocess Solutions Division grew by double digits in sales revenue and earnings. After the previous year's comparably moderate performance that was impacted by a few temporary effects, momentum considerably picked up in the reporting period. The division's sales revenue rose in constant currencies by 14.8% to €1,143.1 million (reported: +13.1%) and was driven by the highly competitive product portfolio and rising demand across all product categories. Thus, the division reached the upper end of the bandwidth of its forecast substantially raised at mid-year to 12% to 15%. The increase in sales was attributable to excellent organic growth, whereas consolidation of the software company Umetrics acquired in April 2017 contributed around half a percentage point of non-organic growth.

### Sales Revenue 2014 to 2018

€ in millions



### Sales Revenue and Order Intake

€ in millions	2018	2017	in % reported	in % wb <sup>1)</sup>
Sales revenue	1,143.1	1,010.3	13.1	14.8
Order intake	1,233.7	1,091.3	13.0	14.9

The division increased its revenue in all regions. EMEA, the region generating the highest revenue for the division and representing around 41% of its total sales, recorded a gain of 12.7% to €464.7 million against a low prior-year revenue base. In the Americas region, which represented around 36% of revenue, sales rose dynamically, after a year-earlier decline predominantly caused by temporary effects, by 17.1% to €410.0 million. The Asia | Pacific region, which accounted for around 23% of the division's sales, also saw strong growth despite its strong prior-year performance. Here, sales revenue grew by double digits again, by 15.0% to €268.4 million.

Order intake showed positive development in the reporting year. Orders rose more strongly than division sales, and were up 14.9% in constant currencies to €1,233.7 million. On a reported basis, this increase was 13.0%.

### Sales by Region

€ in millions	2018	2017	in % reported	in % cc
EMEA	464.7	413.8	12.3	12.7
Americas	410.0	357.1	14.8	17.1
Asia   Pacific	268.4	239.4	12.1	15.0

## Overproportionate Increase in Earnings

In the reporting year, the Bioprocess Solutions Division significantly increased its underlying EBITDA by 15.7% from €282.4 million to €326.9 million, particularly due to economies of scale. The division's respective margin was up year over year by 0.6 percentage points to 28.6%.

### Underlying EBITDA and EBITDA Margin

	2018	2017
Underlying EBITDA in € millions	326.9	282.4
Underlying EBITDA margin in %	28.6	28.0

In the year under review, the Bioprocess Solutions Division recorded positive extraordinary items of €13.0 million relative to -€21.6 million a year earlier. This significant year-over-year increase is due to income related to the modifications of its contract with Lonza.

## Products and Sales

The Bioprocess Solutions Division sells products and services for the entire added-value chain in biopharmaceutical production and upstream process development. The portfolio includes cell lines, cell culture media, bioreactors, a wide range of products for separation, purification and concentration, and systems for the storage and transport of intermediate and finished biological products.

### New Products with a Focus on Automation

As an industry leader in fermentation, during the reporting year Sartorius introduced a fully automated bioreactor system based on single-use technologies. It can be used to portray the development of bioprocesses even on an especially small scale. The ambr 250 system allows customers to execute up to 24 fermentation processes simultaneously during the development and optimization of processes.

In 2018, we launched an automation platform for the process control of single-use bioreactors and various filtration systems, which we developed with Siemens. With this offer, we extend our expertise as a partner for our customers' automation solutions.

In the year under review, Sartorius and the U.S. bioprocess company Repligen reached an agreement that helps customers more quickly establish single-use solutions for continuous bioprocessing. At the core of the collaboration is the idea that through continuous processing, the production of biopharmaceuticals can be intensified and system output increased in order to reduce manufacturing costs.

### Modified Relationship with Lonza for Cell-Culture Media Business

Since late 2012, Sartorius has been working on cell culture media with the life science company Lonza. The contract then signed by the two companies gave Sartorius exclusive sales and marketing rights for certain cell culture media and buffers developed and manufactured by Lonza for use in biopharmaceutical manufacturing processes. During the reporting year, Sartorius and Lonza modified the contract by mutual accord. Starting in 2019, Sartorius will retain current and future Lonza media and buffers in its portfolio of products for cell-based development and manufacture; mutual exclusivity, however, no longer applies. The new agreement offers both contractual partners greater leeway with regard to advancements and strategic positioning.

### Sales Activities Expanded

The Bioprocess Solutions Division markets its product portfolio directly through its own field sales representatives. Sales activities for key accounts are coordinated and supported by global key account management. During the reporting year, we expanded key account management and added more customers to the corresponding programs.

As part of our strategy to position our product portfolio as a platform, we entered into various agreements during the reporting year. The life science group Abzena plc selected Sartorius as its preferred partner for equipping its integrated contract development and manufacturing organization (CDMO) systems in Bristol, Pennsylvania and San Diego, California. ABL Europe, a subsidiary of the U.S. contract production and laboratory research company ABL Inc., chose Sartorius as its primary supplier of single-use systems.

## Product Development

Activities in product development encompass both new and advanced in-house product developments in our own core technologies as well as the integration of new products through collaborations and acquisitions.

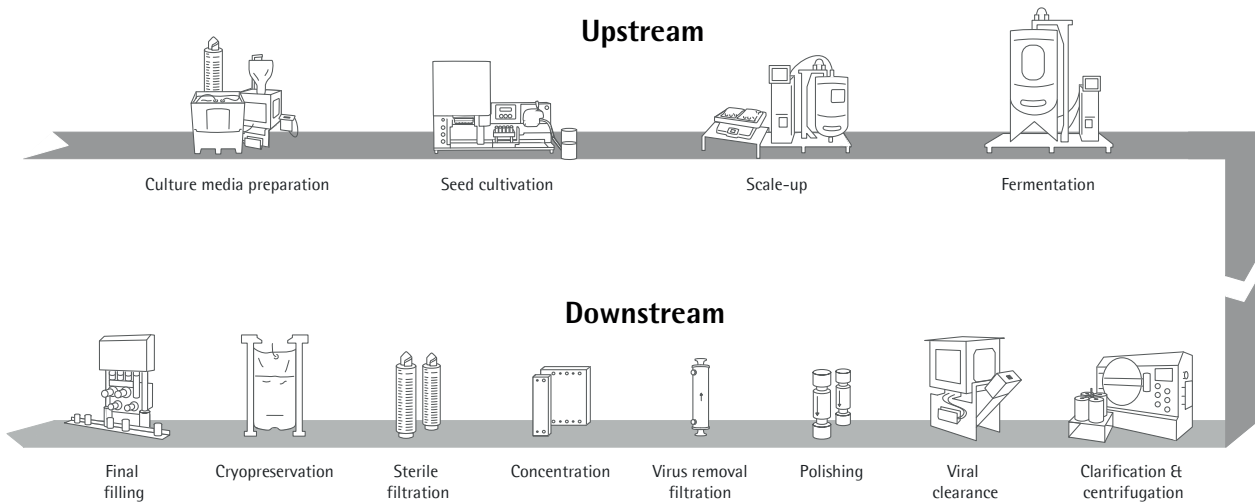
Development activities at Sartorius focus on technology areas such as membranes, which are the core component of all types of filter products; various base technologies, such as single-use containers and sensors; and control technologies for processes such as fermentation. Additional focal areas include developments in materials and components such as plastic, elastomers and intelligent polymers; expanded data analysis; and cell line development.

In the reporting year, one emphasis was on developing the next generation of integrity testing applications and a system for virus filtration that can be integrated as a single-use solution, even in stainless steel units.

Another key task in 2018 was the ongoing integration into our systems of software from Umetrics, which Sartorius acquired in 2017. It should become possible in 2019 to use the programs in the downstream process, as well.

In addition, we are investing in the development of applications for regenerative medicine and plan to launch an analytical solution for lentiviruses, which include human immunodeficiency (HI) viruses, on the market in 2019. We also intend to launch an innovative single-use centrifuge and a membrane-based chromatography system on the market.

Our largest site for product development is Göttingen, Germany. Other key sites are Aubagne, France; Guxhagen, Germany; Bangalore, India; Bohemia, New York, United States; Royston, United Kingdom; and Umeå, Sweden.



Simplified diagram

## Production and Supply Chain Management

The Bioprocess Solutions Division has a very well developed production network around the world. The largest production sites are located in Germany, France and Puerto Rico. This division also manufactures in the United Kingdom, Switzerland, Tunisia, India, the United States and, since 2018, in China.

### Expansion of Production Capacity

A new manufacturing facility for filters opened in Göttingen during the reporting year. Sartorius also expanded production capacity at its Yauco site in Puerto Rico where membrane filters and sterile bags are manufactured principally for the U.S. market. For products manufactured in Yauco, the company also began operating a warehouse in Florida, USA, which helps ensure a smooth supply to customers on the U.S. mainland.

A new logistics center, which opened in Aubagne in 2018 and covers 12,000 square meters, provides the capacity that the company will need in the years to come. An additional cleanroom in Aubagne also boosts the site's production output.

Construction of the development and production center for cell lines in Ulm, Germany is on schedule. With 6,000 square meters of usable floor space, the new center will be about twice as large as the current facility in Laupheim, near Ulm. The company plans to move operations from Laupheim to Ulm in late 2019.

In addition, Sartorius has begun producing sterile single-use bags in Beijing, China, where it plans to manufacture additional products.