BPC® Blue

The perfect tool for determining the biodegradability of materials

BPC INSTRUMENTS

The Ultimate Choice for Material Biodegradability Assessment

BPC Blue

BPC Blue is a state-of-art laboratory instrument specifically designed to determine the aerobic and anaerobic biodegradability of various biodegradable plastics and polymer materials in a wide range of simulated environmental conditions. The instrument is fully compliant with the most important ISO, European and American standards for biodegradability evaluation in both aerobic and anaerobic conditions. Featuring an automatic operation and an intuitive user-friendly design, the BPC Blue enables almost anyone to carry out the test and obtain highly accurate results.

Why choose BPC Blue?

If you need to determine the biodegradability of a material, BPC Blue is the ideal instrument for the job. With its 18 (or 9) channels, you can test multiple samples at once, saving time and cost. Setting up a test is quick and easy, taking only 2-3 hours. After that, the instrument automatically performs sampling, analysis, recording and report generation for a seamless testing experience, including:

- A pre-calibrated instrument with excellent precision and accuracy
- User friendly, automatic operation with minimal time and labour demands
- Standardised measurements, data processing, and reports
- Easy-to-use software that calculates and presents the biodegradability in real-time

Evaluate both aerobic and anaerobic biodegradability

BPC Blue offers the possibility to both evaluate the aerobic and anaerobic biodegradability of a material. For anaerobic analysis, *BPC® Blue Anaerobic* delivers precise and efficient data analysis of biogas release in various aqueous media, controlled slurry digestion systems, and high-solids anaerobic digestion settings. Meanwhile, for aerobic analysis, *BPC® Blue Aerobic* works in conjunction with BPC's patented in-situ carbon dioxide absorption kit, which transforms it into a closed respirometer system that measures oxygen demand.

Configurations of BPC Blue

BPC Blue offers three different configurations to suit your testing needs: Aerobic for aerobic tests, Anaerobic for anaerobic tests, and Premium for both aerobic and anaerobic tests. Additionally, each configuration of BPC Blue is available in two versions: the standard 18-channel version and the more compact 9-channel Light version.

User-Friendly operation

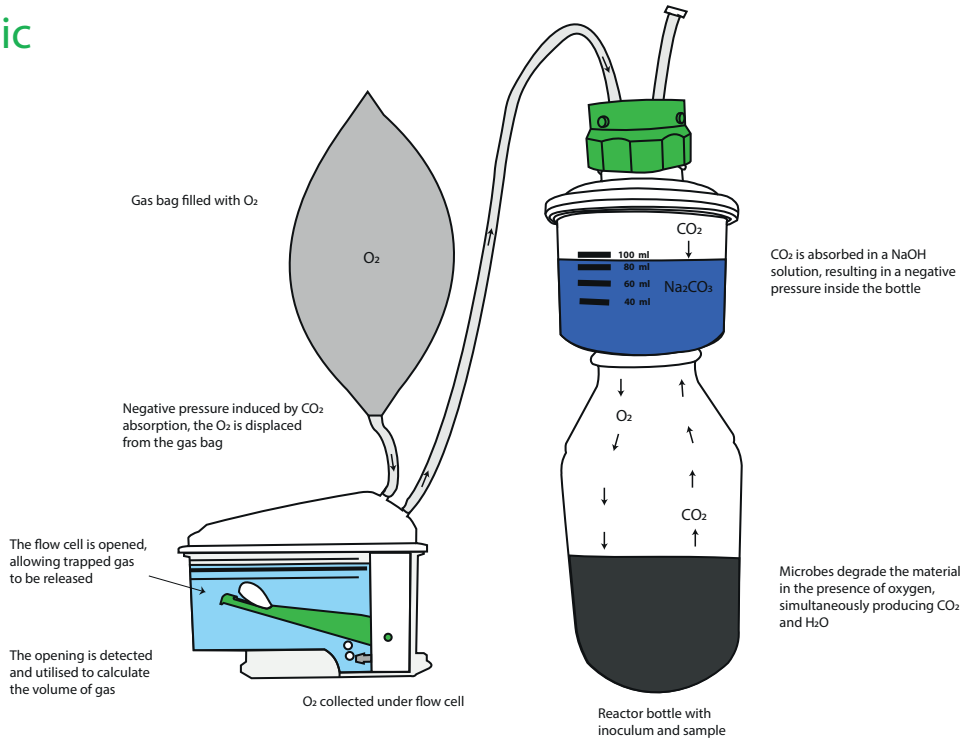
In comparison to conventional techniques or other available alternatives, BPC Blue greatly reduces the need for manual labour and minimises labour the likelihood of human errors. Once experiment preparation and setup are completed, BPC Blue seamlessly takes charge of the entire running process, ensuring an automated test until completion. This allows for real-time review and calculation of experimental data, which can be conveniently accessed anytime through the software Aurora™ user interface and a downloaded report.

Streamlined with embedded solution

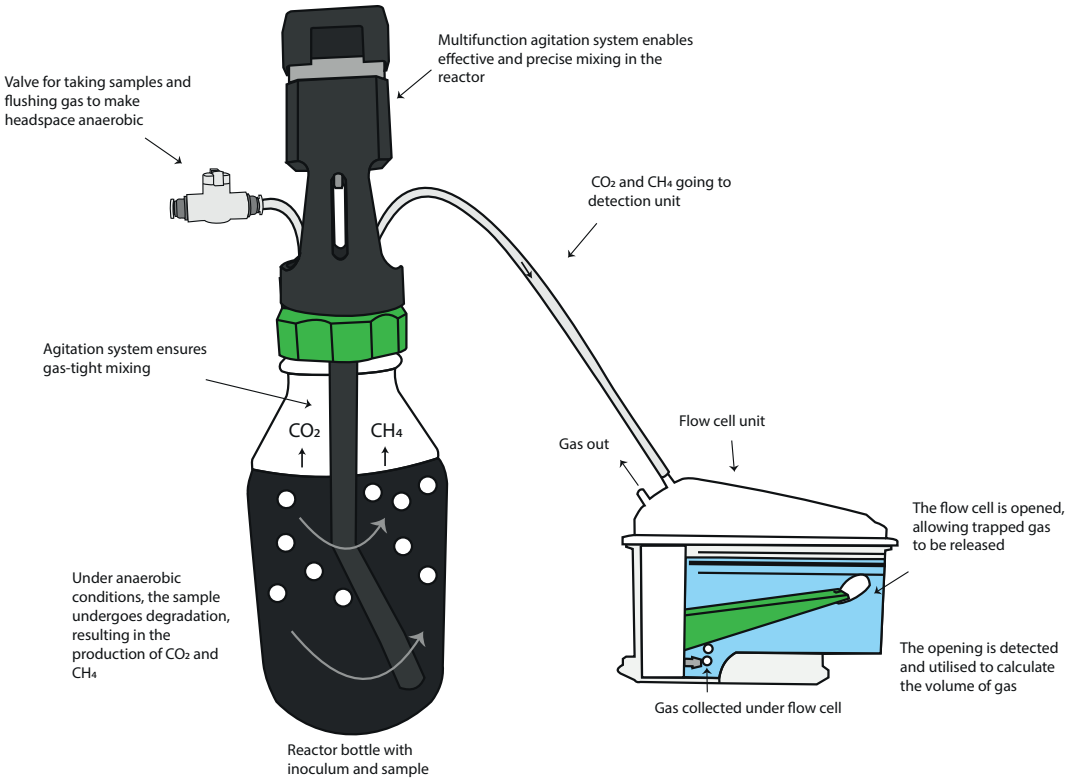
Bid farewell to external computers and embrace the convenience of BPC Blue. Equipped with a generous storage capacity of 15 million data points, it allows you to collect up to 130,000 liters of gas per experiment, making it the perfect tool for your research and development needs. With built-in storage and processing capabilities, thanks to its onboard embedded microcontroller, BPC Blue efficiently stores all measurement data locally. This eliminates concerns about data loss caused by computer crashes or automatic operational system upgrades, saving you valuable time and effort. Say goodbye to interruptions and enjoy seamless operation with BPC Blue.

BPC Blue working principle

Aerobic



Anaerobic



AURORA Software – pre-installed on BPC Blue

Experience the power of Aurora software

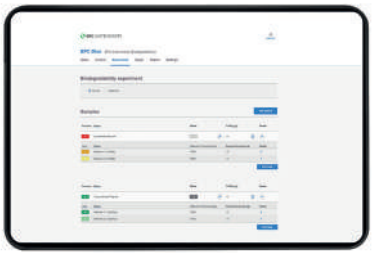
Aurora is BPC Instruments' cutting-edge software solution for its lab instruments, bringing your experiments to life. With its streamlined design, setting up experient, monitoring progress, and downloading results becomes effortless. Aurora comes pre-installed on BPC Blue, eliminating the need for software licences or installation on an external computer.

Realtime data standardisation

Through real-time temperature and pressure compensation, Aurora normalises the measured gas volume and flow under standard conditions (i.e., 0 °C, 1 atm and zero moisture) at each measurement point. This allows seamless switching between volume and mass units during an experiment and facilitates easy data comparison between different laboratories worldwide.

Observe biodegradation in real-time

With BPC Blue's integrated Auroa software, you can witness the calculation of biodegradability in real-time. This includes value, standard deviation, deduction of negative control, and conversion into percent biodegradability. The results are presented in visually appealing graphs, enhancing the overall user experience.



Access results anywhere, anytime, on any device

BPC Blue is designed for convenient access from any remote location using a web browser on your preferred device. Monitor your experiment from the comfort of your office, or home using your computer, tablet or smartphone. Expand the analytical capacity of BPC Blue effortlessly by connecting multiple instruments together with an Ethernet switch. With this feature, each BPC Blue can operate as a standalone device or be connected in parallel, catering to your specific needs.

Powerful and reliable agitation

The agitation system integrated into BPC Blue is powered by high-quality multifunction brushless step motors. This robust system ensures the delivery of gentle, precise, and reliable agitation within a gas-tight environment.

BPC Blue configurations

Each configuration of BPC Blue is available in two versions: the standard 18-channel version and the more compact 9-channel Light version.

AEROBIC
For aerobic biodegradation tests

ANAEROBIC
For anaerobic biodegradation tests

PREMIUM
For both aerobic and anaerobic biodegradation test

Biodegradability norms and standards

Determine the biodegradability of a material according to large number of standards:

Anaerobic biodegradabiltiy

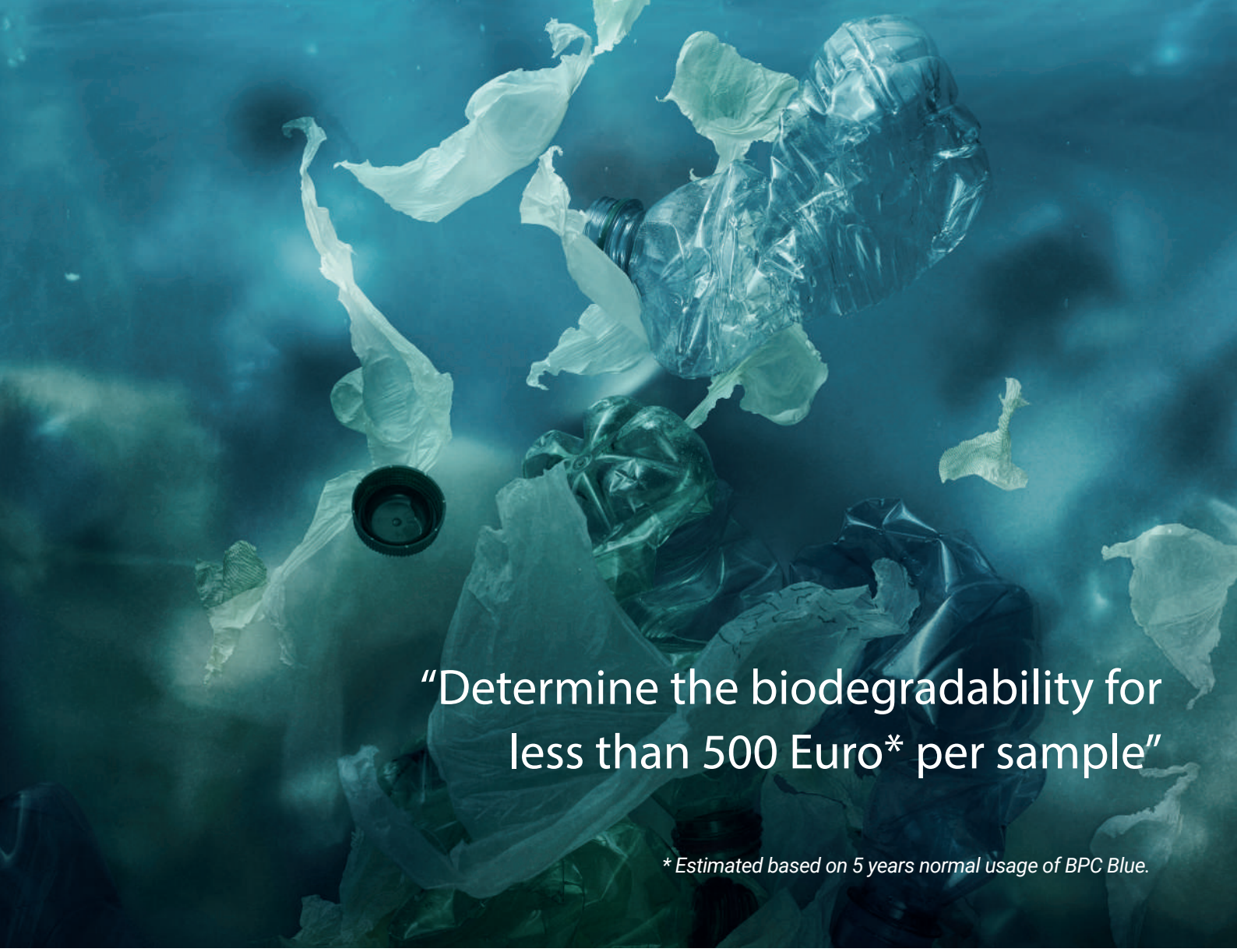
- ISO 14853 – ultimate anaerobic biodegradation of plastic materials in an aqueous system
- ISO 13975 – ultimate anaerobic biodegradation of plastic materials in controlled slurry digestion systems
- ISO 15985 – ultimate anaerobic biodegradation and disintegration under high-solids anaerobic digestion conditions
- ISO 11734 – ultimate anaerobic biodegradability of organic compounds in digested sludge
- ASTM D5511 – anaerobic biodegradation of plastic materials under high-solids anaerobic digestion
- ASTM D5210 – anaerobic biodegradation of plastic materials in the presence of municipal sewage sludge
- ASTM D5526 – anaerobic biodegradation of plastic materials under accelerated landfill conditions
- OECD 311 – anaerobic biodegradability of organic compounds in digested sludge

Aerobic biodegradability

- ISO 14851 – ultimate aerobic biodegradation of plastic materials in an aqueous system
- ISO 17556 – ultimate aerobic biodegradation of plastic materials in soil
- ISO 18830 – aerobic biodegradation of non-floating plastic materials in a seawater/sandy sediment interface
- ISO 23977-2 – aerobic biodegradation of plastic materials exposed to seawater (part 2)
- OECD 301 – ready biodegradability of chemical materials in aerobic aqueous medium

Aerobic biodegradability can also be measured based on analysis of evolved carbon dioxide according to following standards. However, test protocols based on same purpose are available based on measurement of oxygen demand in a closed respirometer which is the recommended method for BPC® Blue with a simplified system configuration, higher measurement precision and accuracy.

- ISO 14852 – ultimate aerobic biodegradability of plastic materials in an aqueous medium
- ISO 22404 – aerobic biodegradation of non-floating materials exposed to marine sediment
- ISO 19679 – aerobic biodegradation of non-floating plastic materials in a seawater/sediment interface
- ISO 23977-1 – aerobic biodegradation of plastic materials exposed to seawater (part 1)



“Determine the biodegradability for less than 500 Euro* per sample”

** Estimated based on 5 years normal usage of BPC Blue.*

Features

- **Web-based convenience:** The user-friendly web-based software running on an embedded server, eliminating the need for software installation on PC, tablet or smartphones.
- **Remote access:** BPC Blue can be accessed remotely and locally from any device with a web browser, providing flexibility and convenience.
- **Automated measurement:** Enjoy automatic measurements with real-time pressure, temperature, and moisture compensation, ensuring accurate and reliable data acquisition.
- **Real-time biodegradability calculation**: Experience the convenience of real-time biodegradability calculation, eliminating the need for manual data processing. The instrument automatically performs the calculations as the experiment progresses.
- **Calibration-free operation:** BPC Blue operates without the need for calibration, simplifying maintenance and ensuring consistent performance.
- **Multiplexing potential:** Take advantage of the multiplexing capability, allowing simultaneous biodegradability analysis with different start-up times.
- **Easy maintenance:** The modular design of BPC Blue facilitates easy exchange, making maintenance hassle-free.
- **Local data storage:** All data is stored locally on the instrument, eliminating the dependence on external computers and ensuring data security.
- **Streamlined data processing:** Export data as a spreadsheet for further analysis, featuring a uniform time axis for easy processing and interpretation.
- **High data storage capacity:** With a remarkable capacity of 7200 l of gas per channel, BPC Blue enables extensive data collection and analysis.
- **Effective agitation:** Benefit from proven strong, reliable, and multifunctional agitation, ensuring optimal mixing and reaction conditions.
- **Various time intervals:** BPC Blue generates outputs at customizable time intervals, ranging from a data point every minute to one every day, providing flexibility for your specific needs.

Technical specifications

Sample incubation unit

- **Maximum number of reactors per system:** 18 and 9
- **Reactor material:** glass
- **Standard reactor volume:** 1000 ml and 2000 ml
- **Type:** Thermostatic water bath
- **Dimension:** 68 x 56 x 33 cm (Thermostatic water bath)
- **Temperature control:** up to 60 °C (203 °F) with a precision of 0.2 °C
- **Mixing in the reactor:** multifunction mechanical agitation with brushless DC motors (adjustable interval, speed, and rotation directions), max. speed 220 rpm

Aerobic configuration

- **In-situ gas absorption attachments:** 18 and 9
- **Volume of in-situ gas absorption attachment:** 100 ml
- **Recommended absorption liquid:** 3 M NaOH with pH indicator
- **Absorption efficiency:** >98%
- **Gas bags:** 3 x 10 L

**Absorption liquid is not included with the instrument*

Flow cell array and DAQ unit

- **Working principle:** liquid displacement and buoyancy
- **Number of flow cell units:** 18 and 9
- **Unit dimension:** 55 x 19 x 17 cm
- **Built-in sensors:** temperature, pressure, hall, accelerometer
- **Connections:** Ethernet, power supply, USB B, motor control
- **Display:** OLED 2.8” 256 x 64 white
- **Housing:** Aluminium and plastic
- **Power supply:** 12 V DC / 1.0 A with 100-240 VAC
- **Usage:** Indoor
- **Measurement medium:** Deionised or distilled water
- **Operation temperature:** 0 – 50o C
- **Operation pressure:** -50 – 50 mbar
- **Gas connector diameter:** ID: 2.4 – 2.6 mm; OD: 4.2-4.7 mm
- **Recommended tubing size:** ID: 4 mm; OD: 6 mm
- **Measuring resolution:** 9 ml or 2 ml
- **Detection capacity:** 7200 liters with 9 ml flow cell and 1600 liters with 2 ml flow cell
- **Measuring range:** 1 to 6000 ml/h for 9 ml flow cell and 0.2 to 1500 ml/h
- **Repeatability:** CV ≤ 1% for 9 ml flow cell and CV ≤ 3% for 2 ml flow cell
- **Gases**: Non aggressive gases (e.g. CH_4 , CO_2 , H_2 , N_2 ,...)

Your user experience is a top priority for us

We take pride in providing support throughout the lifetime of our products. This applies to products covered under warranty, and even products where the warranty period has expired. Our goal is to ensure your instrument always works and continually delivers value.

From academic know-how to commercial products

Founded in 2005, BPC Instruments AB has become a successful company under the leadership of its co-founder and lead inventor, Dr. Jing Liu, who currently serves as the CEO. Leveraging nearly 20 years of industry-leading research in the development of smart analytical instruments, BPC Instruments has made a significant impact in the market.

BPC's impressive portfolio encompasses a range of exceptional products, including two flagship products. The first is the Automatic Methane Potential Test System (AMPTS®), which has become the preferred analytical instrument for conducting various anaerobic batch fermentation tests. The second is the Gas Endeavour®, a novel analytical platform that enables the determination of materials' biodegradability, analysis of bacteria respiration, and performance of biological batch fermentation assays under both anaerobic and aerobic conditions. BPC Blue is a novel respirometer based on the Gas Endeavour® platform, specifically designed for assessing the biodegradability of plastics in both aerobic and anaerobic environments.

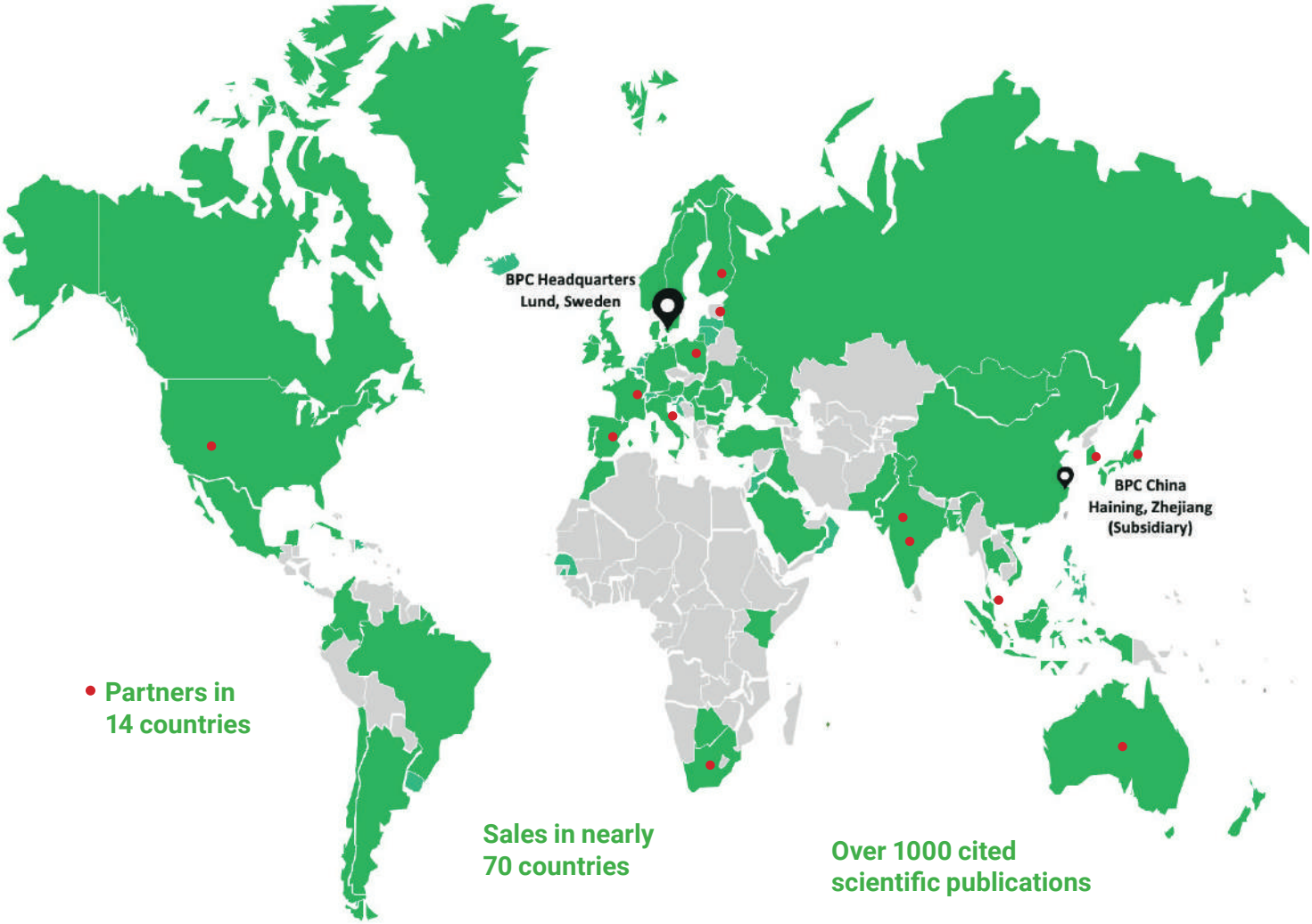
These automated analytical devices offer an abundance of benefits, significantly enhancing operational efficiency while reducing both time and labor requirements. They boast a remarkably user-friendly interface and can be accessed remotely, allowing for convenient retrieval of meticulously collected data whenever necessary. Moreover, these automated analytical devices provide standardized measurements, data, and reports, supplying clear and comparable information upon which evidence-based decisions can be confidently made.

"Our focus is on investing in innovation and developing intelligent instruments, maintaining top-notch product quality across our portfolio, and prioritizing customer service by meeting their needs."

Dr. Jing Liu, CEO and co-founder of BPC Instruments AB

What we do

BPC Instruments brings to market analytical instruments enabling more efficient, reliable, and high-quality of research and analysis for industries in renewable bioenergy and environmental biotechnology. Our instruments are designed and manufactured in Sweden, incorporating the best elements of Scandinavian form and function for optimal quality and reliability.



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Excellence is built on precision and accuracy

BPC Instruments is a global Swedish-based technology company developing and offering analytical instruments enabling more efficient, reliable, and high quality of research and analysis for industries in renewable bioenergy and environmental biotechnology. The result is not only higher accuracy and precision, but also significant reduction in time consumption and labour requirement for performing analyses. BPC Instruments' innovative products offer high-quality hardware and software based on deep knowledge and experience of target applications. The solutions are the first of their kind, making the company a pioneer in its field. Today, BPC Instruments exports to nearly 70 countries around the world.

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