Highlights

QUALITY makes the DIFFERENCE!

IBAK

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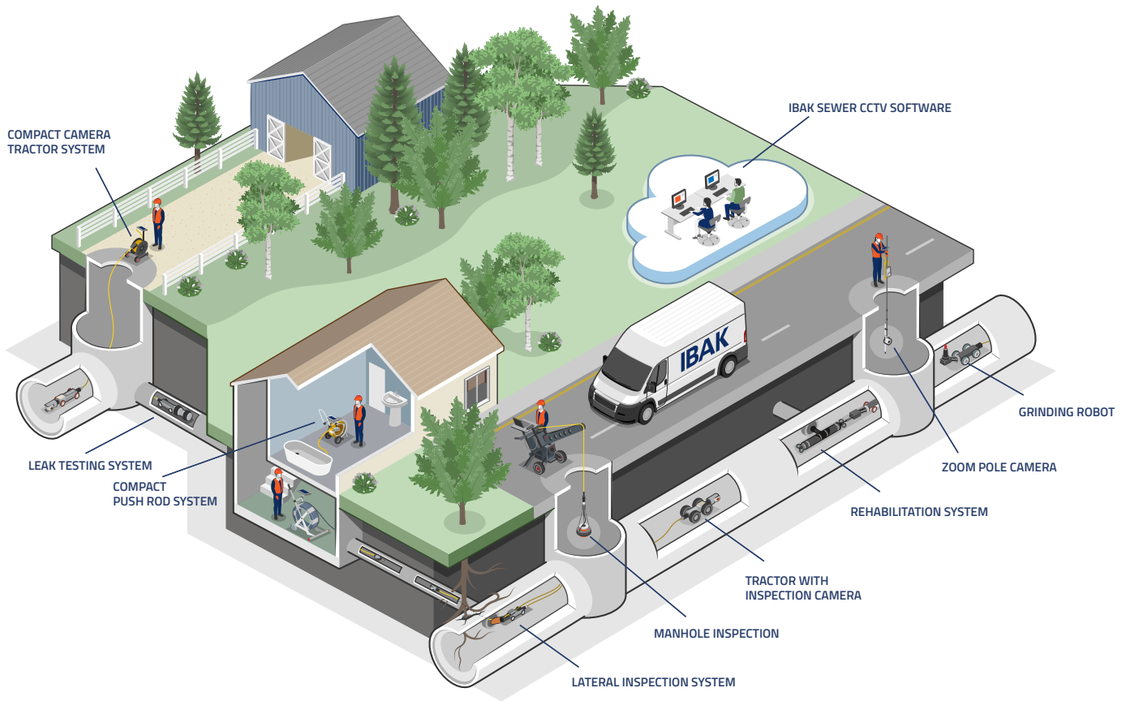
IBAK offers you suitable solutions for your application



IBAK – What we do

IBAK, the pioneer of the industry, designs and manufactures high-quality sewer inspection and rehabilitation systems for worldwide operation. As reliable partners, we help our customers to provide a decisive contribution to ensuring a functioning sewer system and proper wastewater disposal. For a clean environment and reliable service.

Development of solutions
Our systems are ideally matched to each other and are used all over the world to ensure safe and perfect long-term functioning of sewer networks.

High-tech engineering
Our systems stand for reliability and safety in the demanding conditions of the system-relevant underground infrastructure.

Manufacture of systems
In our own production, we rely on latest technologies, innovative manufacturing methods and the automation and digitisation of processes.

Quality assurance
Quality is assured by quality checks combined with state-of-the-art test methods and fully automatic test equipment.

Good advice
We have a suitable solution and accompany you as partners through the process of purchasing your system.

Provision of services
Our experienced team at seven locations in Germany and our partners all over the world ensure optimum services and a high degree of operational reliability of your systems.

Our aims

- Implementation of high-quality, rapid inspection and rehabilitation everywhere
- Generation of added value, for example by means of numerous measuring and application possibilities
- Faster and better output and evaluation of the results

What have we done to achieve this?

- Extension of our high-resolution inspection concept
- Further improvement of rehabilitation systems for greater operating ranges
- Focus on future-oriented software support for inspection and rehabilitation
- Optimisation of systems for mobile operation
- Focus on easy handling of IBAK systems
- Development of smart solutions for large to small diameter pipes

Overview of control systems

BS10 Control System

- For simple main sewer inspection (with up to 300m of camera cable) (Note: for use with KW206/306)
- For UHP cleaning
- For pneumatic cutting and rehabilitation

BS10X – 3.5 Control System

- For the inspection of main sewers and laterals (with up to 300m of camera cable) (Note: for use with KW305.2 S/KW310 with LISY; also for full HD system control)
- For UHP cleaning
- For pneumatic cutting and rehabilitation

BS10X Control System

- For the inspection of main sewers and laterals (with up to 500m of camera cable) (Note: also for KW505, PANORAMO)
- For UHP cleaning
- For pneumatic cutting and rehabilitation

BS10X R Control System

- For the inspection of main sewers and laterals (with up to 500m of camera cable) (Note: also for KW505, PANORAMO)
- For UHP cleaning
- For pneumatic and/or electric cutting and rehabilitation

Extension of the new control concept

The new IBAK control systems combine significant features which are important for both inspection and rehabilitation. They are suitable for versatile applications and are adaptable to specific uses.

- **Ergonomic**: Very good handling thanks to flexible design ergonomically adapted to body posture
- **Efficient working**: Thanks to an additional easy-to-use touch display
- **Added value**: Display of important system and configuration data on a well-arranged screen
- **Well-thought-out concept**: Simplifies handling of the inspection and rehabilitation technology
- **Flexible use**: Operation of cleaning systems (UHP), cutting systems and inspection systems (depending on the configuration SD, full HD, 4K) for main sewers and laterals, if applicable
- **Fully digital operation**: Installation of software packages as required
- **Fast data transfer**: Easy transfer of the inspection results to customers

MiniLite 3 Push Rod Camera System – Easy handling during lateral inspections

The MiniLite is the push rod camera system for small and medium pipe diameters.

- **Can be used anywhere**: Typically for operation in laterals – even if they are strongly ramified
- **Compatibility**: For inspection with all full HD push rod cameras
- **Variability**: Use as an extension unit from the vehicle
- **Added value**: Thanks to extensive measuring functions for qualified condition assessment
- **Ergonomic**: Efficient control console with a big touch display
- **Flexibility**: Thanks to the removable rugged tablet
- **Handling**: Rack optimally adapted to the working procedures with a new brake and a new push rod guide
- **Fast data transfer**: Easy transfer of the inspection results to customers

MainLite 2 – MainLite Inspection System in full HD standard – mobile or in the vehicle

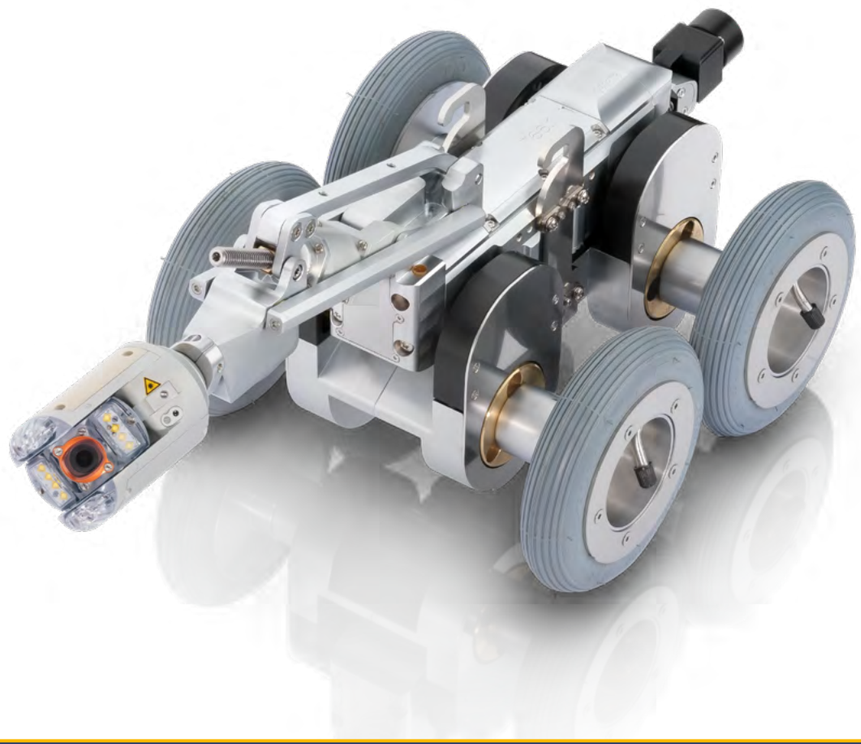
The MainLite supplies inspection data with full HD resolution from main sewers.

- **Added value**: Thanks to extensive measuring functions for qualified condition assessment
- **Safe investment**: Flexible and future-proof thanks to modular system design
- **Variable use**: In the vehicle and as a mobile inspection system
- **Turnkey solution**: Hardware and software from a single source
- **Fast data transfer**: Easy transfer of the inspection results to customers

CC Lift – Electric height adjustment in small pipe diameters

With the CC Lift, the height of the camera can be flexibly controlled electrically, even when the T66 is operated in small pipe diameters.

- **Professional inspection**: Expertly inspect small pipe diameters in Full HD and SD quality
- **Flexible operation**: Can be variably adapted to varying pipe diameters
- **Easy handling**: By means of electric adjustment to the height of the pipe
- **High inspection quality**: Thanks to flexible positioning of the camera at the centre of the pipe
- **Modularity**: Thanks to possible use with all IBAK systems with a T66 tractor (from version T66.1)



NANO 2 Pan Camera – High resolution in small diameter pipes

The NANO 2 enables full HD scans from ramified laterals and central measured data to be recorded

- **Professional inspection**: Inspection of laterals of DN 80 upwards in full HD quality
- **Flexible use**: For variable operation with the compact system MiniLite 3 or a satellite inspection system with LISY
- **Easy handling**: Additional functions at the push of a button such as autofocus and automatic panning around pipe joints make for easier working
- **Good orientation**: Erect image thanks to the UPC function (Upright Picture Control)
- **Added value**: Thanks to extensive measuring functions such as pipe run measurement

POLARIS 3 – The special push rod camera with high resolution

The POLARIS 3 is used to inspect ramified laterals in full HD quality.

- **Professional inspection**: Inspection of laterals of DN 100 upwards in full HD quality
- **Versatile use**: For variable operation with the compact system MiniLite 3 or a satellite inspection system with LISY
- **Intuitive operation**: Easy control in laterals by positioning the camera at the turning-off unit
- **Easy handling**: Additional functions at the push of a button such as autofocus and automatic panning around pipe joints make for easier working
- **Good orientation**: Erect image thanks to the UPC function (Upright Picture Control)
- **Added value**: Thanks to extensive measuring functions such as pipe run measurement

Manned-Entry Adapter – Adapter for hand-guided inspection of large diameter pipes

The Manned-Entry Adapter is used in combination with the ORPHEUS to perform inspections of large diameter pipes with full HD resolution.

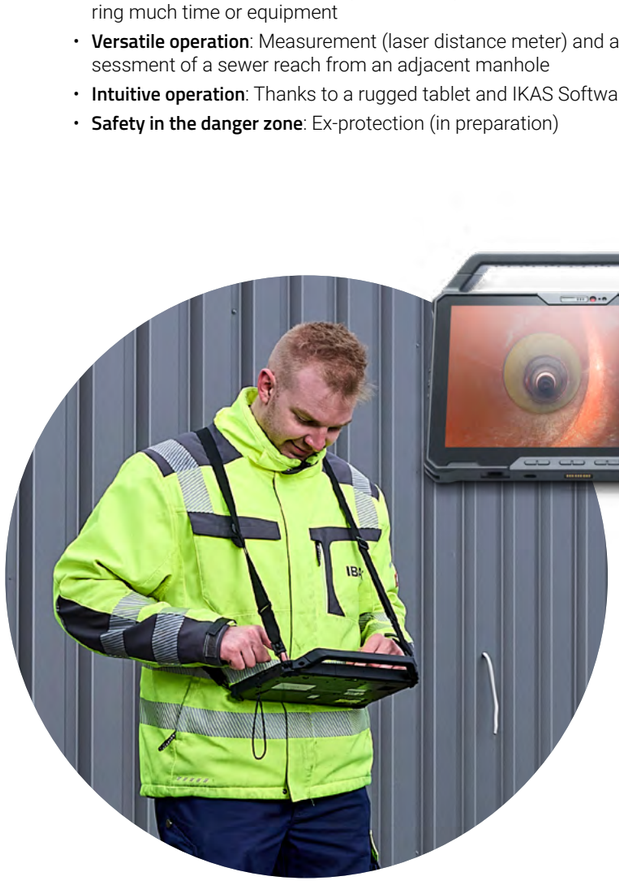
- **Professional inspection**: Inspection of manned-entry main sewers in full HD quality
- **Practical extension**: Connectible to IBAK BS 10X systems
- **Intuitive use**: Easy operation of the camera functions from the vehicle
- **Easy handling**: Communication with the inspector on foot via a headset
- **Added value**: Thanks to laser measurement for detailed documentation of defects

The Manned Entry Adapter is compatible with IBAK BS 10X systems

ASPECTA 3 Electronic Sewer Mirror – For fast visual checks in optimum quality

The ASPECTA enables rapid condition capture and assessment of sewers from an adjacent manhole.

- **Revealing view**: Assessment of the condition of a sewer in full HD quality to decide on further measures
- **Useful basis**: To prioritise inspection, cleaning and rehabilitation measures
- **Immediate visual check**: For a quick first impression without requiring much time or equipment
- **Versatile operation**: Measurement (laser distance meter) and assessment of a sewer reach from an adjacent manhole
- **Intuitive operation**: Thanks to a rugged tablet and IKAS Software
- **Safety in the danger zone**: Ex-protection (in preparation)



MicroGator 150 – Electric cutting and rehabilitation in relined DN150 pipes

With the electric MicroGator 150, the deployment range of the cutting and rehabilitation system has been extended to cover small diameter pipes.

- **Greater deployment range**: For operation in pipes as small as DN150 (relined) upwards
- **Reliable functioning**: Electrically-driven low-noise operation
- **Valuable extension**: The complete system covers pipe diameters from DN150 (relined) to DN800 (with larger MicroGator) plus ovoid cross-sections
- **Added value**: The exchangeable heads make the installation of top hats and sleeves and ultra-high pressure cutting (UHP) possible
- **Everything in view**: Thanks to the observation camera CutterCam with cleaning function

MicroGator 150 Air – Versatile operation in small diameters

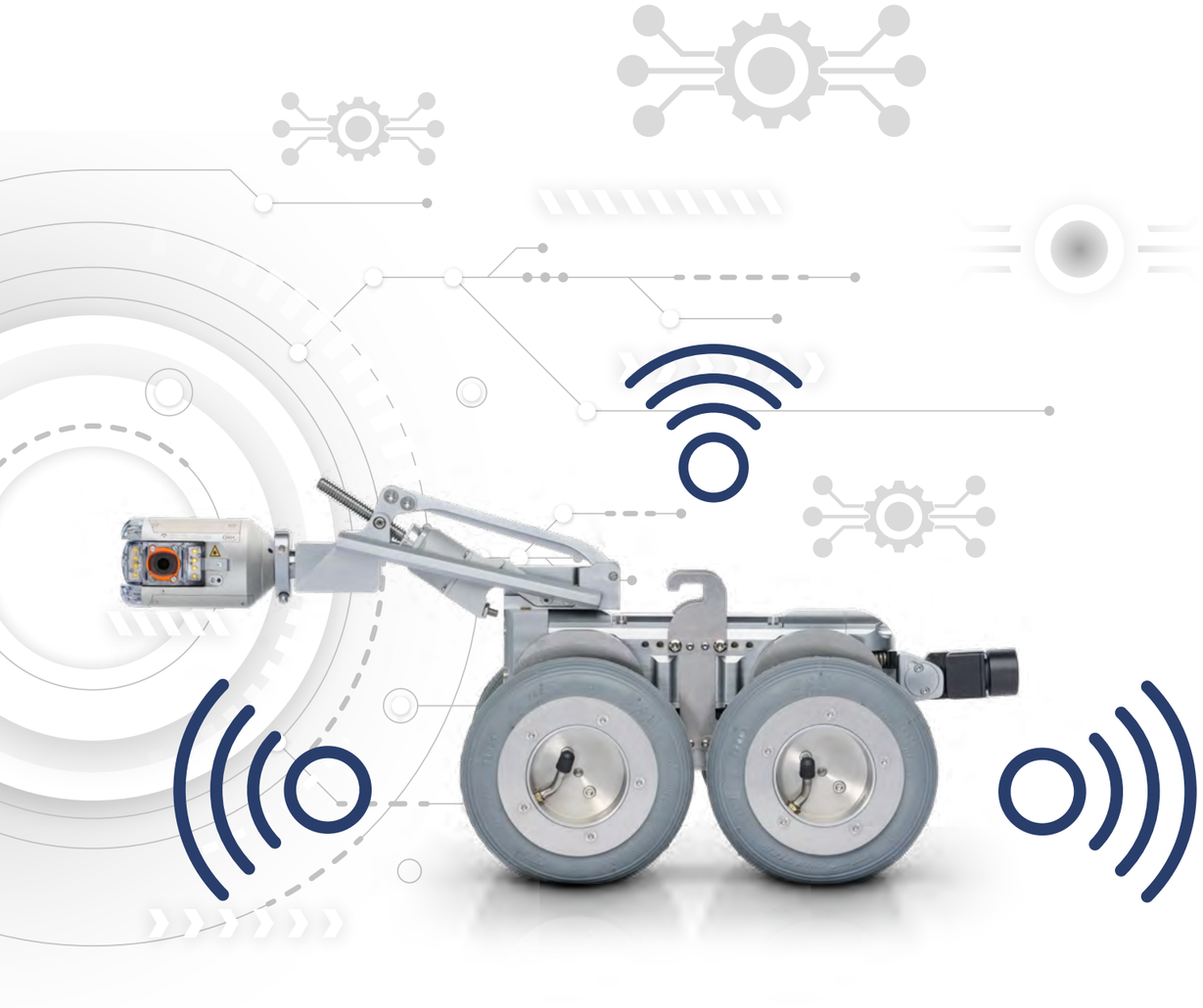
The pneumatic cutter MicroGator 150 Air can be operated just like the bigger MicroGator Air with a compact MainLite system or a BS10X inspection system.

- **Greater deployment range**: Cutting is possible in pipes from as small as DN150 (relined) upwards
- **Effective cutting**: Thanks to precise control of the cutting process
- **Reliable in operation**: Pneumatic and powerful
- **Safe investment**: Flexible and future-proof thanks to modular system design
- **Maximum flexibility**: Fully-fledged inspection from DN125 upwards as the cutter head and the ORION pan camera are exchangeable
- **Variable operation**: In the vehicle and as a mobile rehabilitation system

aiControl – For the intelligent inspection of the future

aiControl is an innovative control concept for the inspection of main sewers and laterals “by autopilot”.

- **(Virtually) autonomous inspection**: Supports negotiation, turning off and panning by means of pan cameras
- **Perfect combination**: Inspection in real time controlled by artificial intelligence (patented)
- **Enhanced data reliability**: Self-learned algorithms ensure high objectivity and reliable capture of defects in large and small diameter pipes
- **Time saving**: Shorter inspection times through forward-looking inspection
- **Safe investment**: Future use with all new IBAK inspection systems (with BS10X and BP3) possible



IBAK ArtIST – For efficient high-quality condition capture with the aid of AI

ArtIST is a web service that helps inspectors to capture condition data rapidly and objectively on the basis of artificial intelligence.

- **Time saving**: Faster analysis and evaluation of inspection recordings
- **Stress relief**: Manual routine tasks during condition capture are reduced
- **Flexible**: Use of the tool by your own inspector or by partner firms for sewer condition data capture or supplementation
- **Plannable**: Permanent accessibility of the ArtIST web service
- **Consistent**: Ensures reproducible results of a consistently high quality
- **Objective**: Standardised condition capture ensures transparency and comparability of the data basis
- **Reliable**: A well-grounded data basis forms the fundament for cost-optimised rehabilitation planning

1. Optical Inspection
You carry out condition data capture as usual during inspection with the camera.

2. Cloud transfer
Then you transfer the condition data to the integrated ArtIST web service via IKAS evolution.

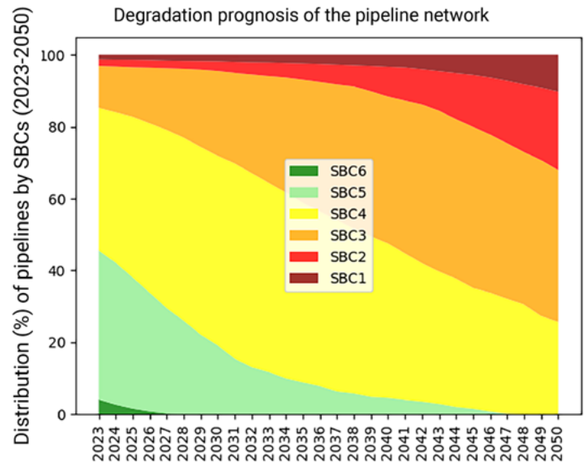
3. Analysis by AI
Defects are recognized by the AI and are classified according to the selected coding system.

4. Verification
After the returned results have been checked, the inspection report is prepared.

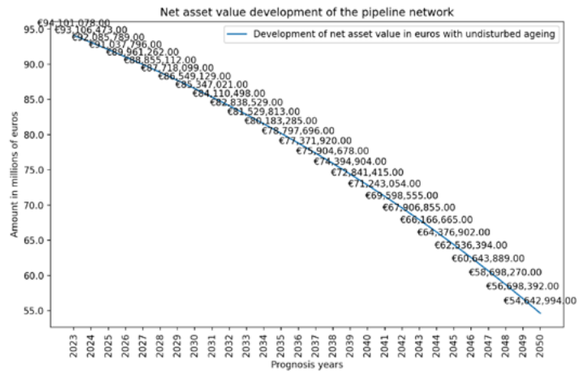
Ageing prognosis of sewer networks by means of artificial intelligence

After the asset values of the sewer sections and networks have been determined, strategically expedient maintenance planning for the coming years can be purposefully performed by means of our ageing prognosis procedure.

- **Time saving**: Ageing prognoses for individual sewer sections or complete networks are generated automatedly in a short space of time, thus permitting fast and efficient selection of the sections to be rehabilitated
- **Visualisation**: Graphics and network plans marked in colour provide rapid information on the ageing of the network over the next few years and identify hotspots
- **Flexibility**: Freely selectable prognosis periods for individual reaches, network sections or complete sewer systems ensure needs-based maintenance planning
- **Cost-effectiveness**: The development of the asset value (€) of sewer sections and networks is calculated and presented graphically
- **Sustainability**: Decisions about rehabilitation are well-grounded on the basis of the prognosis so that an optimum point in time for the rehabilitation of sewer sections can be chosen
- **Transparency**: Documentation of necessary investments in the sewer network for financial decision-makers
- **Reliability**: The prognosis model has been use-validated according to scientific standards



Change in the network with regard to substance classes.



The change in the monetary net asset value of the network over the years if no rehabilitation measures are carried out.

Remote Inspect – For greater flexibility and higher quality

Remote Inspect supports inspections in the field by networking systems or by providing access from the office.

- **Supporting**: Help with condition capture by active consultation of expert advice
- **Functional intervention**: By means of active control of the system from a remote site
- **High quality**: Thanks to efficient use of expert knowledge
- **Flexibility**: Use of the tool to network the vehicles with each other or with an office work station
- **Site-independent**: Remote inspections can be performed from any desired site with a stable internet connection
- **Little impact on the environment**: Because an expert does not need to travel to the site
- **Time-saving**: By means of direct, prompt expert intervention

IKAS evolution WebViewer – The future is networked

The IKAS evolution WebViewer is used to view inspection data in the web browser.

- **Flexibility**: Easy provision of the inspection data on the web
- **Complete workflow**: Upload of all data directly from IKAS evolution
- **Time saving**: Transfer to customers with a click via a web link
- **Rapidly ready for operation**: Flexible management of access rights
- **Uncomplicated use**: No explicit viewer software required

IKAS pressure

The IKAS pressure software is used to analyse the leak tightness of sewer reaches, joints and manholes.

- **Easy handling**: Intuitive operation with the familiar desktop of the IKAS evolution platform
- **Complete working environment**: All features from IKAS evolution are available such as network map, interface modules, data exchange between the office and the vehicle
- **Clear presentation**: Graphical evaluation and display of test time, pressure and temperature
- **Optimum integration**: Pressure tightness test hardware and software are perfectly adapted to each other
- **Complete workflow**: Direct access from the inspection and storage of the data in a database
- **Uncomplicated use**: Data transfer of the leak test data with a free-of-charge viewer


HERMLE
DMG MORI
IBAK
30*1520*3020

Contact persons
Consultation and sales

IBAK

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Fotos: Uwe Reicherter, https://uwe-reicherter.de/ (Produktfotos),
Oliver Maier, www.olivermaier.com(Anwenderfotos)