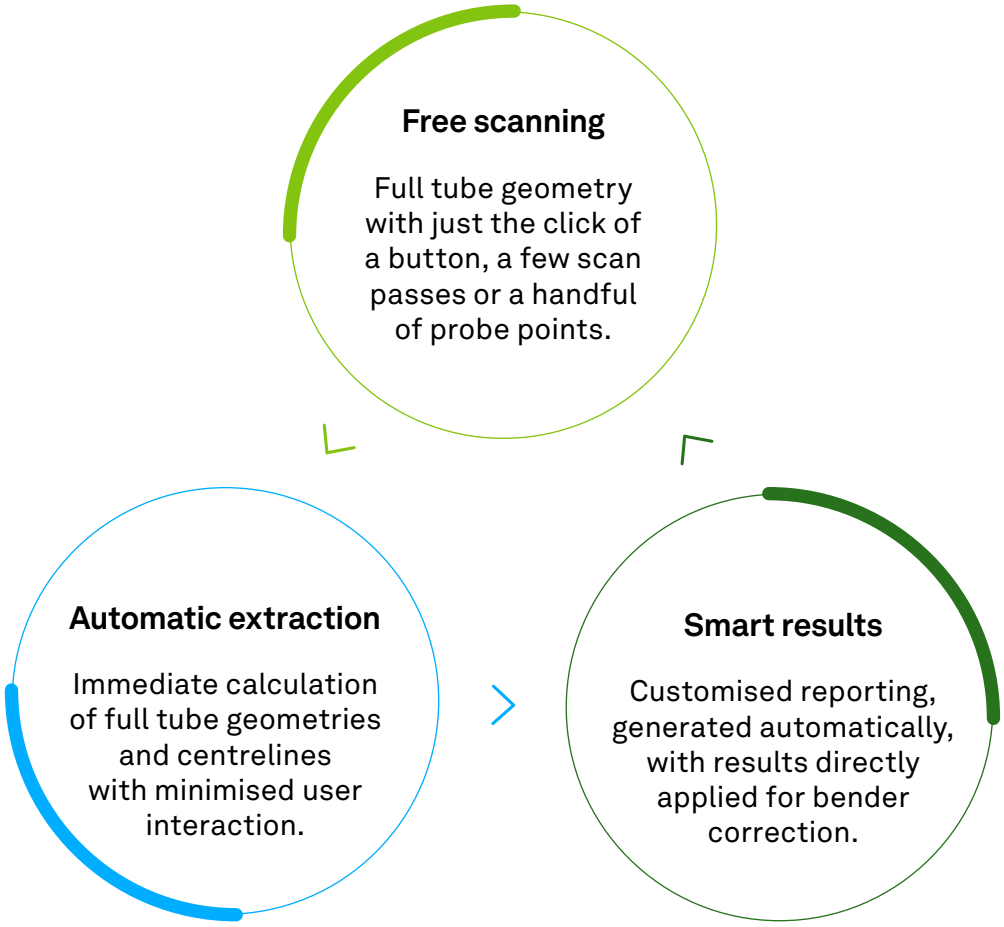
BendXtract technology

The algorithm driving your tube and wire inspection

BendingStudio XT is the world's most advanced software for bending measurement, providing a comprehensive, end-to-end solution. It can quickly and simply calculate the precise geometries of bent tubes and wires to a incredibly high degree of accuracy using camera-based instantaneous measurement, laser scanning, infrared non-contact probing or touch probing.

At the core of BendingStudio XT's high-performance inspection is BendXtract technology – powerful algorithms that quickly collect, analyse, and convert measurement data into actionable, customised reports.





Handheld 3D scanners



Portable measuring arm



Laser tracker



TubeInspect

BendingStudio XT packages

A single hub for complete tube and wire inspection

Easy to learn

- Offers live feedback and guided part positioning to minimise errors and simplify operations
- Intuitive operation workflow based on pictograms, preconfigured templates and inspection plans
- Simple measurement methods enable even beginner operators to use the system fully

Complete measuring solution

- For all materials and geometries of bent parts, including freeform, bend-in-bend and rectangular cross-section measurement
- Supports multiple Hexagon measurement systems
- Reverse engineering in just a few steps
- Integrated merging of long part measurements by simply repositioning

Unmatched repeatability

- Detects and measures drill holes accurately, reducing manual effort and ensuring consistent results
- Seamless ERP integration ensures smooth data transfer, keeping your workflows connected and error-free
- Most repeatable results approved in many GR&R capability studies
- Results not affected by operator influence
- Highest accuracy for centerline – complete geometry is measured
- Independent from the scanning method – points and images

Smart bender correction

- Simplest bending machine connectivity on the market
- Compensates overlength of raw material
- Simulation of correction data with 3D visualisation
- Adjusts for material properties and spring back
- Complete management of machine restrictions
- Interfaces to all major benders



Automation ready

- Minimised user interaction even for manual operation, with measurement jobs allowing batch inspection
- Automated measurement, for example with collaborative robots
- Fully integratable within automatic production cells

Result processing

- Simple OK/NOK decision displayed by thumb up/ down pictogram
- Comprehensive result presentation, including tables and 3D visualisations
- Reports in multiple languages
- Configurable automatic result transfer

Beyond tubes and wires

- No extra measurement required for formed tube ends and other features
- Holders and fittings measured without mechanical tools through unique CAD Adapter functionality or simple touch probing
- Diameter change detection, allows for example protection hose position identification
- Easy measurement of bevel cuts and branched tubes

Deflection compensation

- Most advanced technology for measuring elastic tubes
- Applicable to any flexible tubes and wires, such as long and thin brake lines
- Effectively used by well-known automotive and aerospace companies

BendingStudio XT packages

See the software options you can select

			STANDARD	PREMIUM
Usability	**User interface**	Setting of display levels, multiple languages available for the user interface and reports, user-defined menu configuration, individual colour settings, one-button support, embedded eLearning videos	■	■
	User management	User management, with user-defined configuration of restricted access for operators or extended access for administrators, allowing secure and traceable use	■	■
	Offline seats	Additional BendingStudio XT licence(s) for offline data processing without a connection to measuring systems. The **OFFLINE** module is a local licence assigned to a single seat, while the **FLOATING OFFLINE** module is a network licence for multiple seats	○	○
	Database server	The module **DATABASE SERVER** enables administration of the part database on a separate server or computer, allowing operators at different locations to access it 24/7	○	○
	Automation	The module **AUTOMATION** allows for remote control of BendingStudio software via XML interface or PLC device. It is available only for the integration of TubeInspect in fully automated manaufacturing cells	□	○
Range of parts	**Bent tubes and wires**	Parts with multiple diameters, rotationally symmetric formed tube ends, and proven functions for shallow bends. Deflection correction for elastic tubes caused by gravity, e.g. for long thin tubes or plastic tubes	■	■
	Freeform parts	Measurement of standard freeform parts	■	■
	Rectangular or oval cross-sections	The PROFILE module is used for classic and freeform bent parts with rectangular and oval cross-sections, including calculation of bending data for LRA/PBR parts	○	■
	Busbars and hairpins	Measurement of innovative components, such as busbars and hairpins, used in eMobility. This includes individual settings, such as those for hairpin measurement, with numerous dedicated inspection criteria	○	■
	Branched parts	Measurement of branched tube geometries enables the inspection of both the individual tubes and the assembled part. This function requires at least one bend per individual tube and is only applicable to parts with cylindrical cross-sections	□	■
	Bevel cut, hoses, positions along the tube	Bevel cut tubes, straightening of hose within a tube-hose-combination (only with TubeInspect), positions of diameter changes along the tube	□	■
	Holders, fixtures and drill holes	The **CAD ADAPTER** module determines the position and orientation of mounted holders or attachments, as well as measuring of drill hole positions. The evaluation is done by analysing image or scan data and comparing it with a reference generated from CAD data. It is available for TubeInspect 37 M | 37 XL or Absolute Scanner AS1	□	○
Inspection features	**Alignment methods, inspection criteria and measurement of batches**	The digital gauging function, multiple alignment options, calculation of bending data (LRA/PBR, XYZ, radius), functional dimensions, and multiple options for comparison of nominal to actual (e.g. SAE 2551 standard). It also includes configurable reports, reverse engineering, automatic transfer of results to SPC or statistic packages (e.g. DFQ format). The TubeInspect 37 M | 37 XL offers measurements with a pre-defined and optimally controlled reference position, as well as a measurement job function for batch processing	■	■
	Flexible data import/ export and API integration	Multiple options for data import (e.g. G-Tube (GTT), TubeShaper (TSP), Vector (PRT), CSV, FIF, SV, VDA, XML, $$$) and export part data via file. Other ASCII formats are individually configurable. It is also possible to import multiple files in one batch. A database API is available for secure and programmatic access to part data, such as by customer's ERP system or third party software	■	■
	CAD files	The **CAD WIZARD** module facilitates the import and export of IGES and STEP files, as well as the extraction of bending elements (XYZ/LRA)	○	■
Bending machines	**Bender connection**	Open bender interface with the ability to create file formats for more than 45 brands; additional formats can be configured by the operator. Multiple benders can be connected, supporting uni- and bi-directional communication. NOTE: benders must be enabled to load correction data. Upload should only be performed after confirmation by operator	■	■
	Smart bending correction	Unique functions for smart calculation of correction data, such as overlength compensation or restrictions on bending machines (e.g. clamping jaws). Includes the option to enter correction limitations to avoid collisions on the bender, average correction data based on multiple part measurements, simulation mode, and spring-back calculation	■	■
	Freeform bending correction	Calculation of bending correction data, including bending radii; virtual gauge simulation mode; open bender interface. Note: uploading correction data to the bender must be enabled	□	■

All BendingStudio XT packages include a 12-month SMA
■ included □ not included ○ option

BendingStudio connectivity

See how software integrates with bending machines

BendingStudio XT ensures seamless compatibility with bending machines worldwide, supporting a wide range of file formats and leading machine brands.

By integrating correction data directly into CNC bending programs, it simplifies workflows, improves throughput, and reduces production downtime, making it an essential tool for your manufacturing processes.

Database API

A database API is available for secure and programmatic access to part data, such as by customer's ERP system or third party software

Data import formats

- G-Tube (GTT)
- TubeShaper (TSP)
- DOCS (DS)
- Vector (PRT)
- CSV
- FIF
- SV
- VDA
- XML
- $$$
- Other ASCII text formats individually configurable; possible to import multiple files in one batch

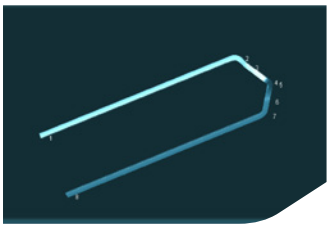
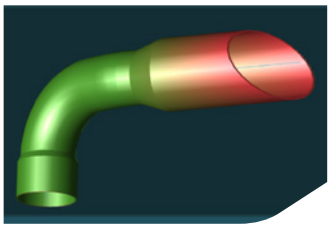
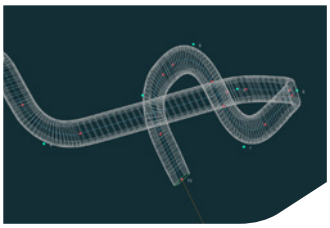
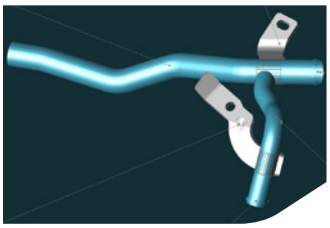
Data export formats

- CSV
- FIF
- SV
- Other ASCII text formats individually configurable
- DFQ (qs-STAT)

Bending machine connection

BendingStudio XT offers the simplest bending machine integration on the market, with built-in interfaces for over 45 leading bender brands worldwide

This seamless connectivity ensures fast setup, real-time data transfer, and precise bending corrections for a more efficient production process

Hexagon is the global leader in measurement technologies. We provide the confidence that vital industries rely on to build, navigate, and innovate. From microns to Mars, our solutions ensure productivity, quality, safety, and sustainability in everything from manufacturing and construction to mining and autonomous systems.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 24,800 employees in 50 countries and net sales of approximately 5.4bn EUR.

Learn more at hexagon.com

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