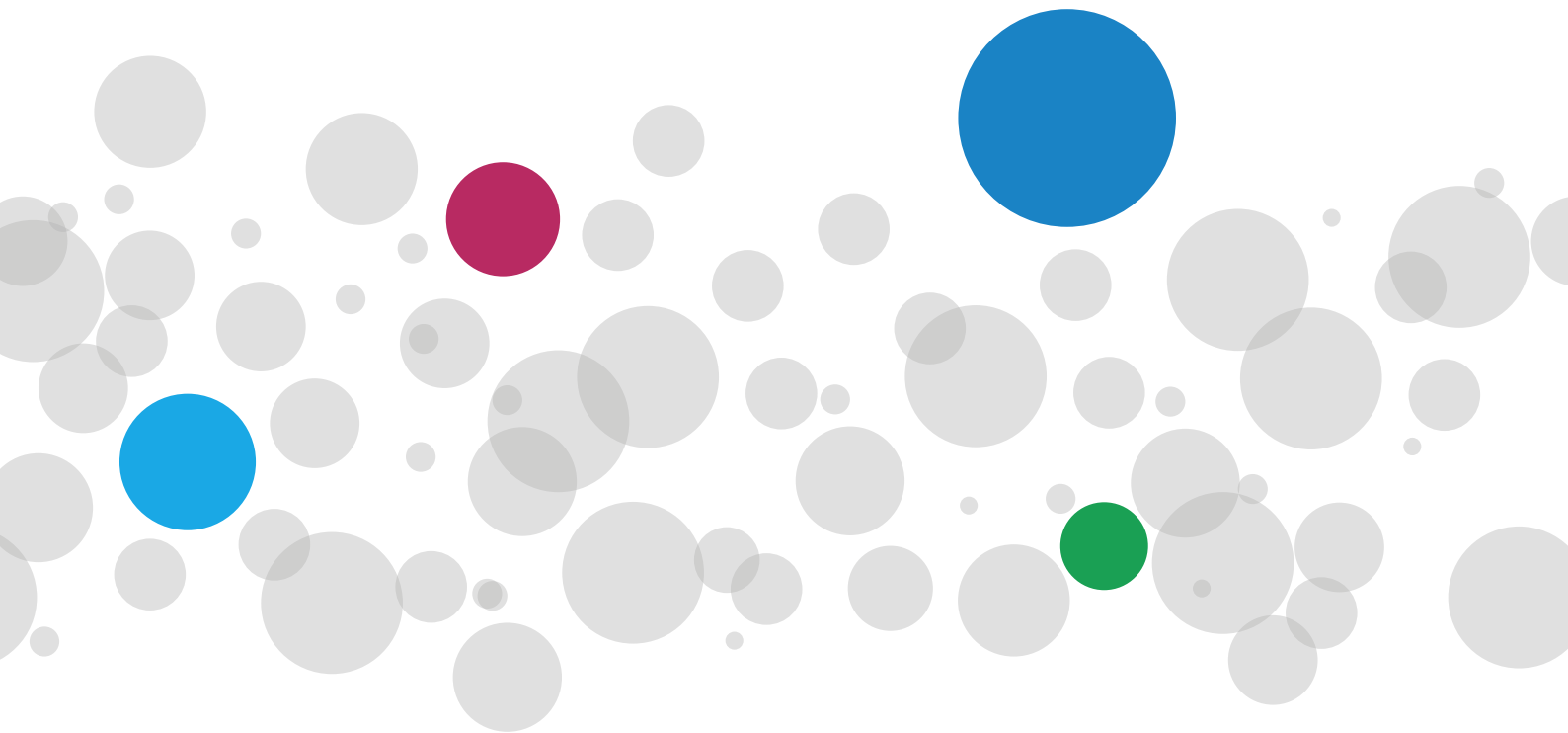


Be Different

Inline Test Station (ITS)



Test solutions that measure up



Made in Germany is an obligation

With more than 30 years of experience in the sectors of electronics, mechanical engineering and software, we develop and manufacture systems and associated software applications for testing electronic assemblies for automotive, aerospace, home appliances and energy.

The planning and development as well as the production and maintenance of our systems takes place at our main site in Markt Schwaben, near Munich. Thanks to our comprehensive electronics and mechanical engineering know-how and our ultra modern machine park, we manufacture high-precision inspection systems and adapters, as well as individual solutions, for the optimal connectivity of your test sample. Thereby we work closely with our customers and target markets, in order to provide a product perfectly matched to the customer's requirements. Intuitive operation and programming, the avoidance of errors, the reduction of wear parts and simple maintenance are the objectives of our daily development work.

As a German technology company, we carry the label of quality "Made in Germany". Our customers expect technically mature, well thought-out products and innovations. This expectation is our daily motivation and a permanent obligation.

Siegmund Krause
Managing Director CGS

ITS Inline Test Stations

Test solutions that measure up.

Patented, cycle-time optimized
Double-stroke test-head principle

Modular design with
SMEMA interface

One or several
integrable test heads

Compact design,
simple maintenance



Inline Test Station 115



Inline Test Station 024

ITS Inline Test Stations

for efficient, flexible and time-saving PCB tests

The Inline Test Stations ITS operate with the **double-stroke test-head principle**, which is **unique in the world** and has been patented by CGS GmbH. Due to the simple mechanical design of the overall system, test cassettes can be changed in less than a minute by the operator, through which the ITS can be implemented very flexibly.

Due to the narrow design of the machine, the ITS 115 fits through every common office door. Several ITS systems can be connected **Inline**, so that different testing and programming tasks can be performed one after the other. Depending on which tests are necessary, the individual ITS systems can be switched on or off. In this case the circuit boards to be tested simply travel through the switched-off systems.



A

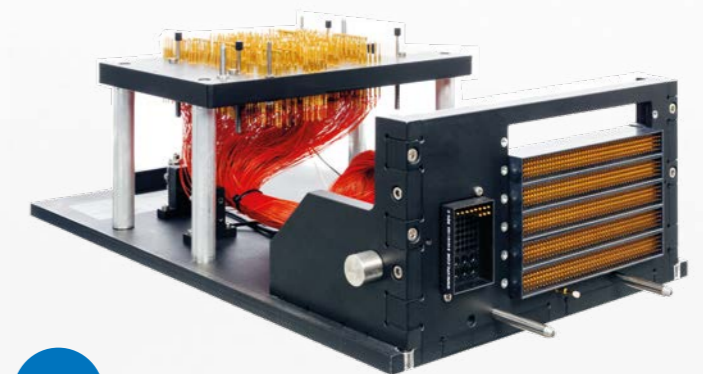
IMB (Inline-Modul-Band)

- Automatic adjustable, continuous conveyor section
- Max. useful width of the belt according to the size of the test head
- Soft start, deceleration, direction reversal, variable speed
- Arrangement of two conveyor sections alongside one another
- Parallel execution of identical or different tests
- Integration in existing production lines

B

Double-stroke test head

- Patented double-stroke test head
- PCB-specific contacting elements
- Clamping device for cassette fixing
- 2 to 4 support cylinders
- Pneumatic or servomotor
- Max. effective PCB size: 450 x 450 mm



C

ITS Cassettes N4 to N7L

- ICT, Boundary Scan, Flash, FKT/EOL...
- Contacting with >3000 needles, dependent on their spring force
- Interface variants (VPC or Pylon)
- Cassettes with integrated stroke counter
- ESD-compliant surfaces
- Integration of additional customer-specific hardware

ITS Inline Test Concept

developed for a fully automated Inline Test

The testing of assemblies is **fully automatic** in the ITS. Thanks to the Inline Test Concept, cycle times can be shortened and the throughput increased.

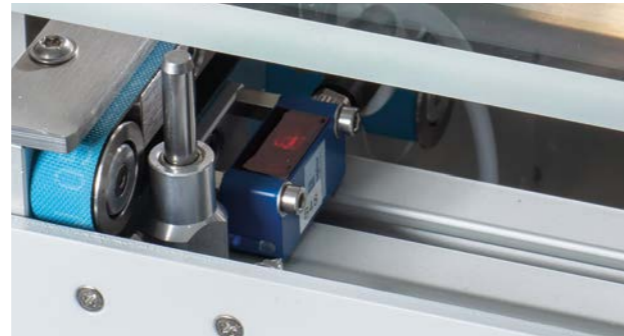
The Inline Test starts with the infeed of the circuit board to be tested. During the test within a fully automatic test cycle, the **continuous in-feed** takes place via the conveyor system IMB (Inline Module Band). Additional workpiece carriers or the like are not required.

The ITS can also be used as a **stand-alone solution**. The conveyor system integrated in the ITS enables – with an additional inlet – both the manual feed of the circuit boards as well as the automatic placement per magazine loader or robot.

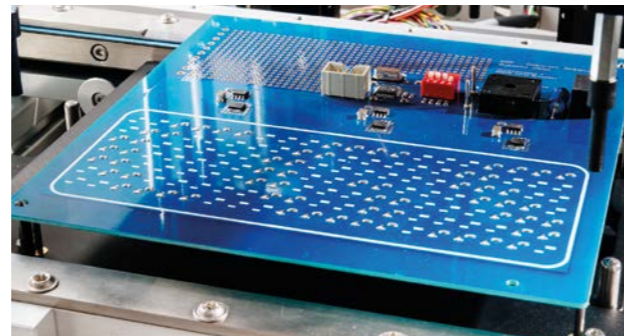
After the insertion of the test sample, this is positioned in the test head with an adapter device and fixed. The test is performed, and the results logged and saved.

The circuit board is released automatically. In the case of a negative test result the assembly can be parked on a **separate belt**, in order to initiate further steps.

At the request of the customer the ITS can be adapted to the production environment. SMEMA interfaces for **simple Inline integration** are available.



The position of the test sample controls the sequence. As a result the ITS reaches a variable throughput speed and adapts automatically to the line cycle.



The test sample is raised by the IMB, the centering pins of the lower cassette engage in the indexing holes. In the meantime the IMB continues running.



NOK assemblies are ejected onto a separate belt and can be easily removed for further processing.

ITS IMB

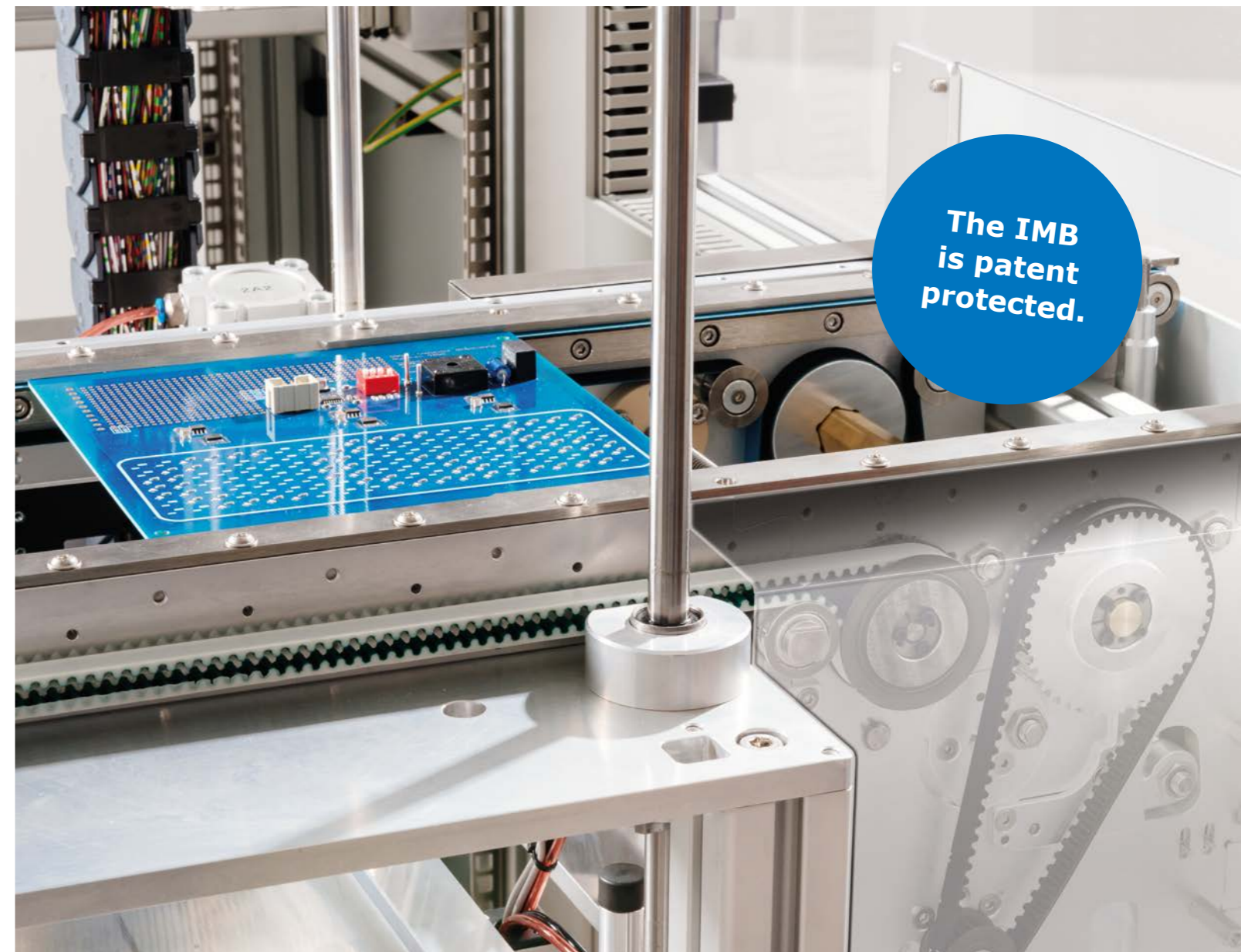
Inline Module Band

The ITS from CGS is equipped with the Inline Module Band (IMB). This is a **dual-track belt**, either with fixed width or automatic electrically adjustable guiding flanks, to be able to individually adapt the width of the conveyor belt to each test specimen.

The **assemblies are transported** via transport belts made from ESD-compliant material. The installation of **belt stoppers, detection sensors and scanners** is possible at any position. Different types or sizes of test sample can therefore be easily processed.

The modular design of the IMB also enables a simple adaptation to the various test head types. The guiding flanks enable a **length adaptation** of the drive- and deflector modules and are also adjustable in width. The IMB therefore also permits the design of the complete **transport infrastructure** of a test system.

The Inline Module Band transports continuously and keeps on running during the test process. As a result, the transport of assemblies while testing continuous.



ITS Assembly Testing

with double-stroke system and precision contacting

Test process sequence

1 Raising of the lower cassette

2 Simultaneous lifting of the assembly from the belt

The centering pins (catch pins) thereby fix the test sample on the application.

3 Lowering of the upper cassette

4 The hold-down mechanism of the upper cassette

presses the test sample on the needle bed of the lower cassette.

5 The electrical connection

to the test- and programming devices is established.

At the beginning of the test process the test specimen travels into the ITS on the Inline Module Band (IMB). **Band stoppers** hold it in the center of the test head at a defined position and align the test specimen. The conveyor continues to run. The test process now takes place as described on the left.

The testing of the assemblies is carried out by a space-saving **double stroke test head**. This consists of an upper- and lower cassette. Frequently the contact takes place one-sided from below. The upper cassette only carries the hold-down mechanism. Located in the lower cassette is the **needle bed**, the application. With two-sided contacting a needle bed is mounted in both the lower as well as the upper cassette. Naturally, all parts in the area of the test specimen are covered with **ESD-compliant surfaces**.

Upper- and lower cassette are fixed to the interface with **pneumatic clamps**. Consequently, a connection exists from the test system (e.g. CGS MFTS500) to the application. The test system can either be connected externally or integrated in the ITS to save space.

ITS Cassettes

for a high degree of testing flexibility

The ITS cassettes are available either with plug connectors from the Virginia Panel Corporation (VPC) or with **pylon** interface. The type of cassette thereby always corresponds to the test head: A type N5 VPC cassette only fits in a type N5 VPC test head.

The cassettes are equipped with a **stroke counter** and have space for the integration of

customer-specific additional hardware, such as e.g. relay cards, marking systems, sensor electronics or pneumatic actuators. Upon request, test points can be switched on and off (pneumatic 2-stage adaptation or servo-electric multi-stage adaptation). Optionally 90-degree connectors can be contacted on the test specimen **from all four sides**.



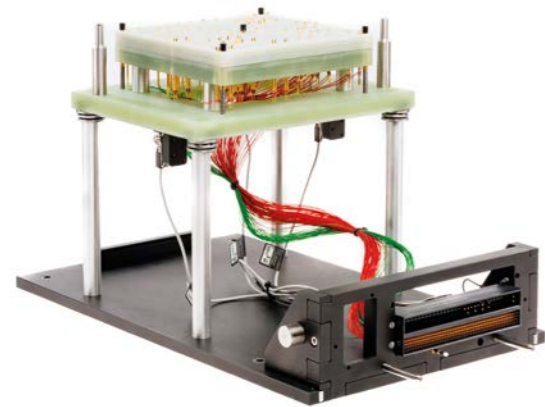
Six-sided
contacting
of up to
3600 points.

ITS Cassettes

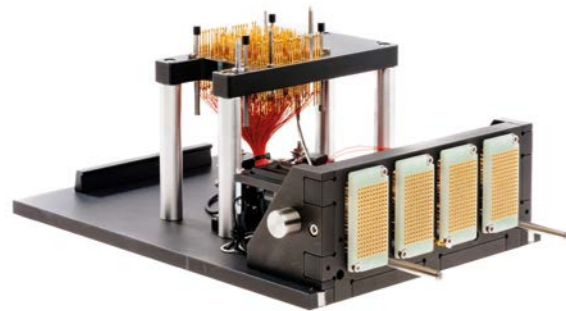
Upper and lower cassette

The ITS cassettes are optionally available with plug connectors from the Virginia Panel Corporation (VPC) or with pylon interface.

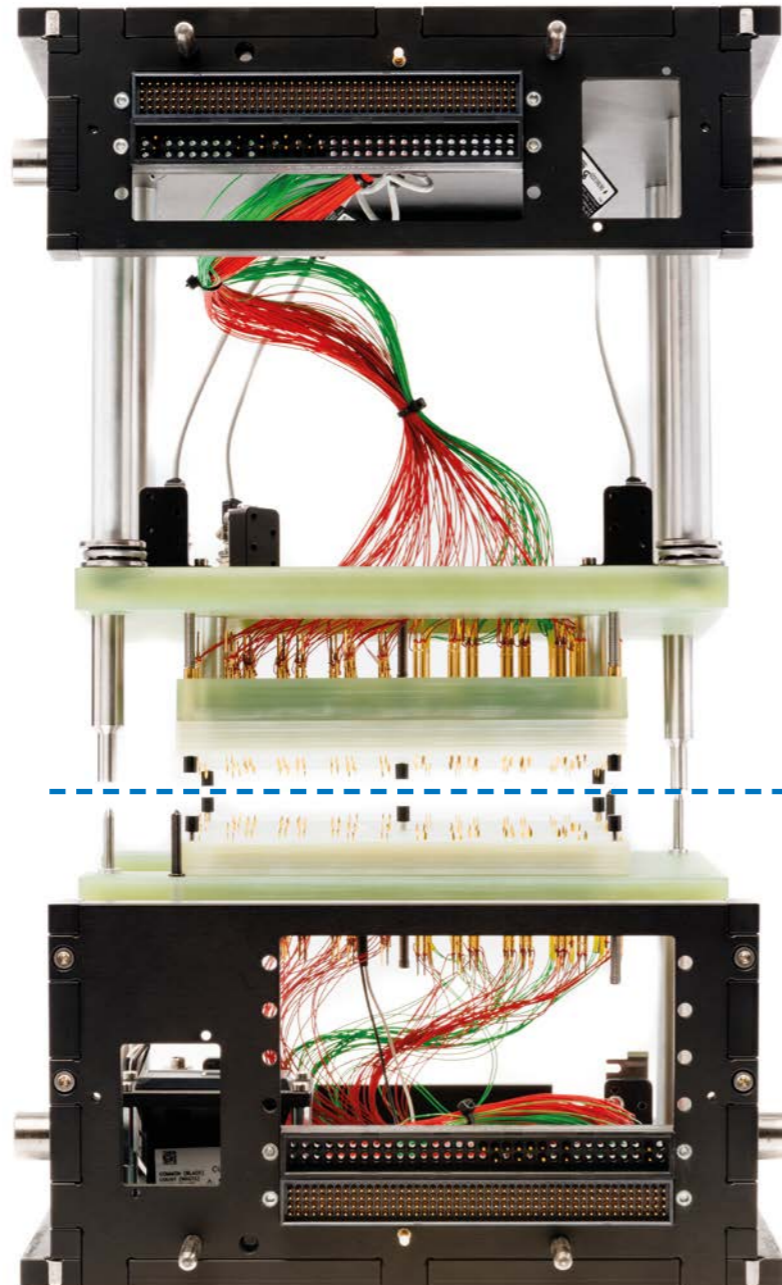
With integrated stroke counter.



ITS cassette N5 with VPC plug connectors



ITS cassette N4 with pylon interface



ITS Test Heads

Technical data

Test head	N4	N5	N6
Test head width	320 mm	360 mm	485 mm
Max. useful PCB size	100 x 125 mm	175 x 175 mm	305 x 305 mm
Closing force	Up to 1.800 N	Up to 4.500 N	Up to 10.000 N
Interface up	4 x Pylon	5 x pylon or VPC: 6 x series 90 + 1 x Icon	VPC: 18 x series 90
Interface down	4 x Pylon	5 x pylon or VPC: 3 x series 90 + 1 x Icon	VPC: 6 x series 90
Change time	< 1 min	< 1 min	< 1 min
Accessories	N4 upper and lower cassette	N5 upper and lower cassette	N6 upper and lower cassette
Transport belt	IMB (Inline Module Band)	IMB (Inline Module Band)	IMB (Inline Module Band)

Test head	N7	N7L
Test head width	620 mm	620 mm
Max. useful PCB size	450 x 250 mm	450 x 450 mm
Closing force	Up to 10.000 N	Up to 10.000 N
Interface up	VPC: 18 x series 90	VPC: 18 x series 90
Interface down	VPC: 6 x series 90	VPC: 6 x series 90
Change time	< 1 min	< 1 min
Accessories	N7 upper and lower cassette	N7L upper and lower cassette
Transport belt	IMB (Inline Module Band)	IMB (Inline Module Band)

ITS Software

is simple to operate

The operator panel of the ITS software is the base to all user interfaces. Via the task-specific structured panel all test- and infeed parameters can be set and monitored. The user level determines access rights.

Automatic

In the user interface Automatic the actual status in Auto Mode is displayed. The current status of the system, the test head and/or test process, the belt stoppers as well as the SMEMA interface is displayed.

Manual

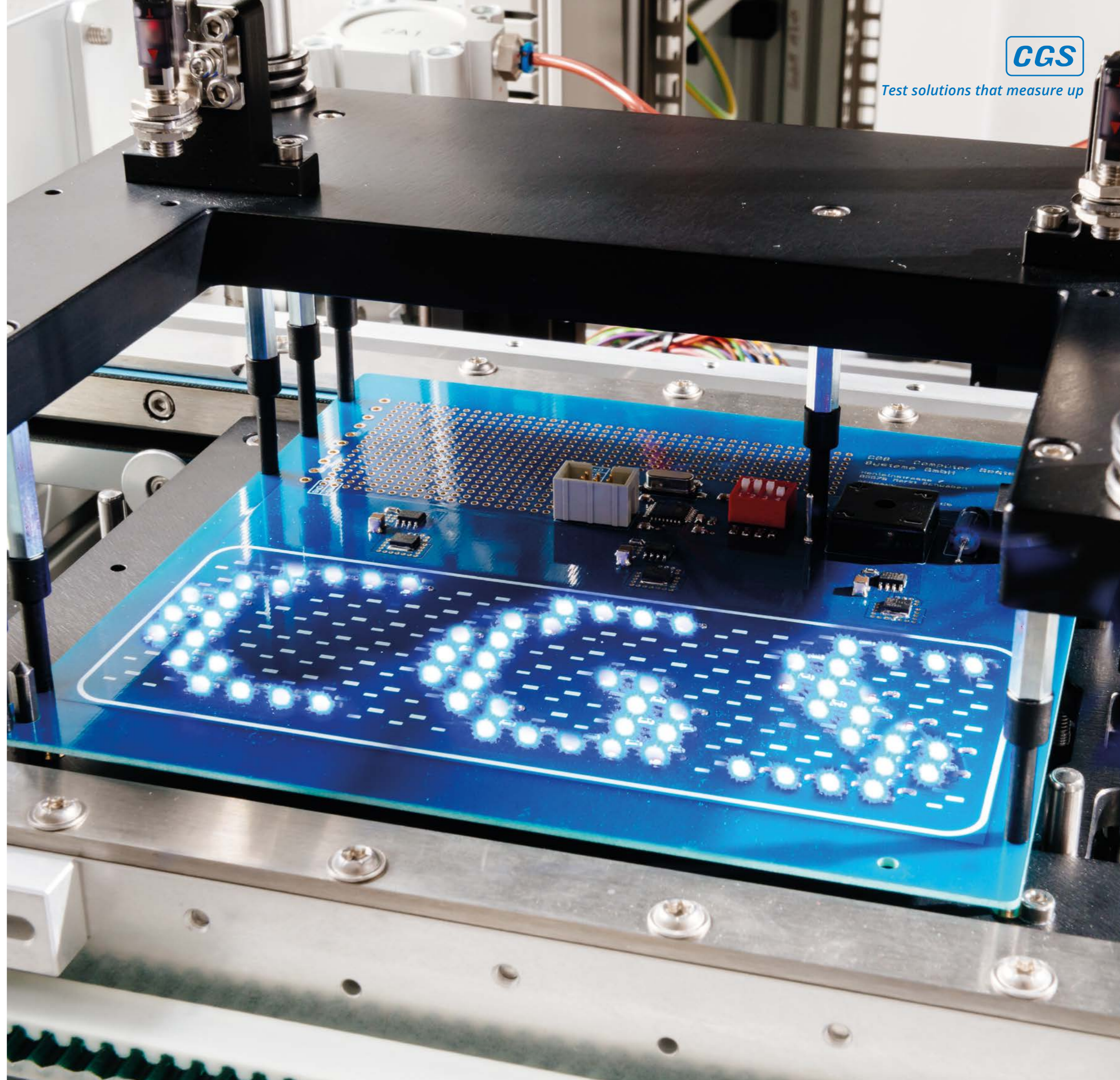
For the visualization and operation in Service- or Maintenance Mode. Here all signals and statuses of the machine are displayed. All ITS components can be operated manually in Maintenance Mode.

Conveyor Settings

This user interface is an expansion of the Manual user interface. Here the width setting of the transport conveyor is operated. In addition it is possible to set different transport profiles and track widths for the conveyor belt.

Counting

General information about the machine data and the throughput is provided. In addition, the number of supplied and discharged test sample as well as good and poor test specimens is listed in real-time, in order to determine and display the average cycle time and the quality quota.



ITS Service & Maintenance

stands for minimal service and maintenance work

The ITS has been designed to require as little servicing and maintenance as possible. Due to the modular and standardized design of the machines, in an emergency, only a few spare parts are required.

Large doors enable easy access to all areas of the machine, from the front as well as the back, enabling fast and simple maintenance. For additional general maintenance or easier transportation, the ITS can also be split in the middle. All cable ducts are structured and also easily accessible. In addition updates for the ITS software can be installed via remote maintenance.

Technical specifications

Example system ITS 024	
Overall width	1.750 mm
IMB overhang (l/r)	225 mm each side
Depth	1.425 mm
Height	1.735 mm – 1.795 mm; signal column +385 mm
Belt height	925 mm – 985 mm
IMB type	Fixed width
IMB type	2 x N4
Test head accessories	ICT + Flash/FKT
NOK belt	90 degrees to the back
Power supply	400 V AC, 16 A, 3NPE (CEE-plug)
Compressed air	6 bar – 8 bar
Control	PLC with Touch-Panel PC, SMEMA-Interface
Interface	SMEMA-9851
Weight	approx. 400 kg

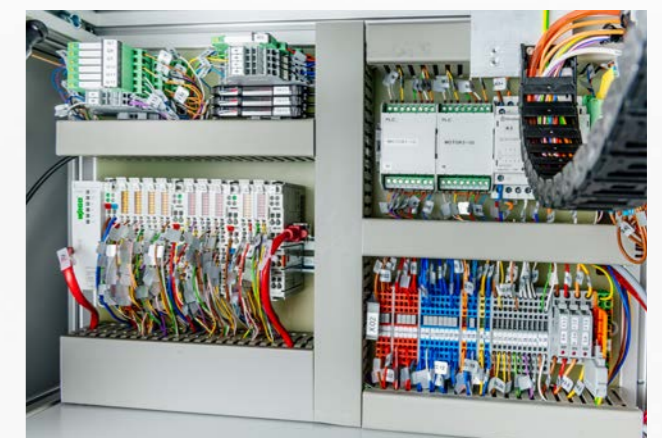


Very few down times, thanks to maintenance-friendly machine concept.



Is a machine upgrade possible?
Yes, in 3 steps:

1. Machine is split in the middle
2. New hardware is integrated
3. Machine is re-assembled and calibrated



Easy access to all parts

- Large doors for a good access
- Uncluttered, neat and tidy machine design
- Access from the front and rear possible

ITS Modular Design

for individual customer requirements and adaptations

The ITS is one of the most **flexible Inline Test Systems** in the market and can be adapted to all requirements. This is applicable for all areas of the machine: Mechanics, Electronics and Software.

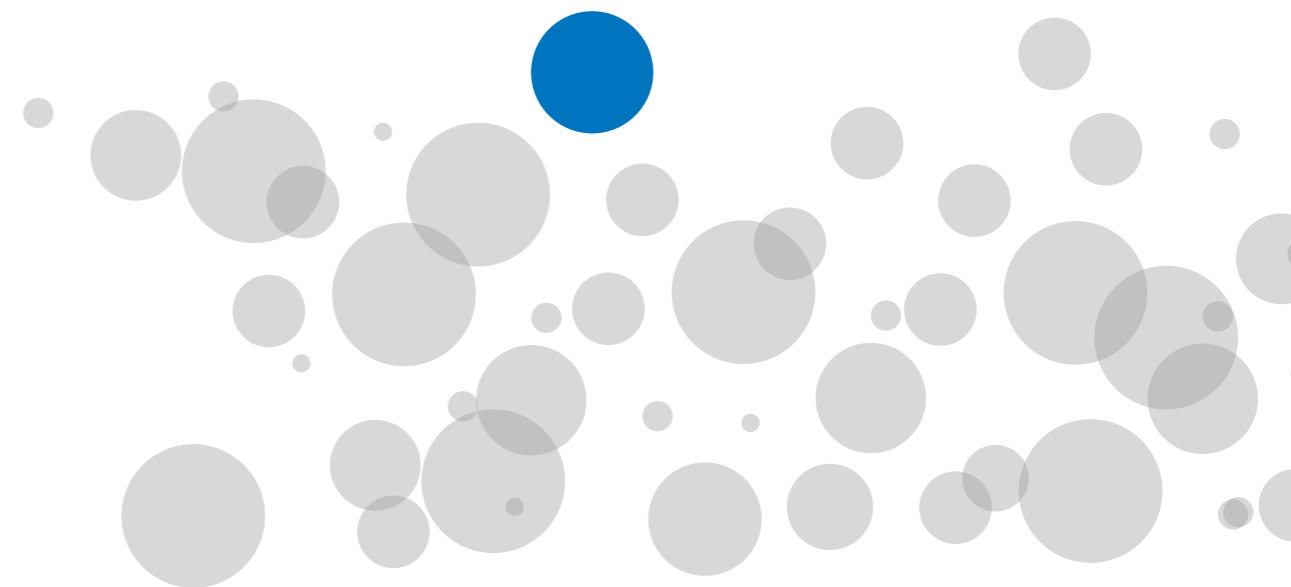
As a result, customer requests can be implemented at lower costs.

Even the basic design of the test station, with its expandable machine frame, enables the integration of more than one test head.

If the **throughput is to be further increased**, the test sample can be divided on parallel IMBs using a belt shuttle. In this case, the test heads can be arranged in parallel (accessible from the front and rear for the cassette change) or on top of one another (all accessible from the front). Furthermore, the modularization is also applicable for the test heads. These are configurable with cassettes, which correspond precisely to the requirements of the customers.



**Modular
concept for
individual
customer
requirements -
talk to us.**



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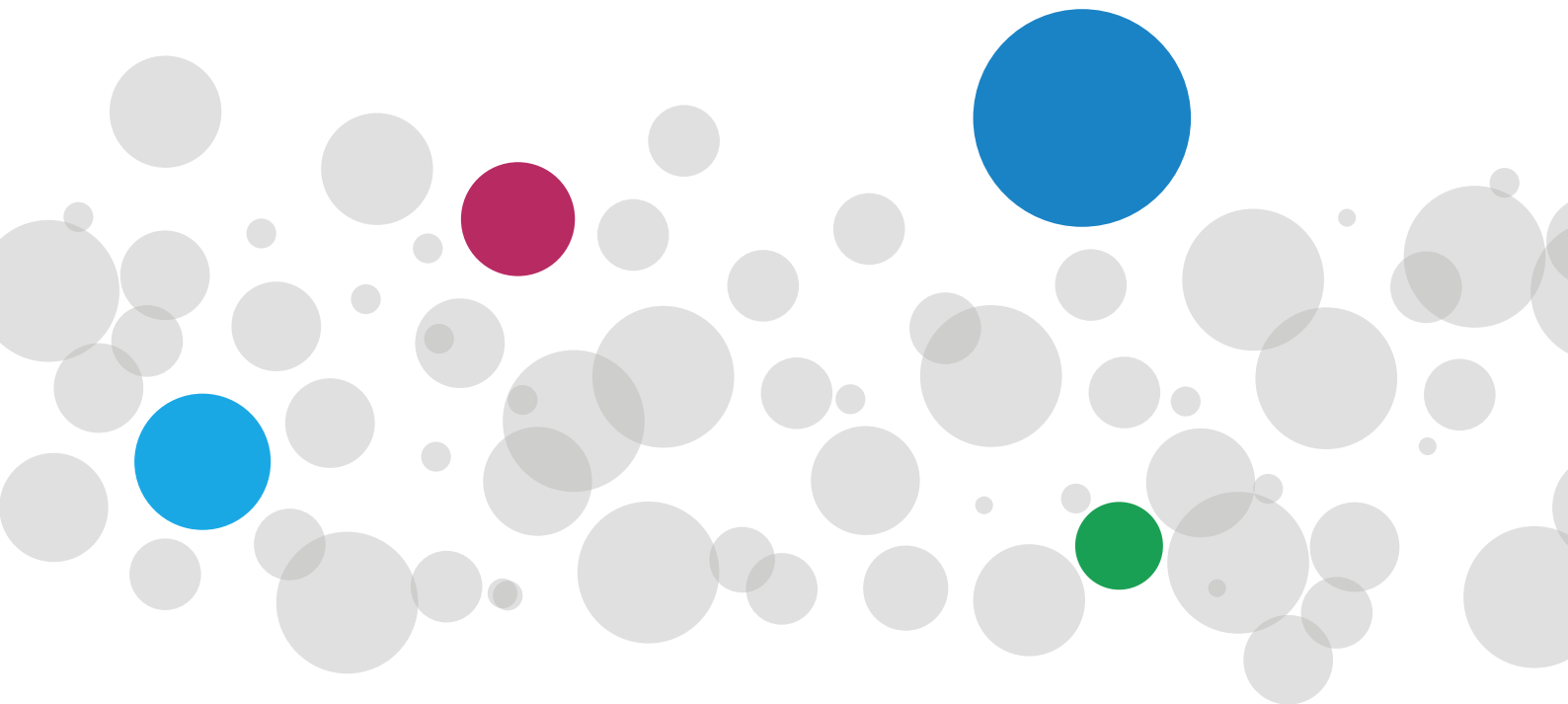
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Test solutions that measure up