



BOSCH

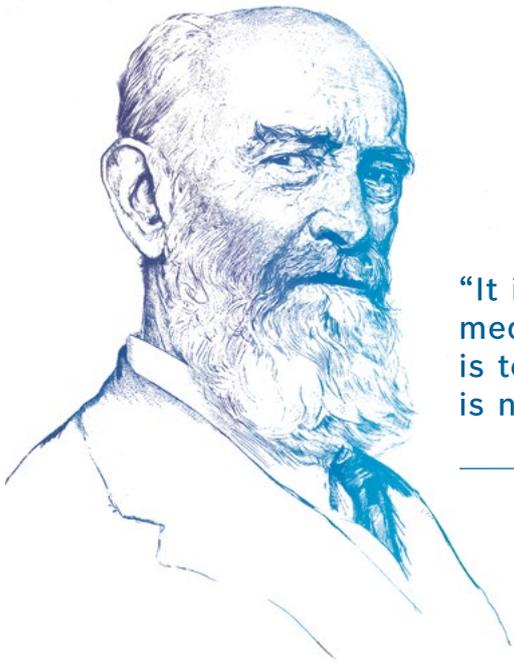
Invented for life

✓ivalytic from Bosch.

The universal diagnostic platform.







“It is inherent to the nature of medicine that its greatest concern is to cure suffering and, where this is not possible, to alleviate pain.”

Robert Bosch

Taking responsibility for health.

Valytic – an innovation that puts all our knowledge to work.

Health is not just our most valuable asset. It is also a serious responsibility for everyone working in this field. Over 100 years ago, Robert Bosch understood that the patient’s wellbeing always has to come first – and today this principle still guides our day-to-day research and development.

Bosch Healthcare Solutions was founded in 2015 to improve the health and quality of life of people around the world with innovative products – a goal that can only be achieved under the right conditions and with the right requisites. Bosch has

these requisites, since the entire group’s expertise comes together from the fields of miniaturisation, automation and networking, for instance. Innovations which benefit us all are the result. In other words: innovation that is truly “invented for life”.

One such innovation is the Valytic technology. Over more than ten years of extensive research, we have succeeded in developing an universal diagnostic platform which delivers decisive advantages to laboratories, clinics and practices. Valytic makes analysing a wide variety of samples easy, quick and reliable. Valytic significantly contributes to improving the treatment of patients and enhancing their quality of life.

An innovation for life.

The Vivalytic concept benefits both physicians and patients.

Vivalytic is a universal platform for molecular laboratory diagnostics, with which a wide variety of samples can be tested. It enables different analysis methods to be run in a fully automated manner within a short timeframe. The system combines a wide range of tests with a number of clinically relevant parameters in a single device. Vivalytic is not only the first all-in-one solution of its kind. Vivalytic is also an open system that can process molecular diagnostic tests from various

manufacturers. Bosch works closely with leading manufacturers so that the range of available tests can continue to grow.

With Vivalytic, single or multiple pathogens can be detected simultaneously from one patient sample. The fully automatic implementation of previously manual analyses can save a great deal of time in the clinic, laboratory or everyday practice. It is also reliable and significantly less error prone than manual test procedures. Vivalytic therefore supports successful therapy based on rapid diagnoses.



You use Vivalytic. You feel Bosch.

The Bosch brand promises – and how Vivalytic fulfils them.



Partnership

With the Vivalytic universal all-in-one solution, molecular diagnostic tests from many different manufacturers can be easily automated. The test portfolio is continuously being expanded and broadened.



Quality

Thanks to fully automated test procedures, Vivalytic enables very precise measurements and reliable diagnostics at all times – in the highest Bosch quality.



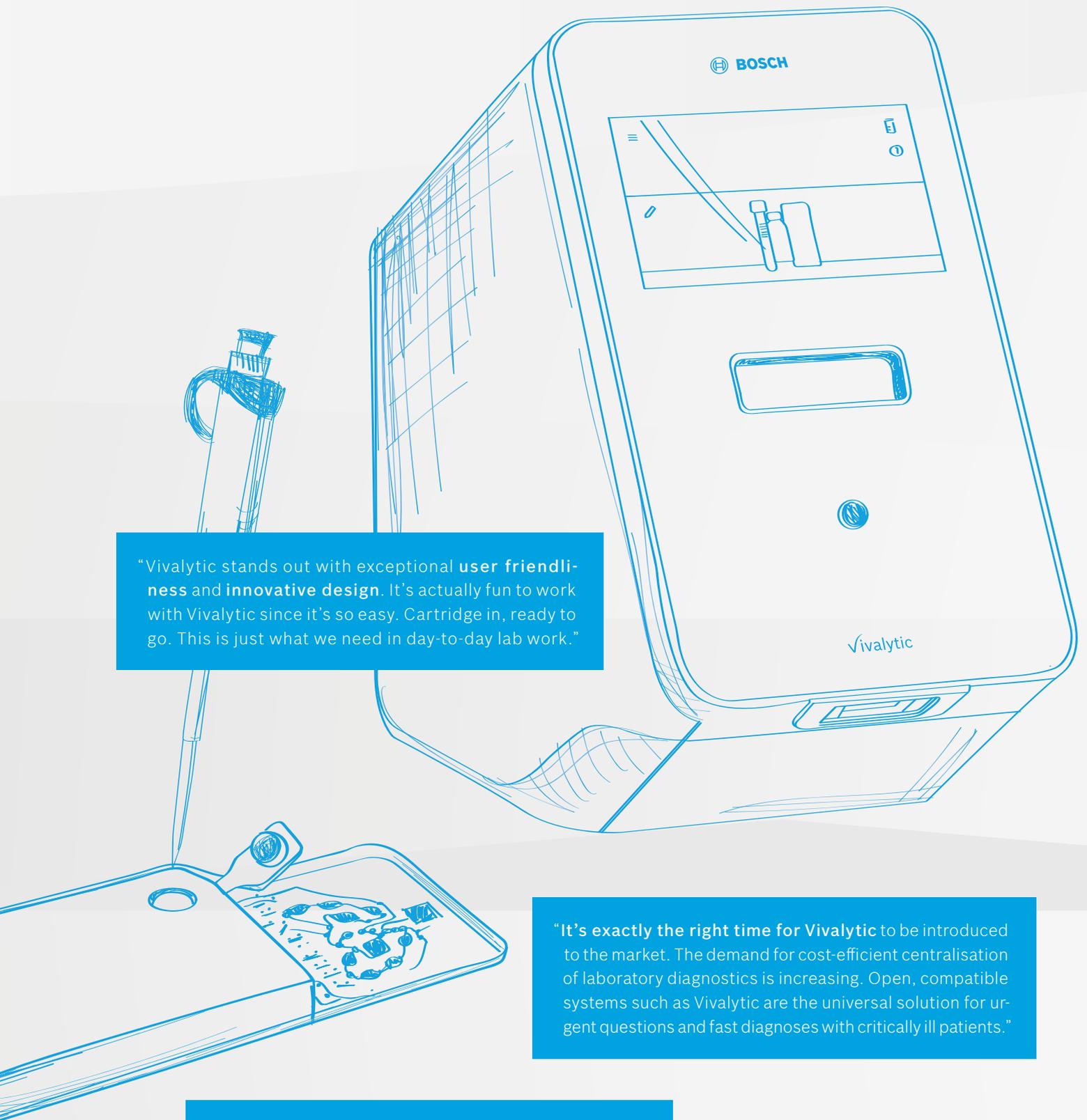
Responsibility

The Vivalytic cartridge is a self-contained system which guarantees reliable sample handling while facilitating hygienic work. Even sensitive patient data is reliably protected against unauthorised access.



User Journey

The Vivalytic platform is intuitive to use. Quickly available test results facilitate the clinic, laboratory or practice routine and enable fast therapeutic decisions and short treatment times.



“Vivalytic stands out with exceptional **user friendliness** and **innovative design**. It’s actually fun to work with Vivalytic since it’s so easy. Cartridge in, ready to go. This is just what we need in day-to-day lab work.”

“It’s exactly the right time for **Vivalytic** to be introduced to the market. The demand for cost-efficient centralisation of laboratory diagnostics is increasing. Open, compatible systems such as Vivalytic are the universal solution for urgent questions and fast diagnoses with critically ill patients.”

“With **high-level sensitivity**, Vivalytic delivers **reliable results** in the **shortest possible timeframe**, therefore facilitating a quick choice of the most suitable therapy. As a compact all-rounder, it can be used anywhere in the clinic – from the laboratory to the intensive care unit.”



Clear findings: Vivalytic offers many benefits.

The unique all-in-one solution from Vivalytic is extremely compelling for the various user groups.

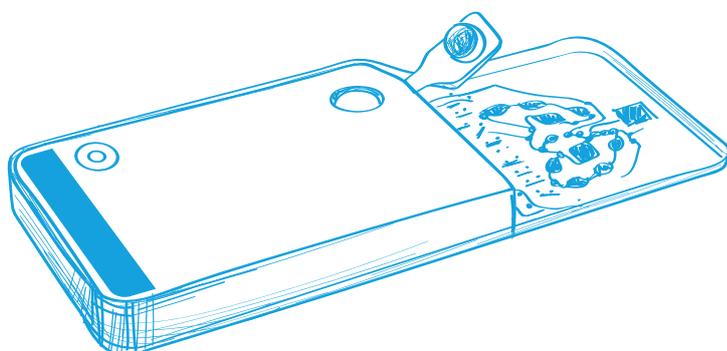
What is Vivalytic?

Vivalytic is a powerful analysis system which tests a wide variety of samples for pathogens using PCR. The user enters the patient sample into a Vivalytic cartridge and slides it into the analyser. There, the test starts automatically and outputs the result of the analysis after a short time. Diagnostics for making important therapeutic decisions on a molecular basis can be this easy.

As clearly expressed in the “invented for life” principle, the development of networked products and services in the field of health and medical technology is based on Bosch’s core competencies: sensor technology, large series production and software for collecting and analysing data, through to developing new services for users.

Vivalytic evolved thanks to in-depth, interdisciplinary research with partners who bring together researchers from various disciplines, as well as collaborators who contribute their practical experience and requirements from everyday medical practice. The Robert-Bosch-Hospital also supports the ongoing development process with practical trials of new application areas and testing opportunities with Vivalytic.

In Vivalytic, Bosch Healthcare Solutions has developed a customised, all-in-one solution for molecular diagnostics which is easy and intuitive to use, virtually maintenance free and universally applicable. Vivalytic is consistently geared to the needs of the various target groups, thereby ensuring the best possible user benefits.



reddot design award



One device, many benefits.

Vivalytic advantages at a glance.





Direct application

Manual test preparation, cold chain of the reagents or the use of different devices are no longer required. They are now combined in a single step – in a fully automated manner.



Universal use

All commonly used molecular diagnostic detection methods are supported. With Vivalytic, molecular diagnostic tests from many manufacturers can be easily automated.



Fast test results

Thanks to automation, results are achieved in just a few steps. Depending on test complexity, results can be available and displayed within a timeframe as short as 30 minutes.



All-in-one solution

No further peripherals such as laptop, keyboard, barcode scanner or filling stations are required. This makes Vivalytic a hygienic and space-saving all-in-one solution.



Flexibility

Single and multiplex tests can be carried out on a single platform. A wide range of sample material can be processed directly without preparation.



Easy integration

Integration into an existing hospital, laboratory or practice IT is easily implemented via standard interfaces.

The Vivalytic Analyser.

Well-designed down to the last detail: the Analyser.

Hygienic and space-saving

No further peripherals such as laptop, keyboard, barcode scanner or filling stations are required. This makes Vivalytic a hygienic and space-saving all-in-one solution.

Direct, clear results

The test result is summarised clearly. Details on the raw data of each individual measurement can also be displayed, as required.

A protected and closed system

To ensure a safe and reliable run, the Vivalytic Analyser integrates the software with the device. This represents the ultimate protection of the data and valuable sample material.

Networked and combinable

Easy integration with popular standard IT systems makes test results instantly available. An analyser device can be networked and combined with many other devices, so that several series of tests can be carried out at the same time. All devices are based on the same hardware and software, so that the product family can be expanded quickly and without major development effort or expense.

Standardised and reproducible

Vivalytic implements quantitative and qualitative PCR procedures with three stable isothermal temperature zones, where microfluidic processing achieves fast heating and cooling cycles. This ensures high test quality and reproducibility.

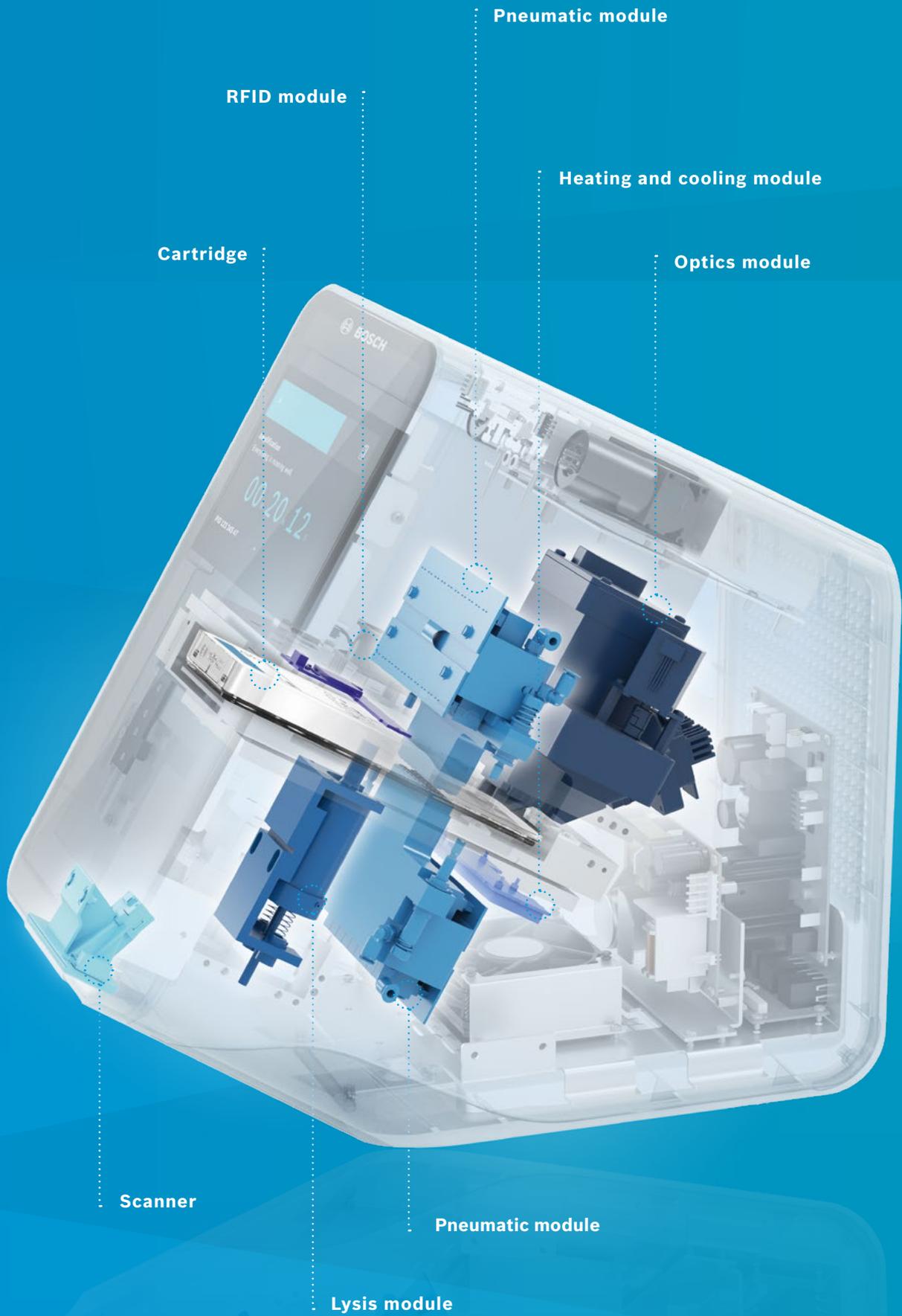
A universal detection system

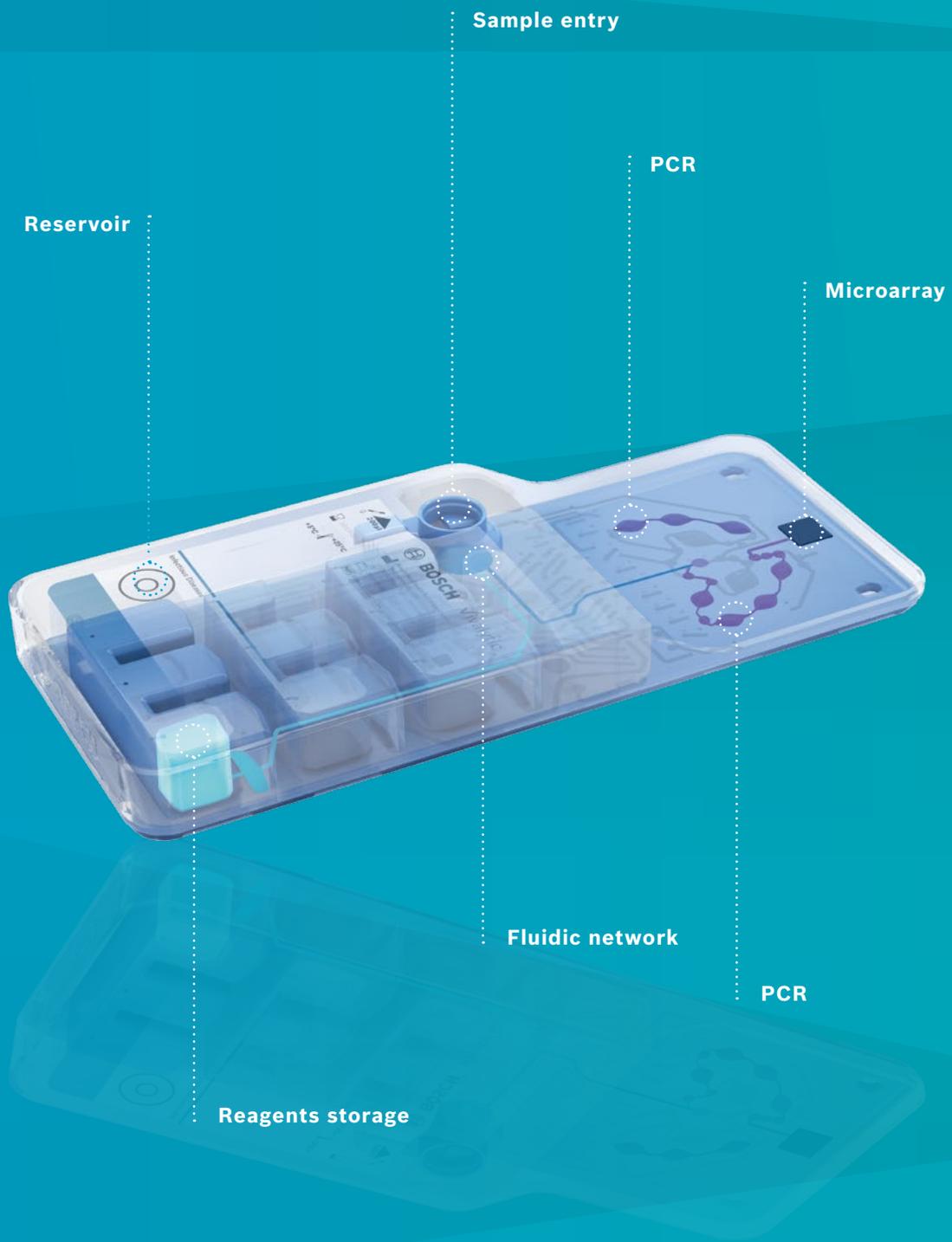
The Vivalytic Analyser has a universal optical evaluation unit. This enables μ Arrays, qualitative or quantitative PCRs as well as melting curve analyses to be read out in one system.

Multiplex degree variable

Four standard colour channels can be evaluated per PCR strand. This corresponds to a degree of multiplexing of up to eight for qualitative or quantitative PCR, or up to sixteen in multi-channel melting curve analysis.

Via geometrical multiplexing with the help of μ Arrays, a much higher number can be obtained. Typically, 10 to 50 properties are examined here. The Vivalytic platform therefore has a consistent and future-proof spectrum.





Vivalytic Cartridges.

Maximum benefit in the smallest space.

Reagents included

All the reagents that are required for a test are included on the cartridge. There are Vivalytic cartridges with six or nine liquid reagents. Both versions are compatible with all Vivalytic Analysers.

Programmable microfluidics

Through intelligent, programmable microfluidics, it is possible to analyse a sample in two independent, parallel PCR reactions. Furthermore, the cartridge allows the entry

of sample volumes between 50 µL and 2 mL. Even the smallest samples can be tested without loss, quickly and efficiently.

Universal sample analysis

Untreated samples can be added to the cartridge without preparation. Ultrasound-assisted sample processing homogenises and lyses not only liquid samples and smears, but also more challenging samples such as tissue, stool and sputum. This allows a simultaneous analysis of bacteria, viruses and fungi from a single sample.

vivalytic Cartridges



Requested, tested.

Universal, intuitive, fast: Vivalytic in practice.



The right spectrum of applications

Vivalytic offers an ideal test portfolio for different clinical questions – with only one system. The Analyser combines all common optical evaluation methods in a space-saving device. This opens up a unique range of testing capabilities:

- ▶ Detection of individual pathogens/resistances in the singleplex test with qualitative, quantitative PCR as well as by melting curve analysis
- ▶ Simultaneous detection of many different pathogens/resistances by means of high-multiplex tests and microarray technology

The combination of these proven molecular diagnostic procedures, together with a flexible process, ensures expandability and therefore the future viability of the platform.



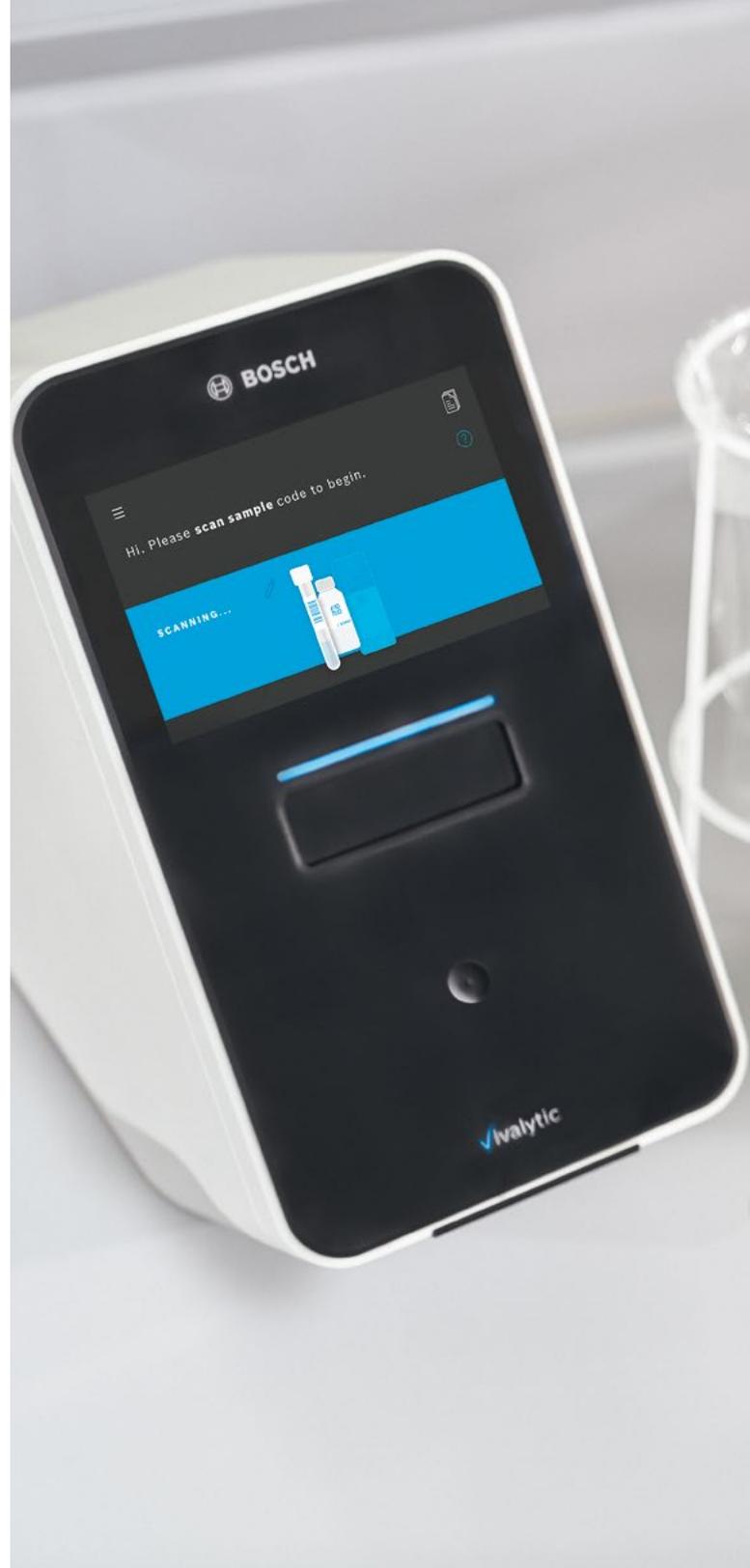
The time factor

The sample is processed quickly and reproducibly with the aid of innovative microfluidics, so that the results can be available within 30 minutes, depending on test complexity. Since there is virtually only one manual step, Vivalytic saves costs and time – time which lab employees can use for other important tasks.



Reliability

You can rely on Bosch quality when it comes to reliable diagnostics at the crucial moment in the clinic or laboratory. Since Vivalytic not only enables fast and reliable test procedures, intelligent system monitoring and excellent ad hoc service also guarantee high device availability.



Variety of samples

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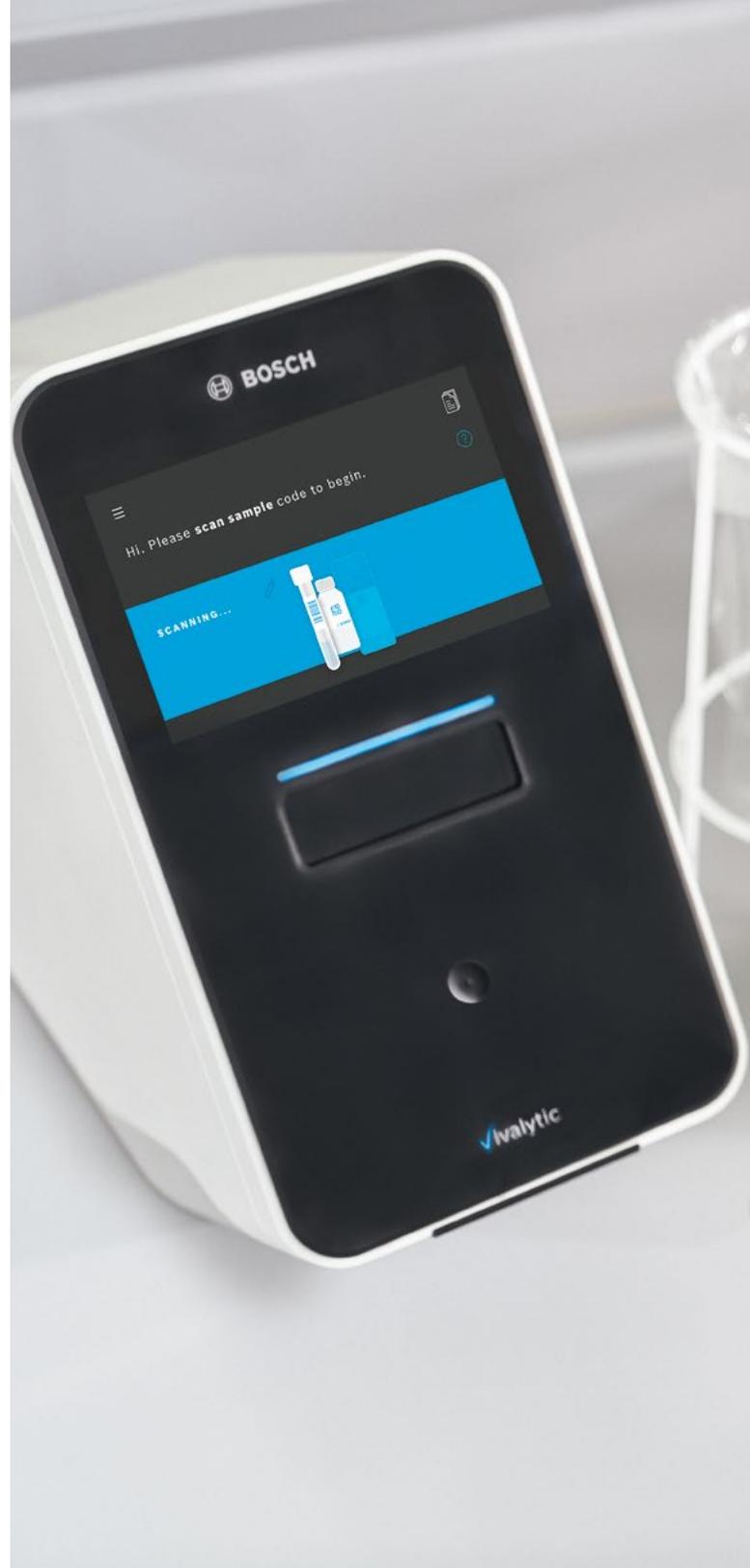
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Intuitive operation

The training required for working with Vivalytic is minimal as the device is easy and intuitive to operate:

- ▶ Sophisticated design of the cartridge and the Analyser
- ▶ Cartridges can be stored at room temperature
- ▶ Touch screen with gesture control, similar to the smartphone
- ▶ Compact device without space-consuming peripherals such as a mouse, laptop or scanner
- ▶ Clear and meaningful presentation of the results

Good results can be this easy.

A reliable result in a short time.



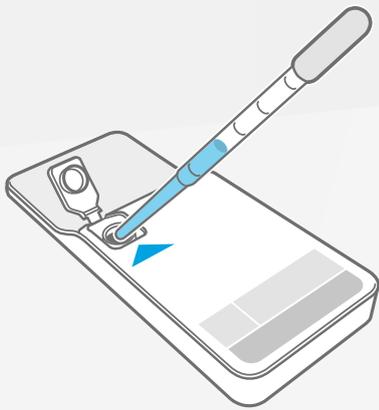
01 Scan the sample code.



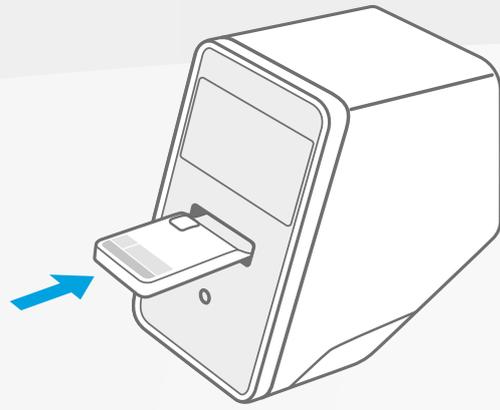
02 Scan the cartridge code.

Automatic control of functional elements on the cartridge allows a simple and reliable workflow – from applying the sample to the test result. The cartridge contains all reagents required for a complete test run. Since this eliminates many steps that previously had to be performed manually, Vivalytic saves time and helps prevent errors.



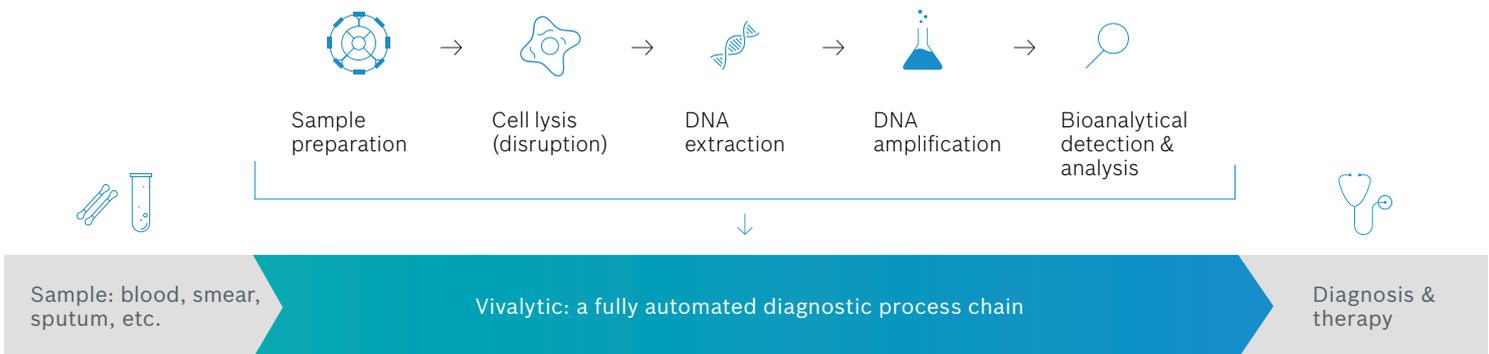


03 Fill in the sample and close the cartridge cover.



04 Insert the cartridge. Test starts automatically.

Automated workflow:



Open for success.

Vivalytic's open concept – and everyone wins.

Long-term, fair partnerships have always been intrinsic to the Bosch corporate philosophy. More can be achieved together – and to everyone's benefit. This also applies to the Vivalytic platform, for which Bosch works closely with leading test manufacturers. Vivalytic combines the specialised expertise of the manufacturer with Bosch's extensive experience. The result: top quality high-tech.

Vivalytic was deliberately conceived as an open platform. Various test providers can

and should benefit from our innovative business model, as well as from past Vivalytic research and development results.

We offer interfaces for integrating existing tests, therefore allowing even smaller companies and start-ups with innovative tests convenient access to automating their products.

The marketing of Bosch Vivalytic takes place in collaboration with partners. This opens up new distribution channels and enables the successful expansion of the Vivalytic test portfolio.

Our test cooperation partners are:

RANDOX

r-biopharm®



“What an ingenious idea from Bosch to invest in an open platform which can be adapted this quickly and comfortably to changing market conditions. Many companies will want to provide their tests as partners. This is definitely a system with a future.”



