

We have been designing and developing a full range of products of Non Destructive Testing by Eddy Current (EC) and Ultrasonic (UT) methods for nearly 30 years : high performance instruments, ultrasonic and eddy current rotating heads, EC probes and UT sensors, as well as accessories.

Thanks to our know-how and our experience, we offer inspection systems from conception to realization in many fields of activity : Metal, Steel, Automotive, Aeronautics and Nuclear.

Our main objective is to develop turnkey solutions to improve productivity, profitability, efficiency and safety of our customers.

With our products and our remote support service, we offer quality and productivity solutions worldwide for all types of applications.

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Eddy Current inspection



Our systems

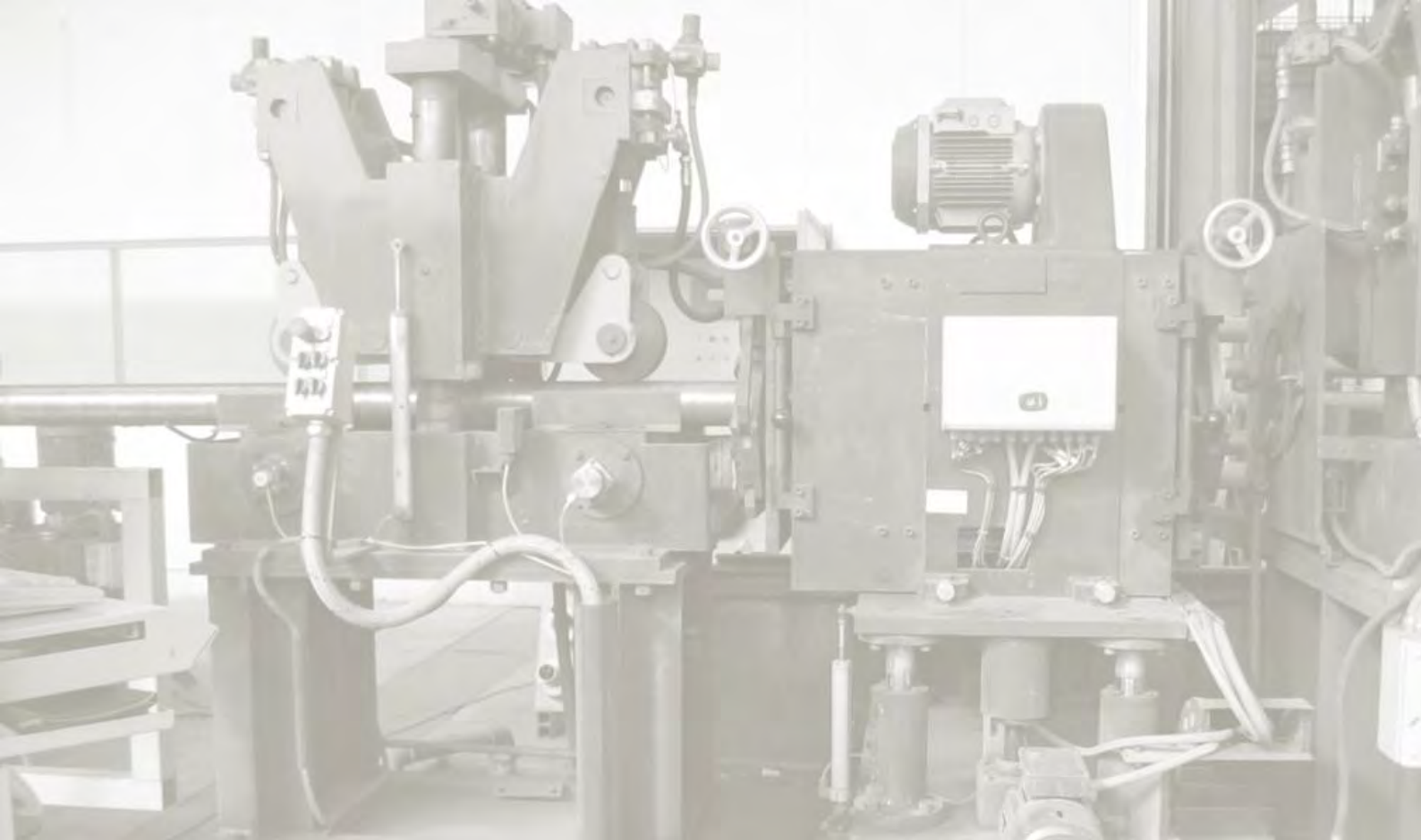
- ROTATING HEADS **ROTOETSCAN**
- ROTATING SYSTEMS
- SECTORIAL MAGNETIZING UNITS
- MAGNETIZING UNITS



Rotating heads

RotoETscan





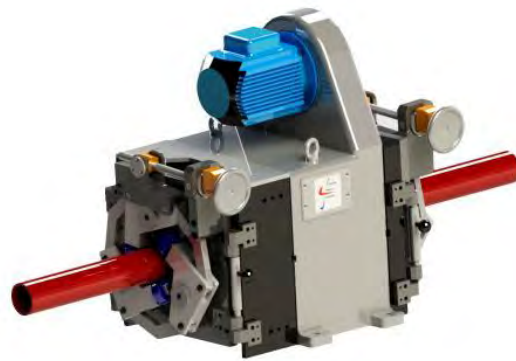
O ur range



- ROTOETSCAN VC
- ROTOETSCAN TR20
- ROTOETSCAN TR 35
- ROTOETSCAN TR 65
- ROTOETSCAN TR 130
- ROTOETSCAN TR 160
- ROTOETSCAN TR 220

Overview :

The rotating head **RotoETscan** detects the presence of longitudinal surface or sub surface defects at high speed. It is often installed directly on the production line. It is generally dedicated to the control of long products such as tubes, bars and wires, made of ferrous and non-ferrous material. It can also be used for inspection of small parts (billets).



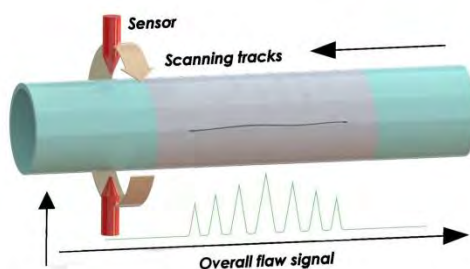
Main advantages :

- ✓ High inspection : up to 3 m/s
- ✓ Transmission of the signal, contactless
- ✓ Automatic offset (GAP)
- ✓ Quick and easy change of probes (without special tool)
- ✓ Very fast inspection diameter change
- ✓ Robust construction monobloc
- ✓ Minimum defect depth detected : from 50µm
- ✓ No contact with the product
- ✓ Temperature sensor (on transformer) to avoid damage due to overheating



Range of products

	Special TR VC	TR20	TR35	TR65	TR130	TR160	TR220
Reference	5100VC	5100SP	5100	5200	5300	5350	5400
Product diameter (mm)	0.8 à 10	4 à 25	5 à 35	6 à 65	14 à 130	20 to 160	40 à 220
Rotation speed standard version (rpm)	9000 Option :18000	8000 Option :18000	7000 Option : 9000	6000	3000	2500	2000
Rotation speed centrifugal closure plate (rpm)		4000			2000	1600	1000



Operating principle :

The product, in translation, passes through the rotating head. Two or 4 EC probes inside the head are rotated around the product. The inspection is carried out with a helicoidal step. The results are displayed on the instrument screen in a timebase and/or a lissajou.

Standard equipment :

- ✓ Plate adjustable in diameter, 4 probes
- ✓ Input and output centering devices



Other configurations available :

- ✓ Adjustable plate with 2 probes only
- ✓ Cassette for fixed diameter (economical solution)
- ✓ Plate with centrifugal closure (automatic closure on the product by centrifugal force)
- ✓ Digital display of the working diameter by laser measurement

Associated eddy current instrument : Zet@Master

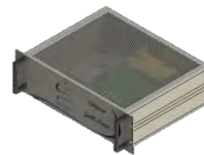
In order to facilitate the integration of our instrument, **Zet@Master** is available in different versions : **standard with touchscreen, blind or rackable.**



Standard

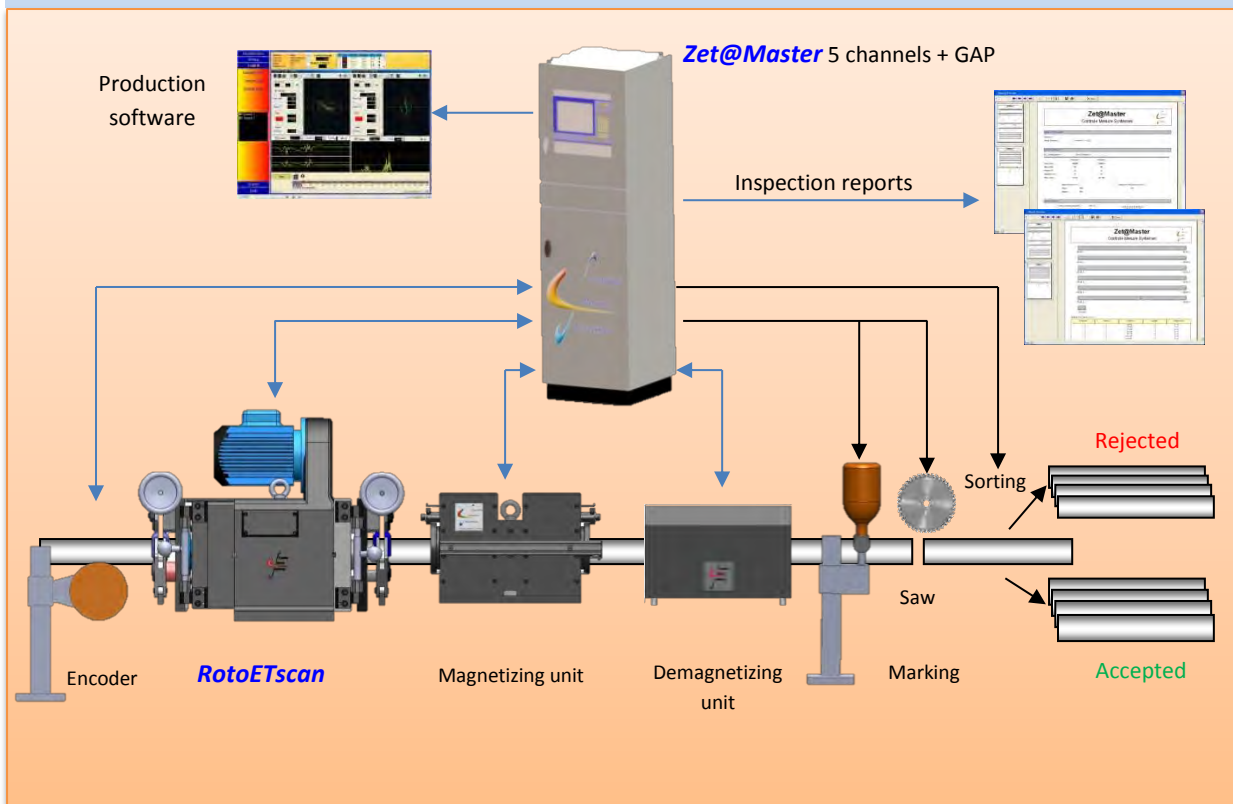


Blind



Rackable

Configuration example : Detection of longitudinal and transversal defects on carbon steel tubes





Rotating systems





O ur range



- **SYSTEM ST 5500**
- **SYSTEM ST 5800**
- **SYSTEM ST 5810**

Overview:

The **rotating systems** are designed to put in rotation EC probes to detect internal and / or external defects. The probes connected to this kind of system are generally specifically designed and adapted to the inspected product.



Main advantages:

- ✓ Robust, modular and evolutive systems
- ✓ High speeds rotation
- ✓ Transmission of the EC signal, contactless
- ✓ Possible integration for on-line inspection (system 5800 and 5810).

Range of products

	Rotating system	Rotating gun	Rotating system ST
Reference	5800	5500	5810
Applications	Inspection of piston, bar, tube, rail	Inspection of bore, thread, tube	Inspection of cylindrical part, rail

- ✓ **5500** : Rotating gun for small part inspection : checking of bore, thread. The addition of an axial encoder allows locating a defect in depth and its angular position. Manual or industrial version.
- ✓ **5800** : Rotating system 4 or 8 channels, manage by an EC equipment, **Zet@master** or **Zet@Premium** regarding the number of required channels. It is dedicate especially to internal tube control, piston inspection (bore and combustion chamber). It can be coupled to rotating discs for surface inspection on tubes and rectangular bars.
- ✓ **5810** : Rotating system dedicated to internal and/or external cylindrical parts.



Operating principle :

The rotating system drives in rotation the EC probe on the surface or inside the product to inspect. These systems provide power and retrieval contactless probes inspection.

Standard equipments :

➤ System 5500

- ✓ Connection to special EC probes, designed to the geometry of the part
- ✓ Manual (with handle) or industrial version
- ✓ Axial encoder

➤ System 5800

- ✓ 4 or 8 channels
- ✓ Connection to special EC probes, designed to the geometry of the part
- ✓ Adaptation of rotating disks
- ✓ Possibility to integrate the system on production line

➤ System 5810

- ✓ Connection to special EC probes, designed to the geometry of the part
- ✓ Mounting in a trolley for rail inspection

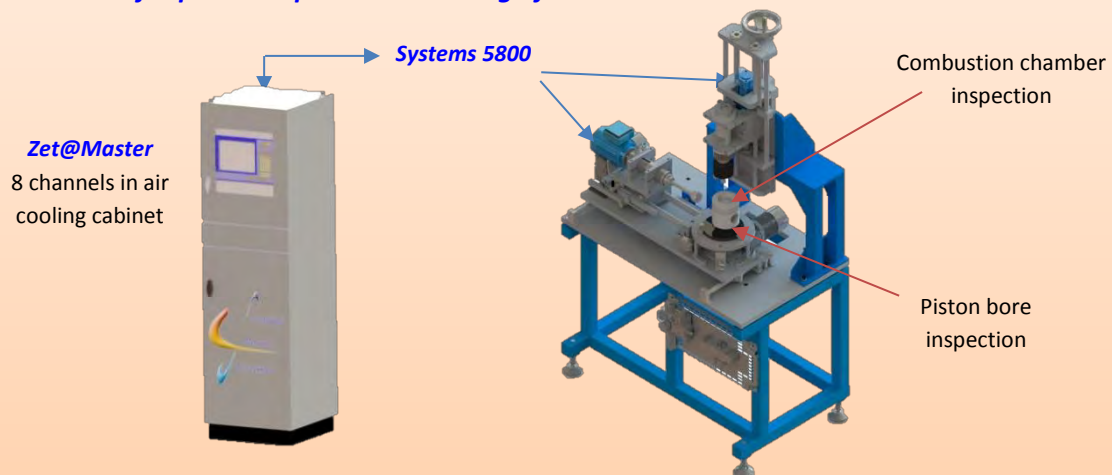
Associated eddy current instruments : Zet@Master, Zet@Premium

In order to facilitate the integration, our instruments are available in different versions : **standard, blind and rackable.**

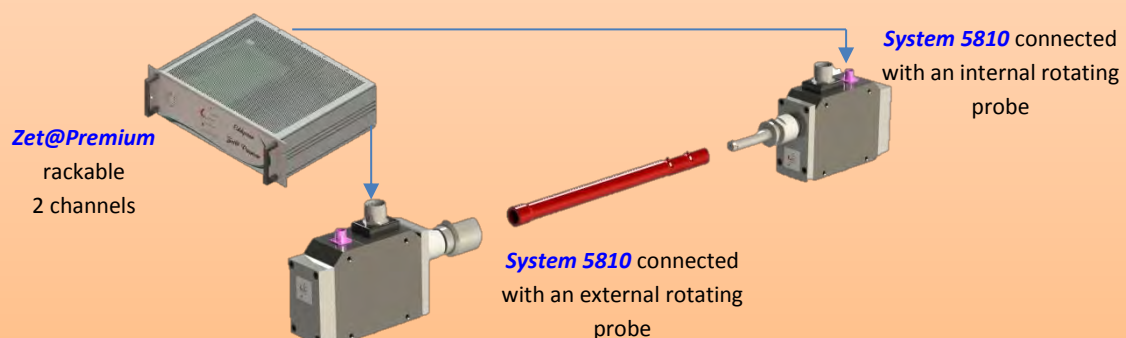


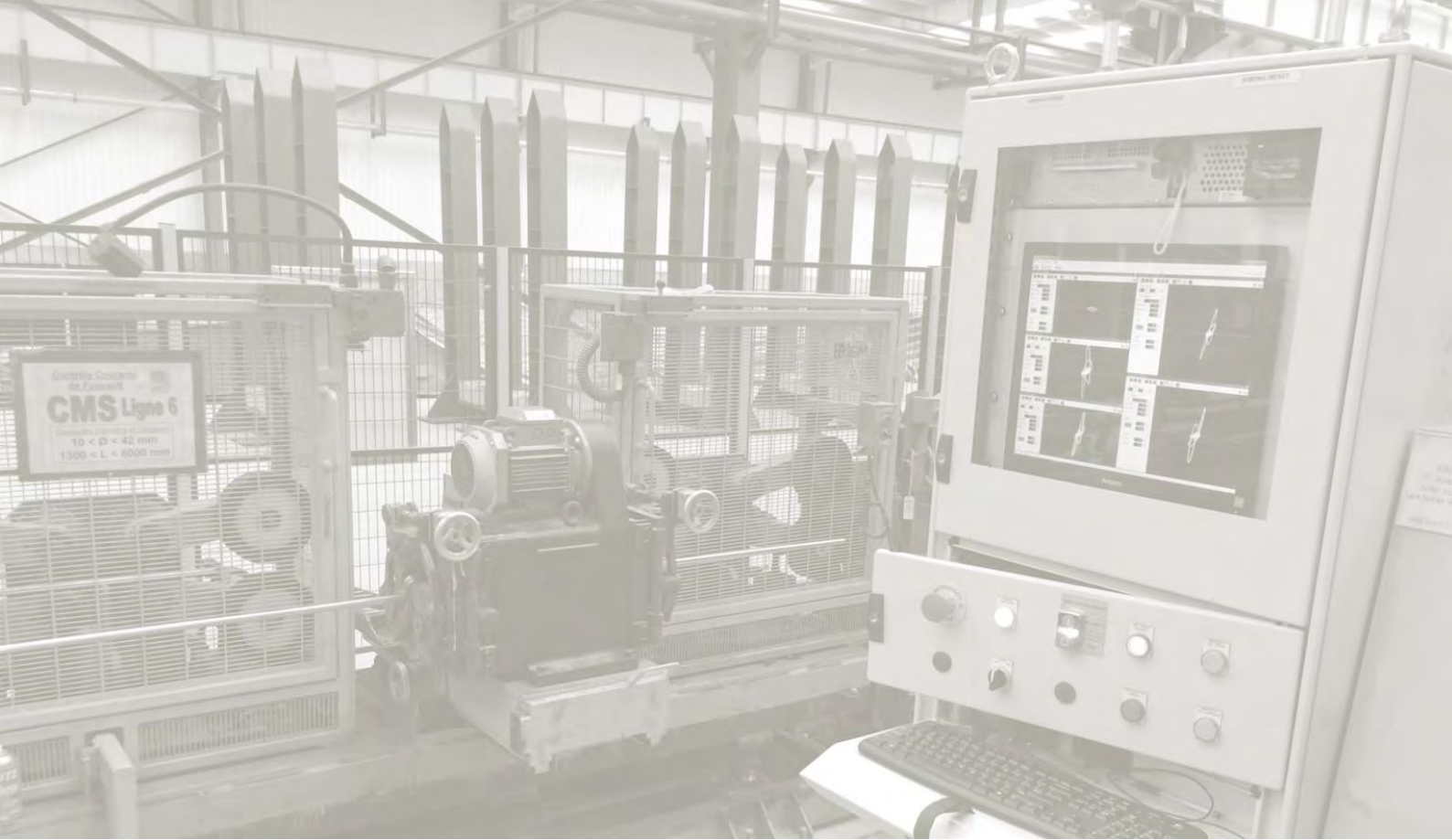
Configuration examples :

Control bench for piston inspection : checking of bore and combustion chamber

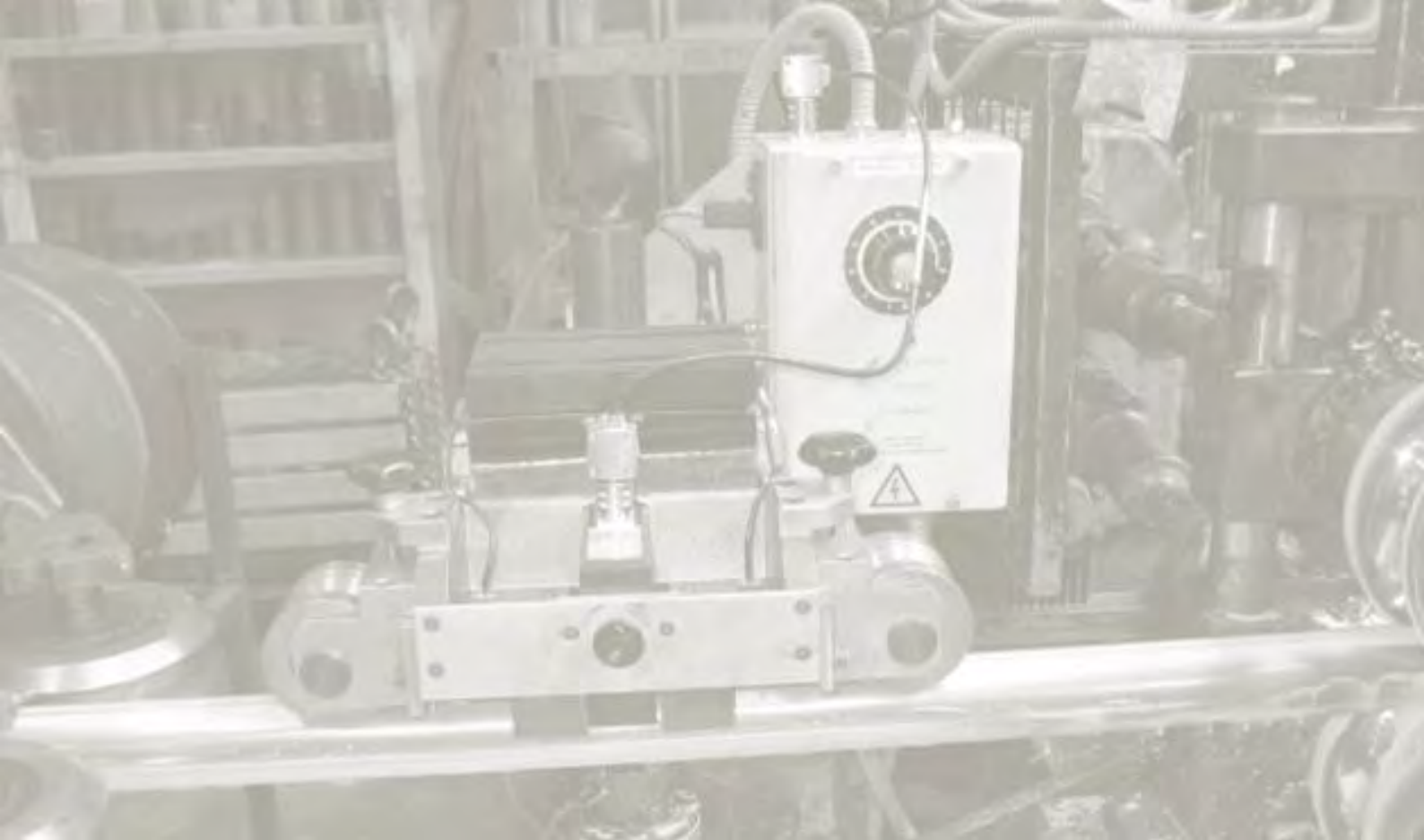


Internal and/or external inspection of cylindrical parts





Sectorial magnetizing units



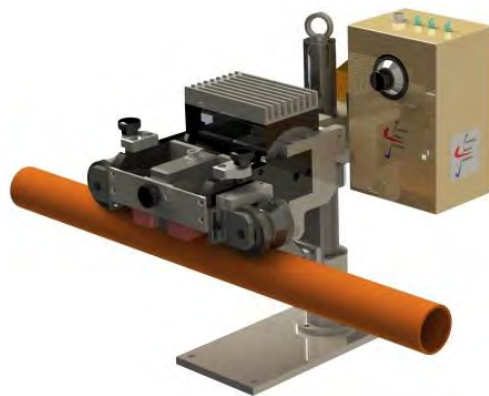
O ur range



- **SIZE 1**
- **SIZE 2**

Overview:

The **sectorial magnetizing unit** allows to inspect a precise area, for example the welding of tubes. This type of inspection make it possible to detect the presence of small defects (holes and cracks) or to identify an open or interrupted weld. It also detect long defects essentially on welded rolled tubes, ferrous or non ferrous.



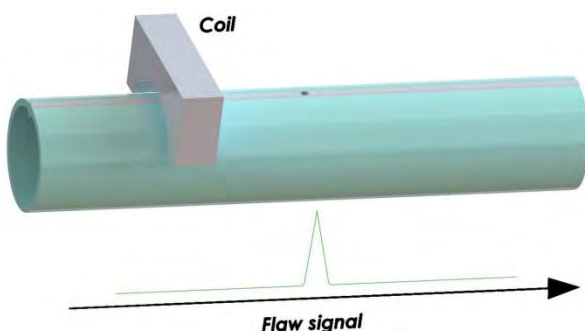
Main advantages :

- ✓ Easy integration into existing lines
- ✓ High sensibility
- ✓ High inspection speed
- ✓ Low maintenance
- ✓ Robust construction
- ✓ Adjustable field strength



Range of products

	Sectorial magnetizing unit T1	Sectorial magnetizing unit T2
Reference	6200	6250
Range of ϕ (mm)	5-300	15-300
Product scroll speed	Unlimited	



Operating principle :

The welded rolled tube passes under the sectorial magnetizing unit integrating a sectorial probe (differential and / or absolute), that follow the surface of the tube. The presence of a defect varies the impedance of the coil and triggers a signal in the inspection screen.

Standard equipment :

- ✓ Pneumatic jack for high diameters
- ✓ Range of sectorial probes, adapted to the weld area

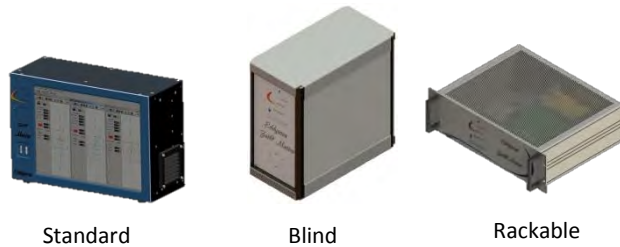
Other configurations available :

- ✓ Sectorial coil differential and absolute for long defects detection
- ✓ Demagnetizing unit for magnetic products

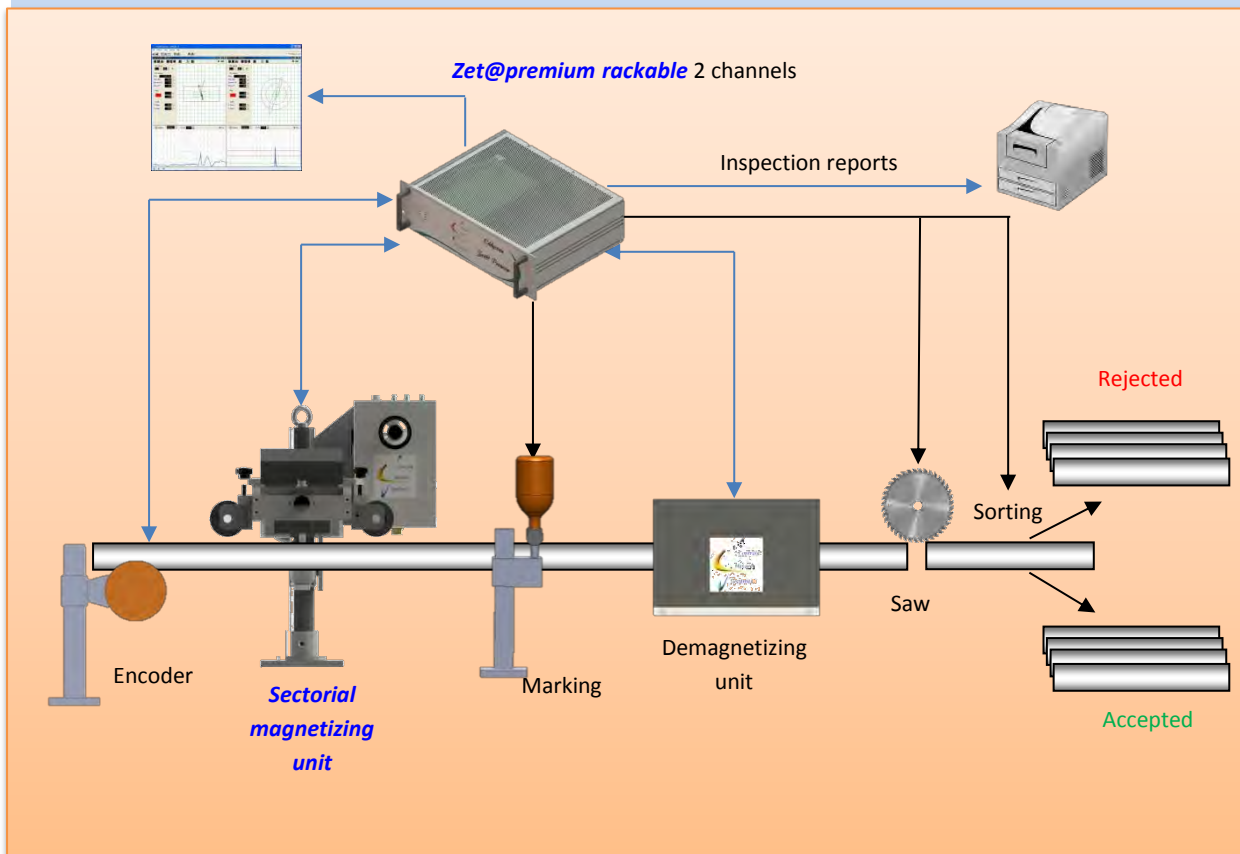
Associated eddy current instruments : Zet@Micro, Zet@Premium

In order to facilitate the integration, our instruments are available in different versions : **standard, blind and rackable.**

Zet@micro 1 channel, or **Zet@premium** 2 channels for long defects detection.



Configuration example: Inspection of welded area on welded rolled tubes with detection of long defects.





Magnetizing units





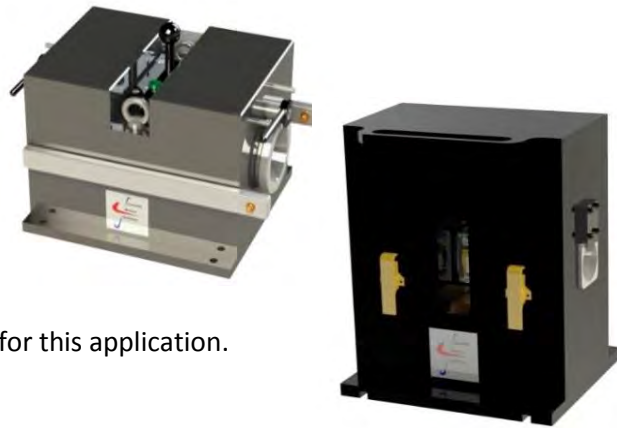
O ur range



- **MONOBLOC VERSION**
- **OPENING VERSION**

Overview:

The inspection by magnetic saturation and encircling coils allows the detection on ferromagnetic materials of surface and sub surface punctual and transverse defects. This inspection is dedicated to the control of long products such as tubes, bars and wires. The opening version allows the inspection of wires from 5 to 55 mm diameter, and avoids cutting the product by opening coils especially designed for this application.



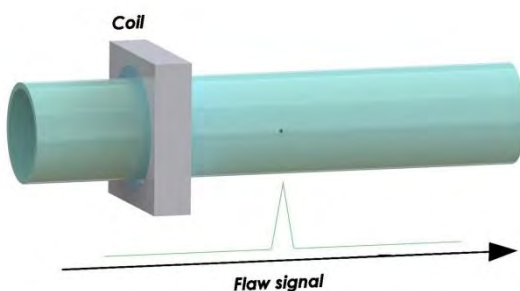
Main advantages :

- ✓ Fast and easy change of guides and inserts to adjust the diameter of the inspection product
- ✓ 7 sizes available, covering diameters from 1 to 230 mm
- ✓ Unlimited inspection speed
- ✓ Can be associated to a large range of CMS accessories
- ✓ Low maintenance
- ✓ Robust construction
- ✓ Adjustable field strength



Range of products

	Mag 1100	Mag 1200	Mag T2	Mag T3	Mag T4	Mag T5	Mag T6
Monobloc version	M1100	M1200	M1200M44	M1300M100	M1400	M1500M180	M1600M230
Range of ϕ (mm)	1-18	1-55	1-44	1-100	10-140	5-180	50-230
Opening version	M2100	M2100					
Range of ϕ (mm)	5-25	5-55					



Operating principle :

The product, in translation, passes inside the magnetizing unit. The EC probe is located at its center. The presence of a defect varies the impedance of the coil. The results are displayed on the instrument screen, in a timebase and/or a lissajou.

Standard equipment :

- ✓ Monobloc magnetizing unit
- ✓ Guide sleeves adapted to the magnetizing unit
- ✓ Set of inserts



Other configurations available :

- ✓ Set of additional guide sleeves
- ✓ Set of additional inserts
- ✓ Set of probes adaptor



Associated eddy current instruments: Zet@Premium ou Zet@Micro

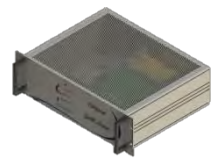
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Standard

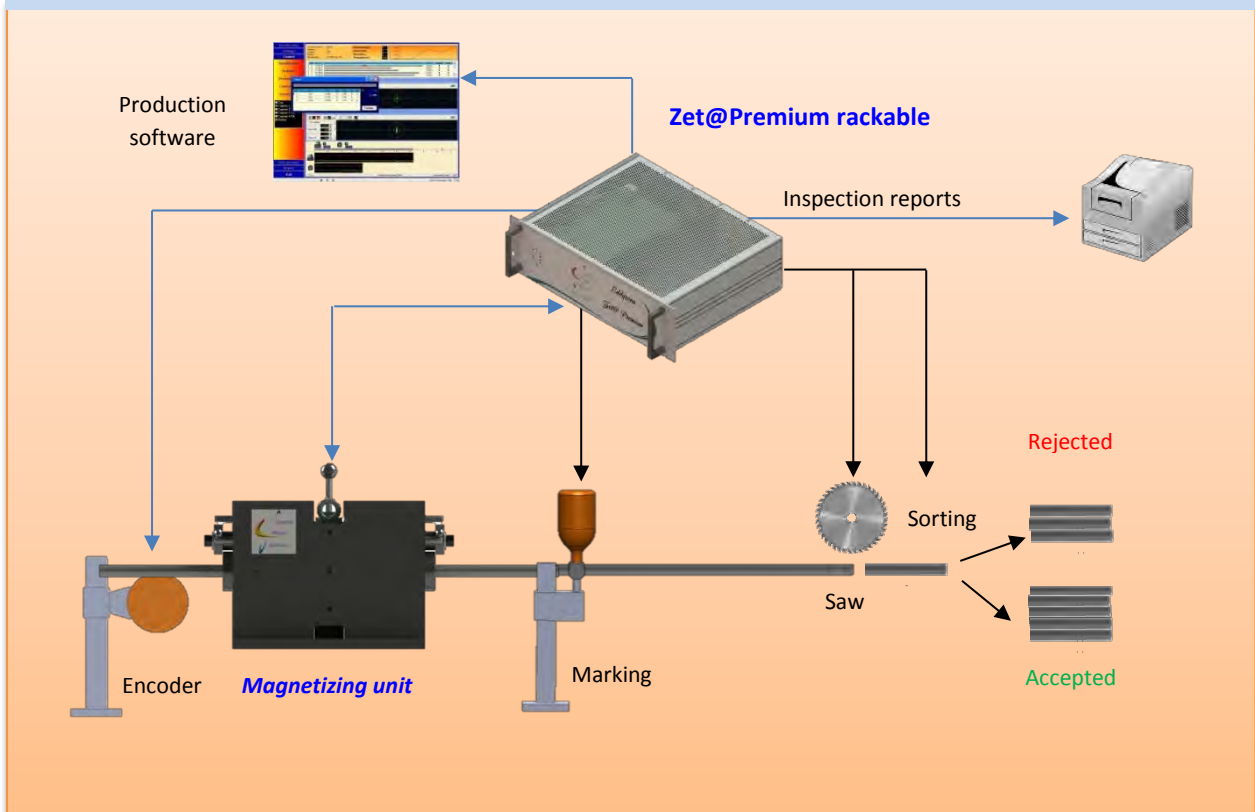


Blind



Rackable

Configuration example : Detection of transversal defects on precision tubes





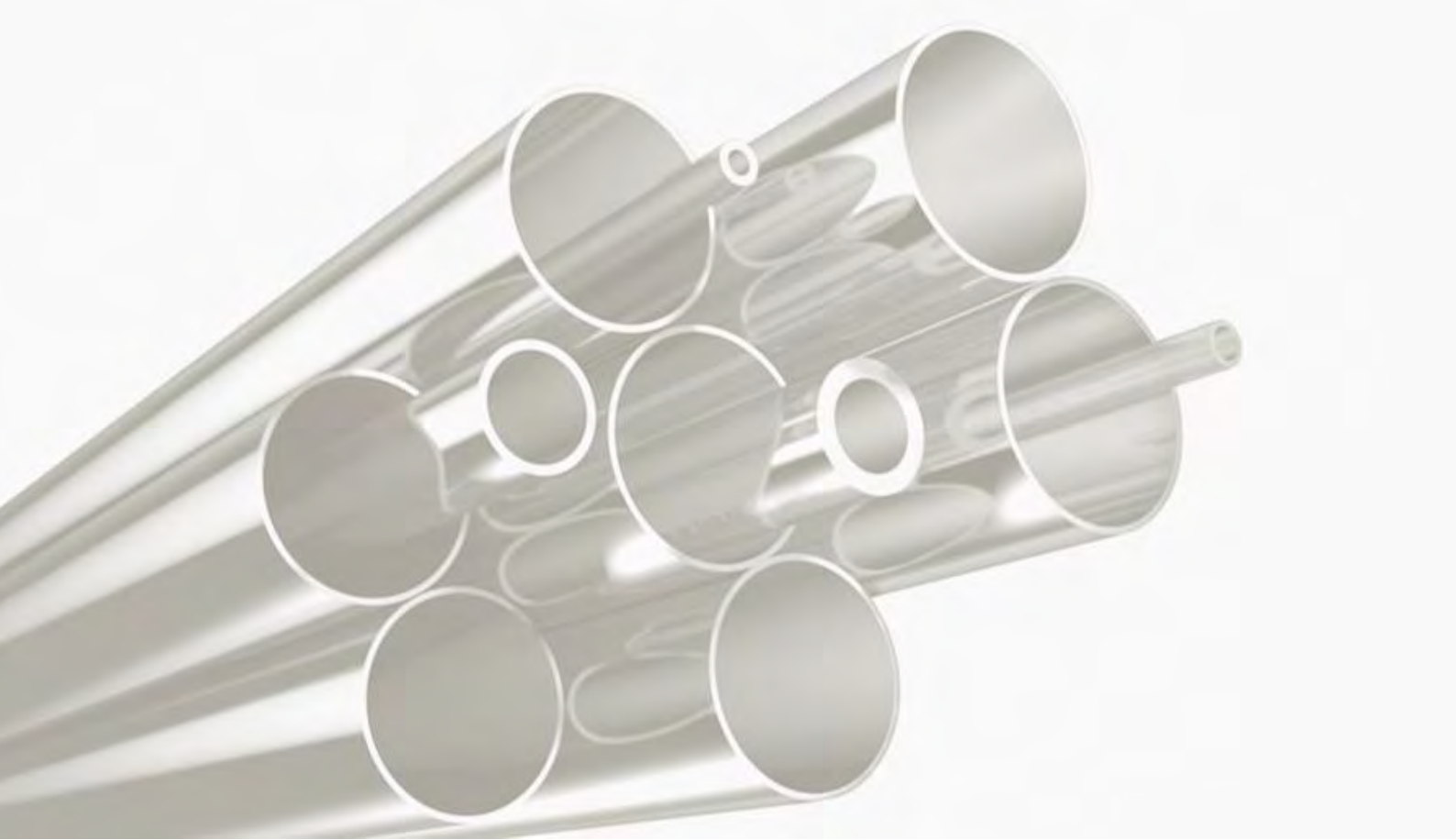
Eddy current inspection



OUR PROBES



- **ENCIRCLING PROBES**
- **INTERNAL PROBES**
- **PENCIL PROBES**
- **SECTORIAL PROBES**
- **ROTATING PROBES**
- **ARRAY PROBES**
- **SPECIAL PROBES**



Encircling probes

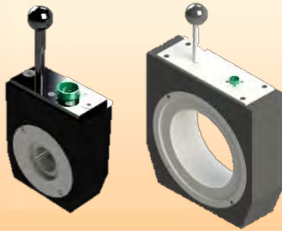


Applications :

- ✓ External inspection of tubes, bars and wires, ferrous and non-ferrous
- ✓ Hot rolling inspection
- ✓ Sorting of shade of conductive materials

Specifications :

- ✓ Detection of punctual defects such as : cracks, creeks, inclusions...
- ✓ 7 different sizes to inspect products from 0.1 to 230 mm diameter
- ✓ contactless



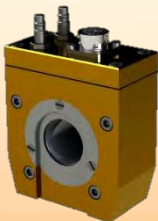
Standard encircling probe

For inspection of tubes, bars, wires



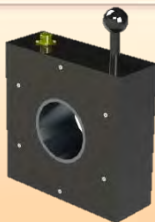
Opening probe

For inspection of wires (avoid cutting the product)



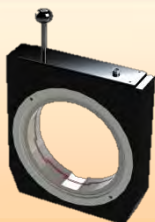
Hot inspection probe

For inspection of hot rolling



Sorting probe

For material sorting and thickness coating



Array probe

Allow to increase the detection threshold on tubes or bars of great diameter



Internal probes

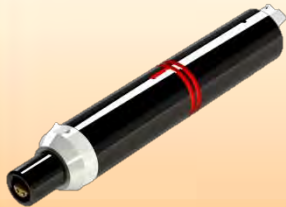


Applications :

- ✓ Internal inspection of ferromagnetic tubes, bended or not
- ✓ Heat exchanger tubes inspection
- ✓ Inspection of carbon steel tubes

Specifications :

- ✓ Detection of internal defects such as : erosion, wear, cracks...
- ✓ Different sizes to inspect products from 5 to 65 mm diameter



Standard internal probes

For inspection of internal non-ferrous and stainless steel tubes



Auto centered internal probe

Auto centered inside the tube



Flexible internal probe

For inspection of bended tubes



Remote field probe

For inspection of heat exchanger tubes and carbon steel tubes



Pencil probes



Applications :

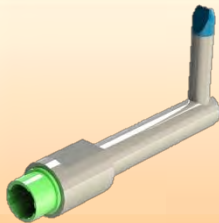
- ✓ Material sorting, hardness inspection on automotive parts
- ✓ Material sorting, hardness inspection on aeronautic parts
- ✓ Inspection of the weld area on welded rolled tubes

Specifications :

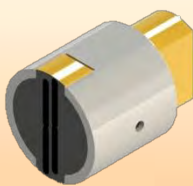
- ✓ Detection of surface defects such as : cracks, creeks...
- ✓ Detection of defects on the weld area such as : holes, cracks, open or interrupted weld



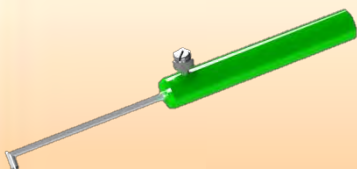
Straight pencil probe



Bended pencil probe



Paintbrush probe



Punctual pencil probe



Sectorial probes



Applications :

- ✓ Inspection of the weld area on welded rolled tubes

Specifications :

- ✓ Detection of defects in the weld area such as :
holes, cracks, open or interrupted weld



Standard probe

Integrated in sectorial magnetizing unit



Special probe



Rotating probes

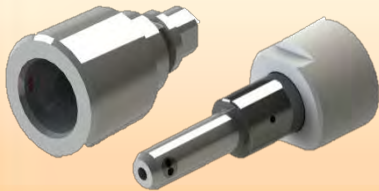


Applications :

- ✓ Inspection of ends tubes
- ✓ Piston inspection (combustion chamber and bore)
- ✓ Inspection of bore, thread, tapping

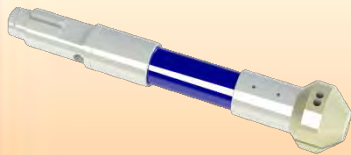
Specifications :

- ✓ Detection of internal and external defects on ends tubes
- ✓ Detection of longitudinal defects (piston boring)



Rotating probe ST300

For inspection of internal and external ends tubes



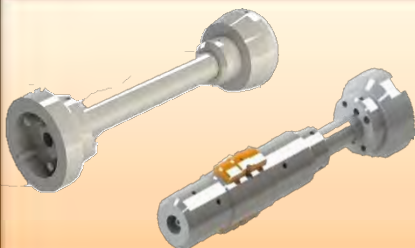
Rotating probe ST2000

For inspection of thread



Rotating probe ST2100

For inspection of tapping



Rotating probe ST2000

For inspection of bore, fixed or adjustable to different diameters



Array probes

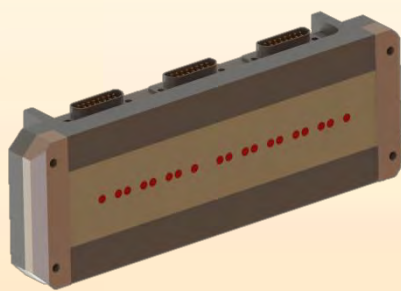


Applications :

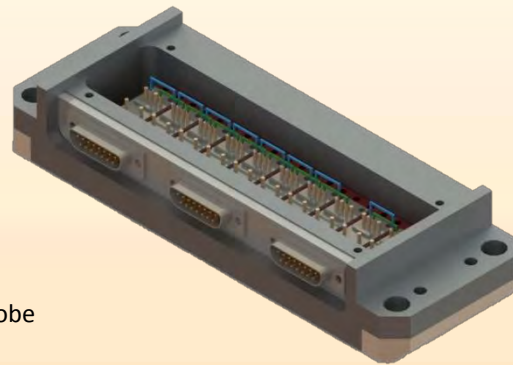
- ✓ Inspection of tubes / bars in rotation and translation
- ✓ Inspection of complexe parts

Specifications :

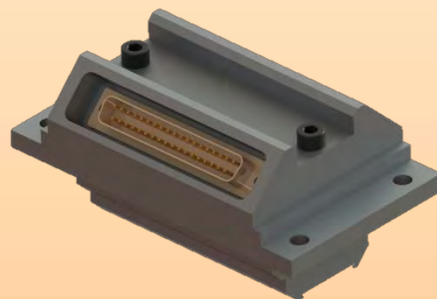
- ✓ Type of defects detected : holes, longitudinal notches, hard point
- ✓ Large area inspection in one pass
- ✓ Troubleshooting with any type of orientation
- ✓ High detection sensitivity

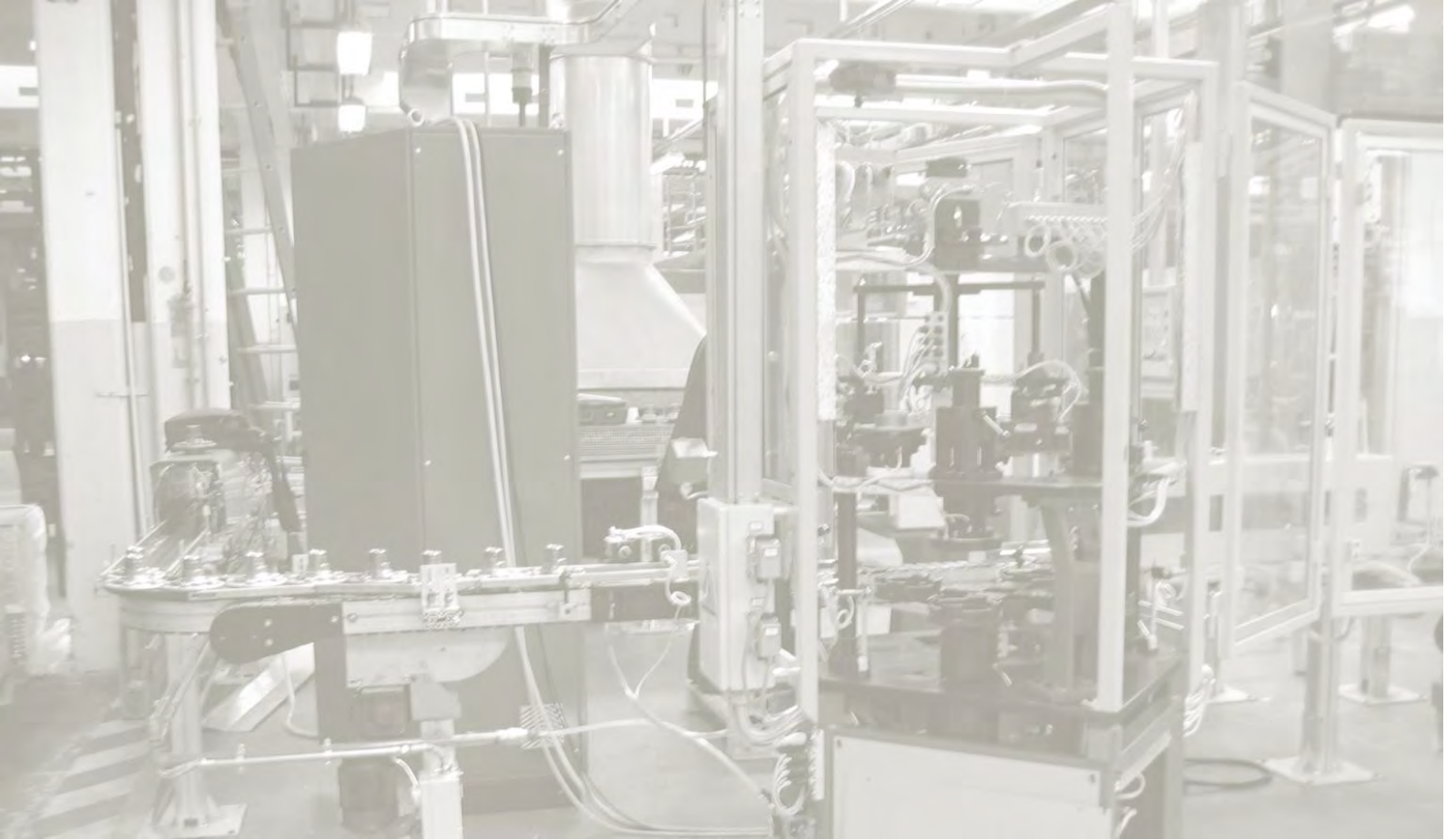


Array probe



Array probe





Special probes



Applications :

- ✓ All type of applications
- ✓ Inspection of complexe parts

Specifications

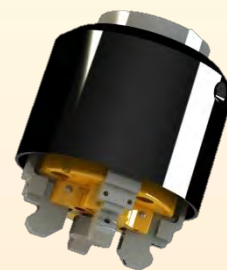
- ✓ Designed and adapted to the product profile
- ✓ A single probe geometrically adapted to the product profile
- ✓ Several probes arranged to follow the product profile



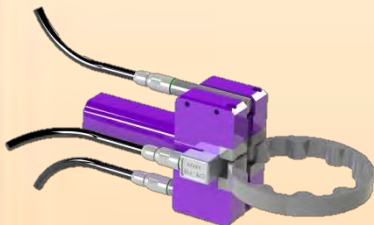
Probe holder for inspection of fuse wheel profile



Probe for gear wheel inspection



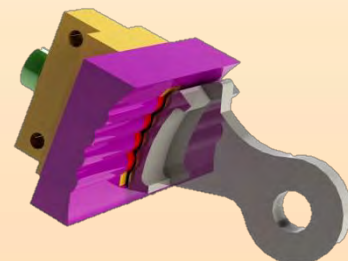
Probe holder with 4 probes for combustion chamber inspection



Probe holder with 3 probes for gear clutch inspection



Probe holder for cracks inspection on multi shape



Probe for cogged inspection



Probe for cogged gear wheel inspection



Inspection of cylindrical parts



Eddy current inspection



OUR INSTRUMENTS

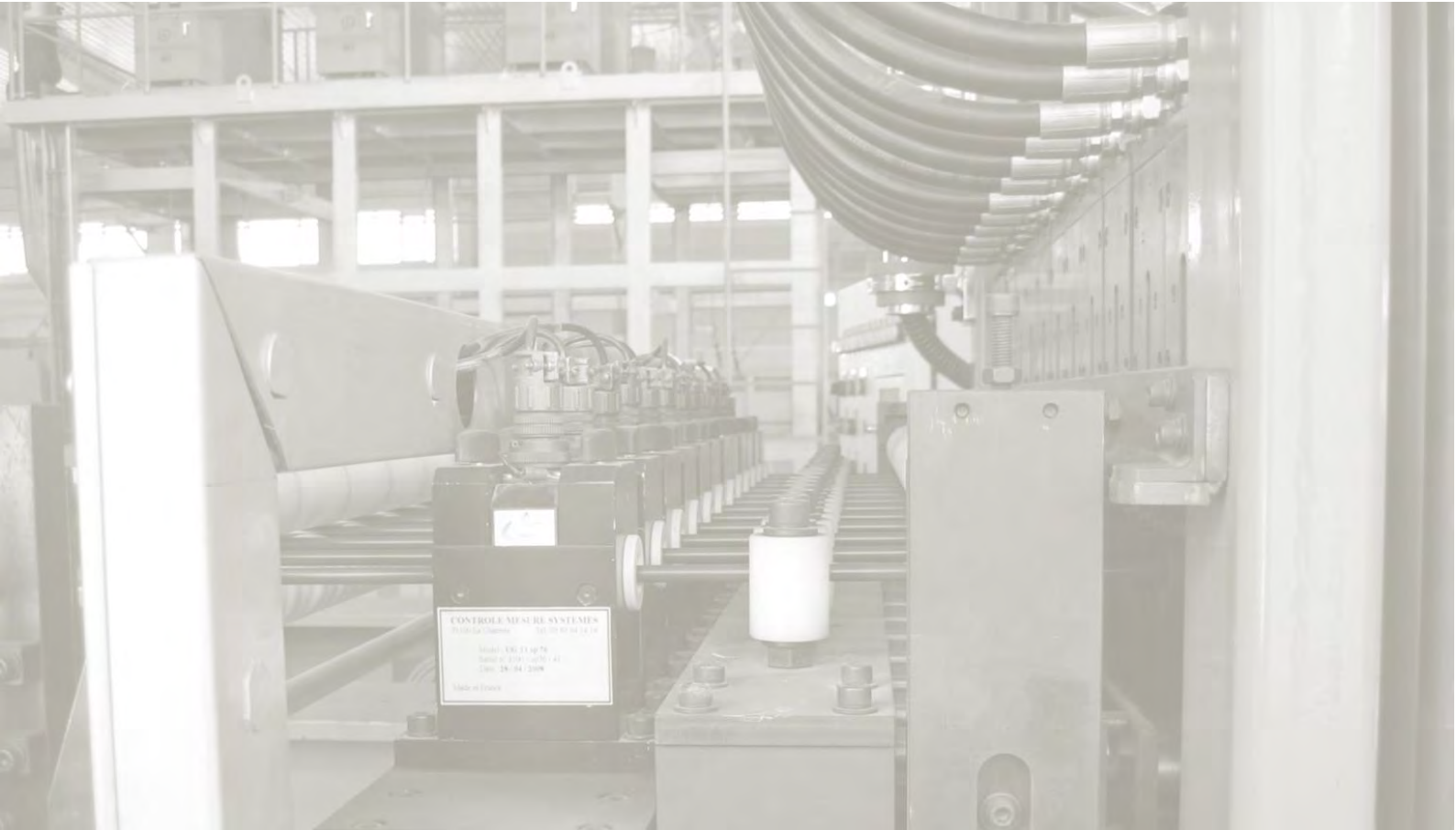


- **Zet@Micro**
- **Zet@Premium**
- **Zet@Master**



Zet@Micro





O ur range



- DEFECTS DETECTION
- MATERIAL SORTING
- PROFILOMETRY

Overview:


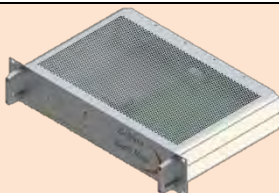
Zet@Micro blind is the most common and economical Eddy Current instrument of the **Zet@** range. Thanks to its USB 2.0 port, it can be connected directly to a computer. It is suitable for the detection of defects and usually used for material sorting.



Main advantages :

- ✓ Economical and easy to use
- ✓ Important inspection speed
- ✓ Suitable for the most defects detection and material sorting applications
- ✓ Universal system meeting the requirements of international normatives (ASTM, API, DIN, SEP...)
- ✓ Simple I/O interface for communicate with the production line

Range of products

	Blind	Rackable
		
Dimensions (mm)	262x106x231 (HxWxD)	483x325x88 (HxWxD)
Weight (Kg)	3.2	3.5
Power	100-240VAC – 50-60 Hz	
T° /Humidity	0-45°C max – 85% max	
Hardware required	Windows® XP, 7, 8 or 10 -32/64 bits - processor 1 GHz, 512 Mb RAM	
Nb of channels	1 differential channel, 2 nd channel optional	

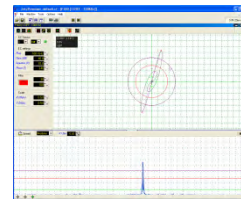


Operating principle :

The instrument is drive by configuration software allowing to define EC parameters adapted to the application, such as measure settings and alarm thresholds for defect detection or sorting thresholds for sorting version. The signal analysis is performed entirely by the electronics of the instrument, which guarantees a perfect reactivity and a real time operation, independently of the PC. The opto-isolated Inputs / Outputs of the instrument allow quick and easy interfacing with the production line.

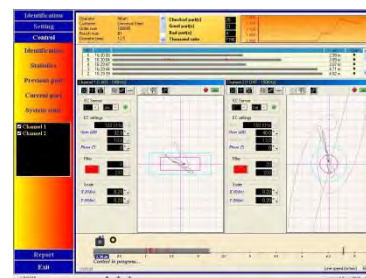
Standard equipment :

- ✓ Single channel equipment
- ✓ EC setting software



Other configurations available :

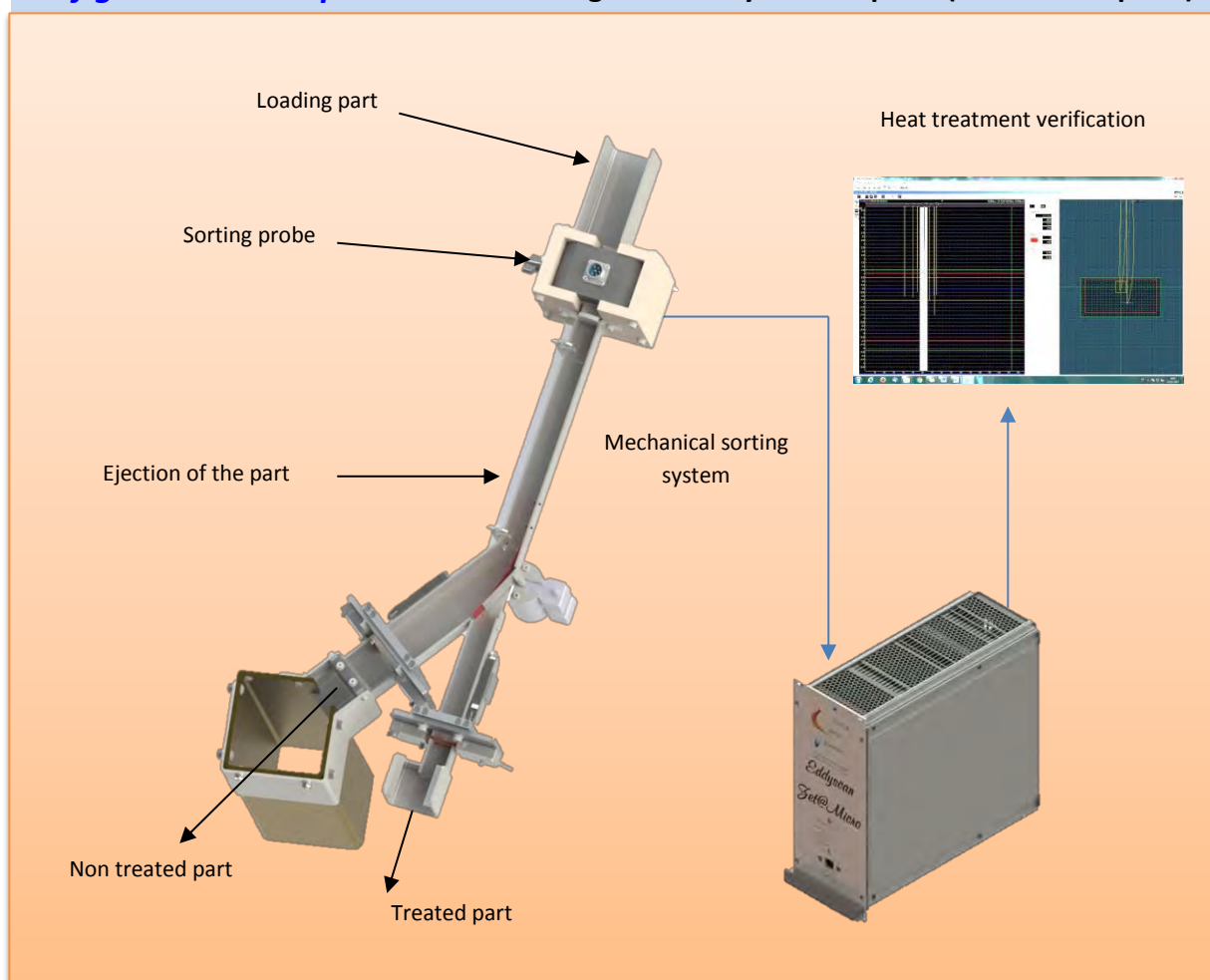
- ✓ One additional channel for a control in absolute mode
- ✓ Can be connected to a USB HUB to manage several devices with a single computer
- ✓ Personalized softwares adapted to the desired control : production software for long or short product inspection, material sorting ...
- ✓ Network connection for remote assistance



Associated systems :

- ✓ Eddy current systems such as sectorial magnetizing units, supports coils...
- ✓ Eddy current probes and coils single channel

Configuration example : Material sorting on small cylindrical parts (automotive parts)





Zet@Premium





O ur range

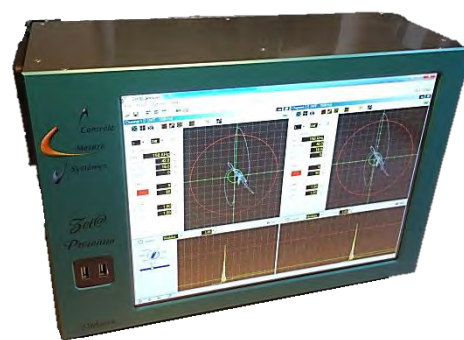


- DEFECTS DETECTION
- MATERIAL SORTING

Overview :

Zet@Premium is a simplified version of the **Zet@master** instrument with 2 channels maximum. Compact and easy to use, it is suitable to the most common eddy current defects detection applications. A TM version (dedicated to material sorting, heat treatment verification...) make it a complete inspection instrument at low cost.


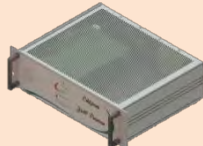
It is available in standard and rackable versions for easy integration on production line.

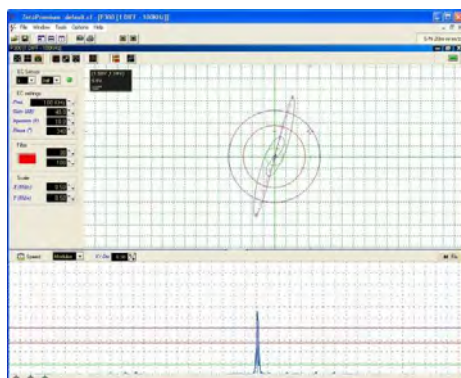


Main advantages :

- ✓ Touchscreen instrument (standard version), compact and easy to use
- ✓ Real time display of the location of the defects (with encoder and production software)
- ✓ Suitable for the most defects detection and material sorting applications
- ✓ Very high inspection speed
- ✓ Universal system meeting the requirement of international normatives (ASTM, API, DIN, SEP...)
- ✓ Complete I/O interface for communicate with production lines
- ✓ Analog interface and encoders

Range of products

	Standard	Rackable
		
Dimensions (mm)	425x292 x176 (HxWxD)	133x483x401 (HxWxD)
Weight (Kg)	8	8
Power	100-240VAC – 50-60 Hz	
T° / Humidity	0-45°C max – 85% max	
Hardware required	Windows 7 ultimate 1.6 Gz, 1 Gb RAM, touchscreen TFT 15" 1024x768	Windows® XP, 7, 8 or 10 -32/64 bits , processor 1 GHz, 512 Mb RAM
Nb of channels	Up to 2 channels	

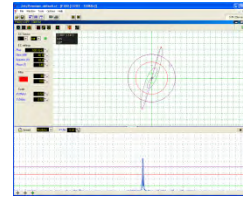


Operating principle :

The instrument is drive by configuration software allowing to define EC parameters adapted to the application, such as measure settings and alarm thresholds for defect detection or sorting thresholds for sorting version. The signal analysis is performed entirely by the electronics of the instrument, which guarantees a perfect reactivity and a real time operation, independently of the PC. The opto-isolated Inputs / Outputs of the instrument allow quick and easy interfacing with the production line.

Standard equipment :

- ✓ Single channel equipment
- ✓ EC setting software



Other configurations available :

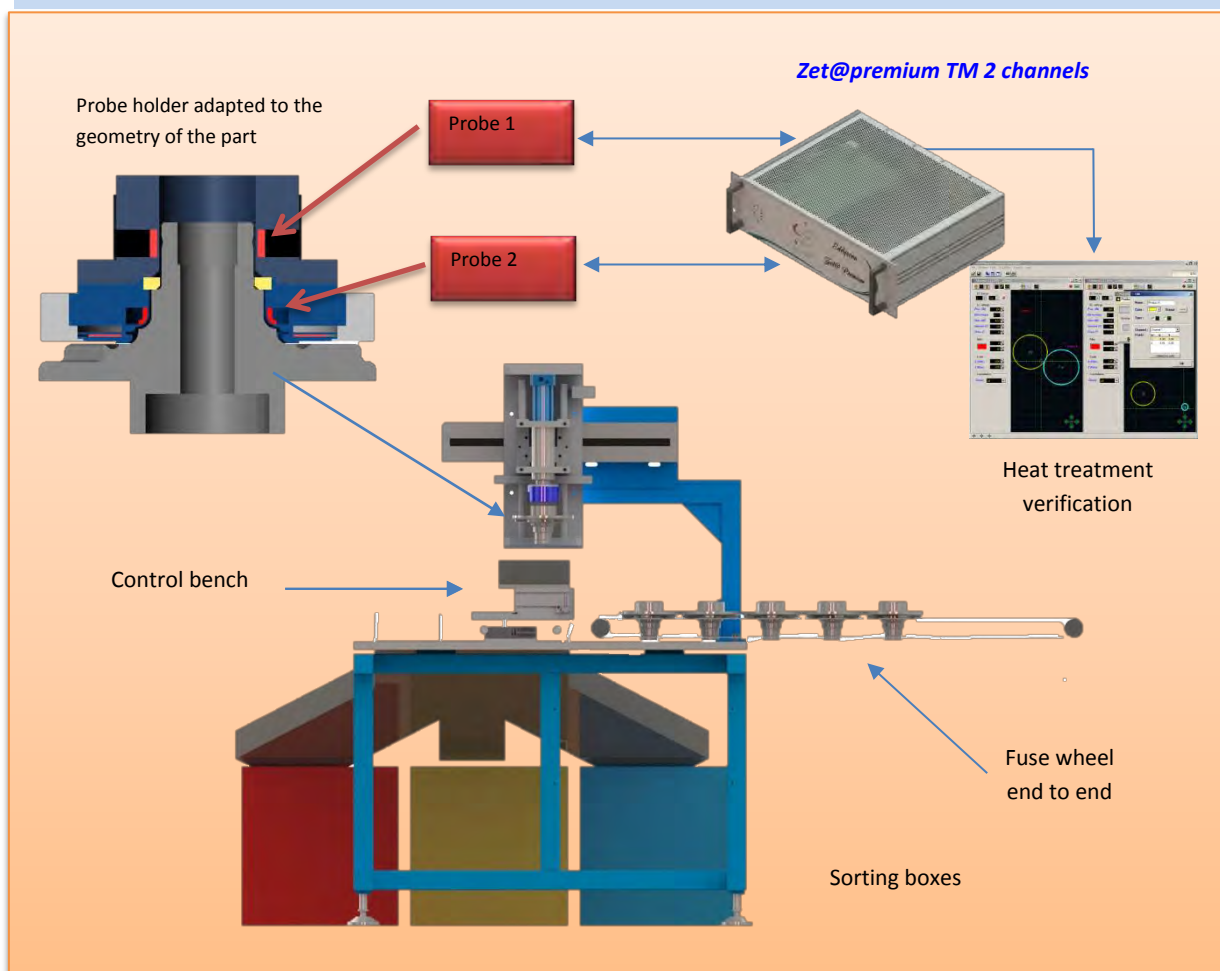
- ✓ Possibility to use 2 differential channels or 1 absolute channel and a differential one
- ✓ Personalized softwares adapted to the desired inspection : production software for long and short production inspection, material sorting....)
- ✓ Network connection for remote assistance

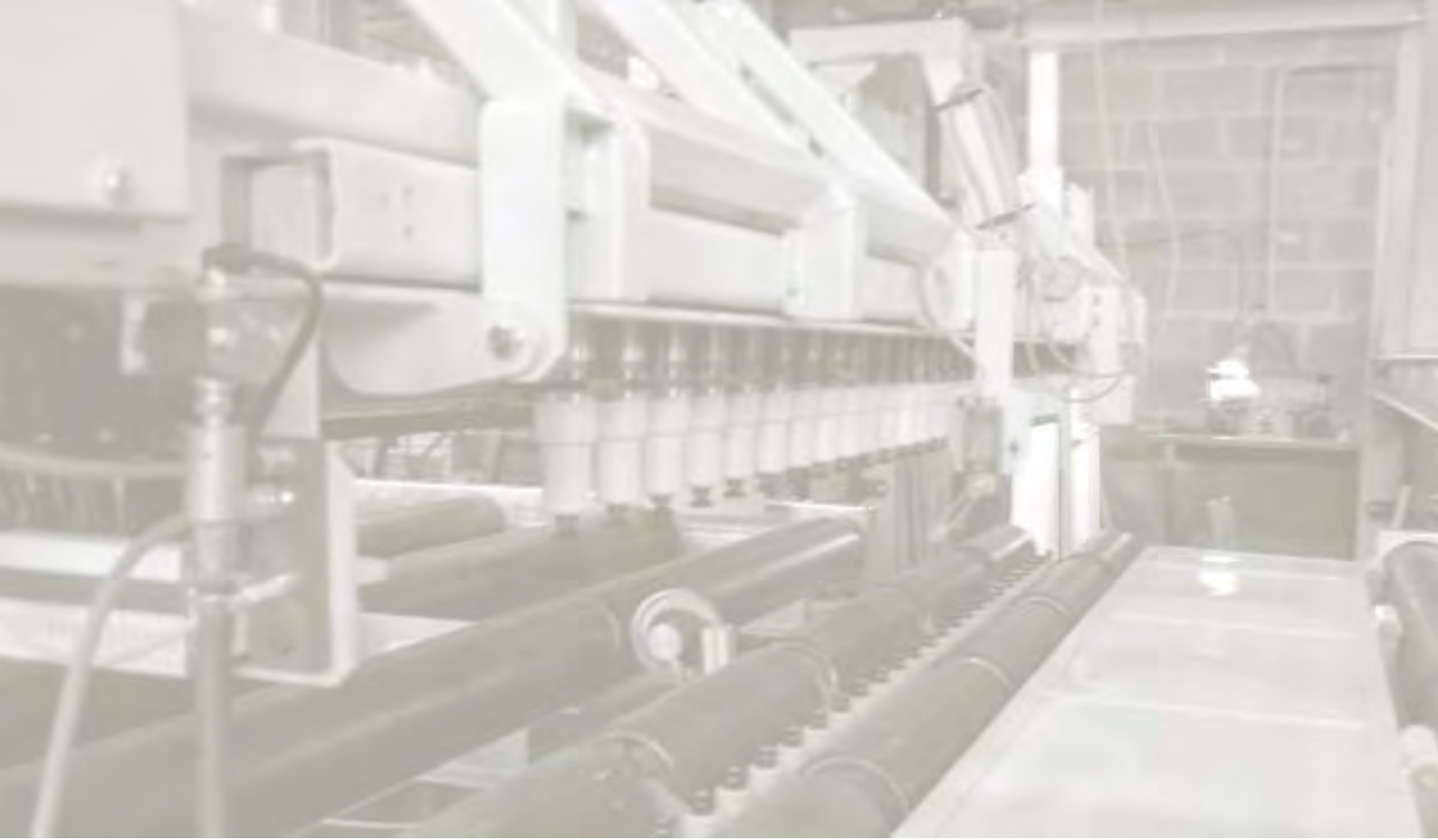


Associated systems :

- ✓ Eddy current systems such as magnetizing units, sectorial magnetizing units, supports coils...
- ✓ All EC probes and coils single channel

Configuration example : Inspection system for heat treatment verification in automotive fuse wheel parts (material sorting version)





Zet@Master





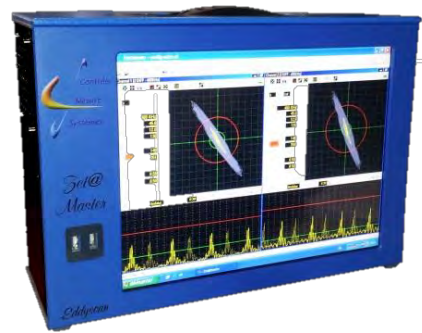
O ur range



- DEFECTS DETECTION
- CONDUCTIVITY MEASUREMENT

Overview:



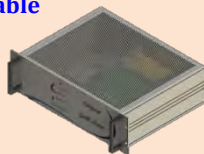
The Eddy Current instrument **Zet@Master** is designed for detection of defects and multi-probes applications. It is the most powerful instrument of the range. Multi-channel and multi-frequency it allows connecting several EC systems on a single one. Different versions are available to facilitate its integration on production lines : **standard version with touchscreen, blind or rackable.**



Main advantages :

- ✓ Stand-alone instrument with high performances, user friendly and easy to use
- ✓ Multi-channel, multi-frequency for inspection at very high production speeds
- ✓ Simultaneous management of several devices (rotating head, magnetizing unit...)
- ✓ Suitable for all required configurations with high performances softwares
- ✓ Real time display of results, analysis report for quality inspection tracing
- ✓ Universal system meeting the requirement of international normatives (ASTM, API, DIN, SEP...)
- ✓ Complete I/O interface for communicate with different production lines
- ✓ Analog interface and encoders

Range of products

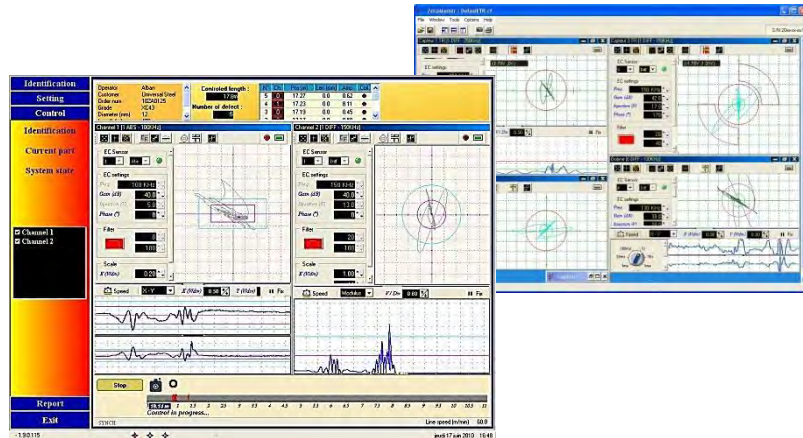
	Standard	Blind	Rackable
			
Dimensions (mm)	425x292x176 (HxWxD)	320x165x320 (HxWxD)	133x483x401 (HxWxD)
Weight (Kg)	8	6	8
Power	100-240VAC – 50-60 Hz		
T° /Humidity	0-45°C max – 85% max		
Hardware required	Windows 7 ultimate 1.6 Gz, 1 Gb RAM, touchscreen TFT 15” 1024x768	Windows® X , 7, 8 or 10 -32/64 bits , processor 1 GHz, 512 Mb RAM	
Nb of channels	Up to 32 channels		

Operating principle :

The instrument is drive by configuration software to define all the EC parameters suitable for the application, such as measure settings and alarm thresholds for defect detection. Signals analysis is performed by the electronics of the instrument for a perfect reactivity, a real time operation, independently of the PC. The opto-isolated Inputs / Outputs of the instrument allow quick and easy interfacing with the production line. Other softwares standard and / or specific can be integrated into the instrument in order to respond to the customer needs : production software with inspection reports, export of measures, recording, recordviewing and analysis of signals...

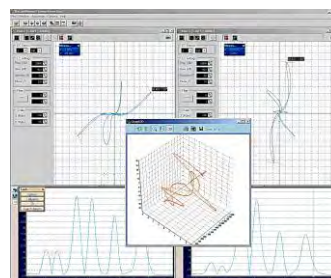
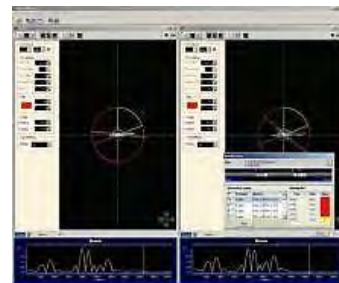
Standard equipment :

- ✓ Can be integrated in all versions : standard (touchscreen), blind or rackable
- ✓ Production software



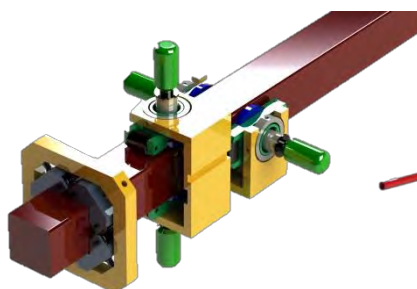
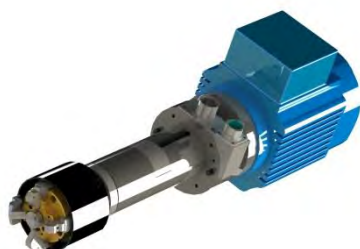
Other configurations available :

- ✓ Adjustable number of channels
- ✓ Automatic offset correction (GAP) for inspection by rotating head
- ✓ Personalized softwares developed and adapted to the desired inspection : acquisition and recordviewer of defects...
- ✓ Network connection for remote assistance

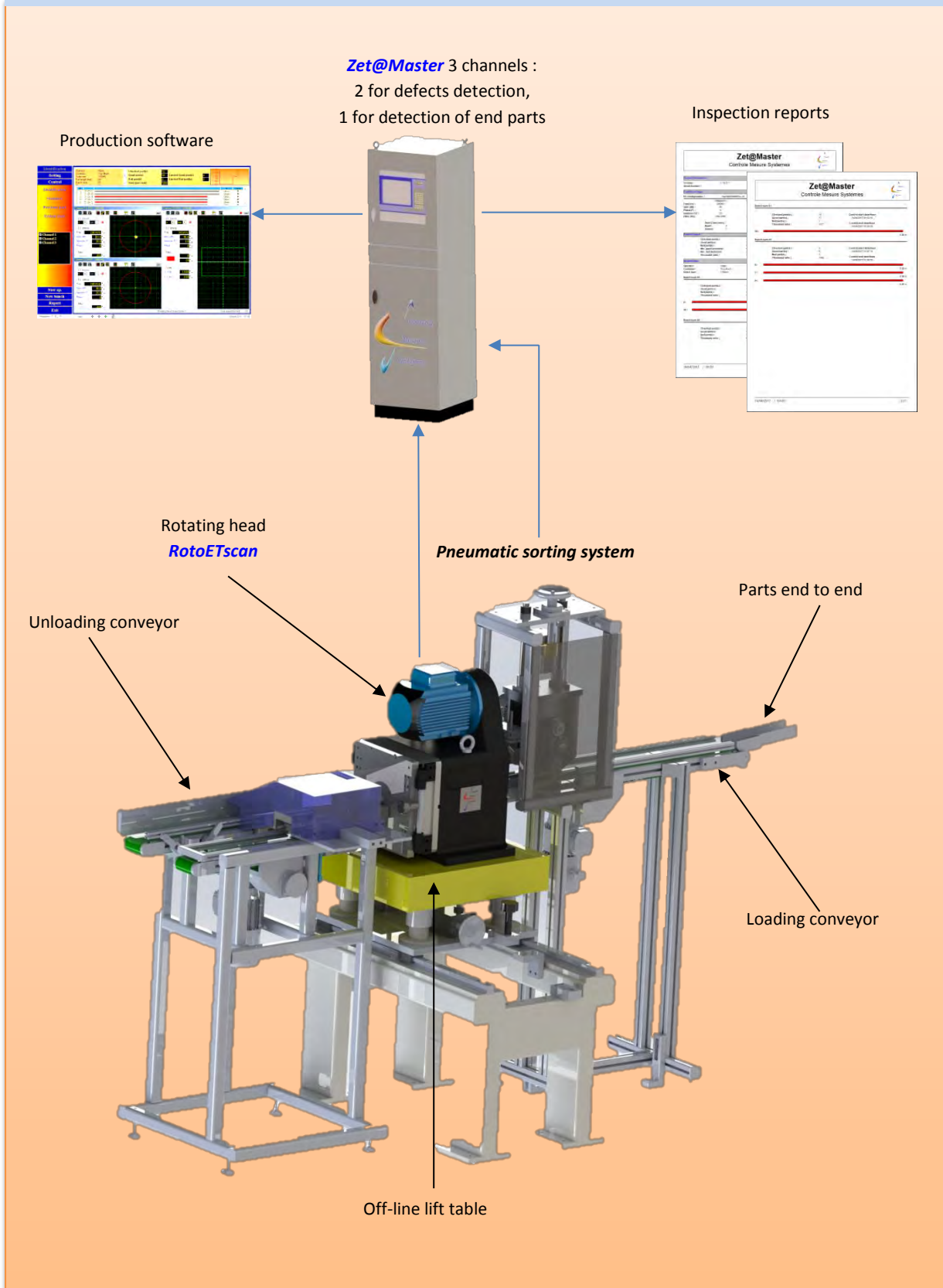


Associated systems :

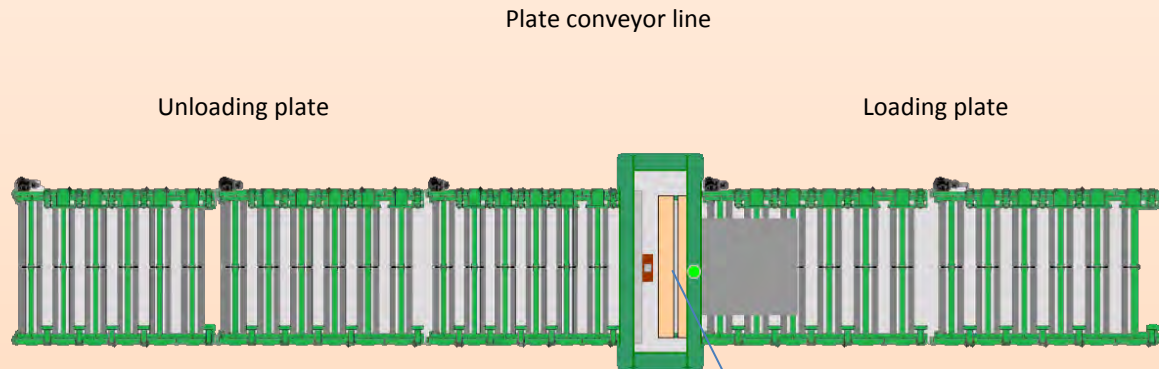
- ✓ All eddy current CMS systems (rotating heads, rotating systems, array probes, conductivity benches...)
- ✓ All eddy current probes and coils



Configuration example : Detection of longitudinal and transversal defects on small cylindrical parts (cylinders, injection nuts, billets...)

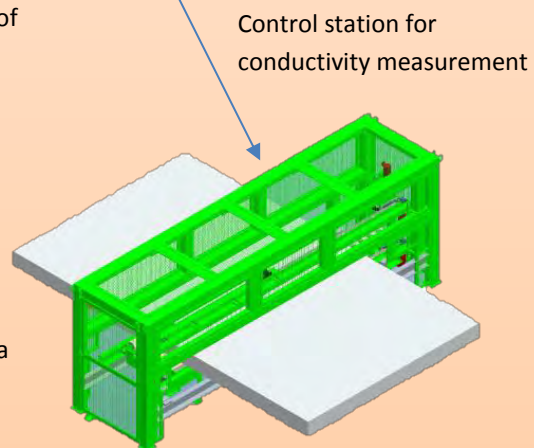


Configuration example : Conductivity measurement on the 2 faces of aluminium plate for aeronautic market

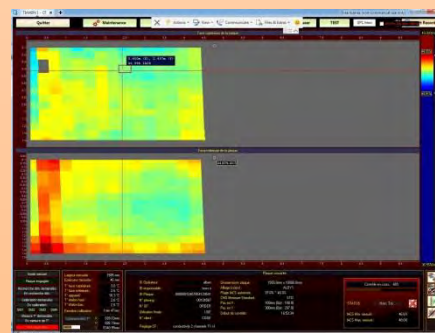


The fully automatized system consists of a robust mechanical frame (with input and output conveyors, plate centering system) and a control station consisting of linear axis probe holders and multi-channel EC equipments for conductivity measurement.

The plate moves automatically along the conveyors, passes through the control station to carry out the conductivity measurement. The results are processed, displayed and stored in **Zet@Master** instruments for data processing.



The conductivity of the 2 faces of the plate is displayed in real time in a scanning window in order to visualize its heterogeneity. The data are stored for inspection reports, taking all the measured values and their exact location on the plate.





Eddy Current inspection



OUR ACCESSORIES

- SUPPORTS COILS
- DEMAGNETIZING UNITS
- CENTERING DEVICES
- MECHANICAL BENCHES
- OTHER ACCESSORIES

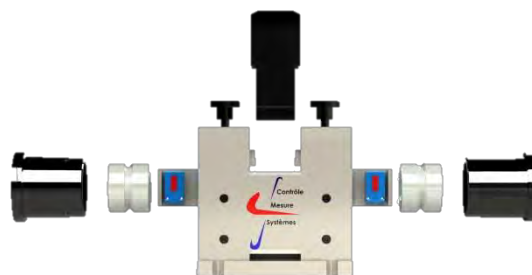
Supports coils:

The inspection by support coils and encircling coils allows the detection of surface and sub surface punctual and transverse defects on long non-magnetic products. A specific range is designed for material sorting, heat treatment verification, coating thickness measurement (TM version).



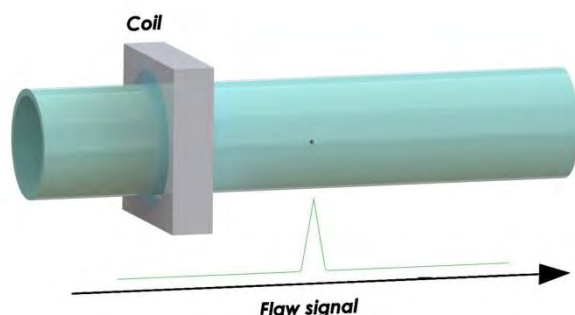
Main advantages :

- ✓ Fast and easy change of guide sleeves, inserts and adaptators to adapte the product diameter
- ✓ The same support can cover a diameter range from 1 to 230 mm
- ✓ Unlimited inspection speed
- ✓ Can be associated to a large range of CMS accessories
- ✓ Low maintenance
- ✓ Robust construction



Range of products

	Support T1	Support T2	Support T3	Support T4	Support T5	Support T6
Reference	3100M16	3200M44	3300M100	3400M135SP	3500M180	3600M230
Range of ϕ (mm)	0.1-16	Max 44	Max 100	Max 135	Max 180	Max 230
	TRI T1	TRI T2	TRI T3	TRI T4		
Reference	3100TRI	3200TRI	33300TRI	3400TRI		
Range of ϕ (mm)	2-60	Max 110	Max 180	Max 300		



Operating principle :

The product, in translation, passes inside the support. The EC probe is located at its center. The presence of a defect varies the impedance of the coil. The results are displayed on the instrument screen in a time base and / or lissajou.

Standard equipment :

- ✓ Set of guide sleeves adapted to the support
- ✓ Set of inserts



Other configurations available :

- ✓ Set of additional guide sleeves
- ✓ Set of additional inserts
- ✓ Probes adaptators
- ✓ Lift table
- ✓ Centering devices (tripels)

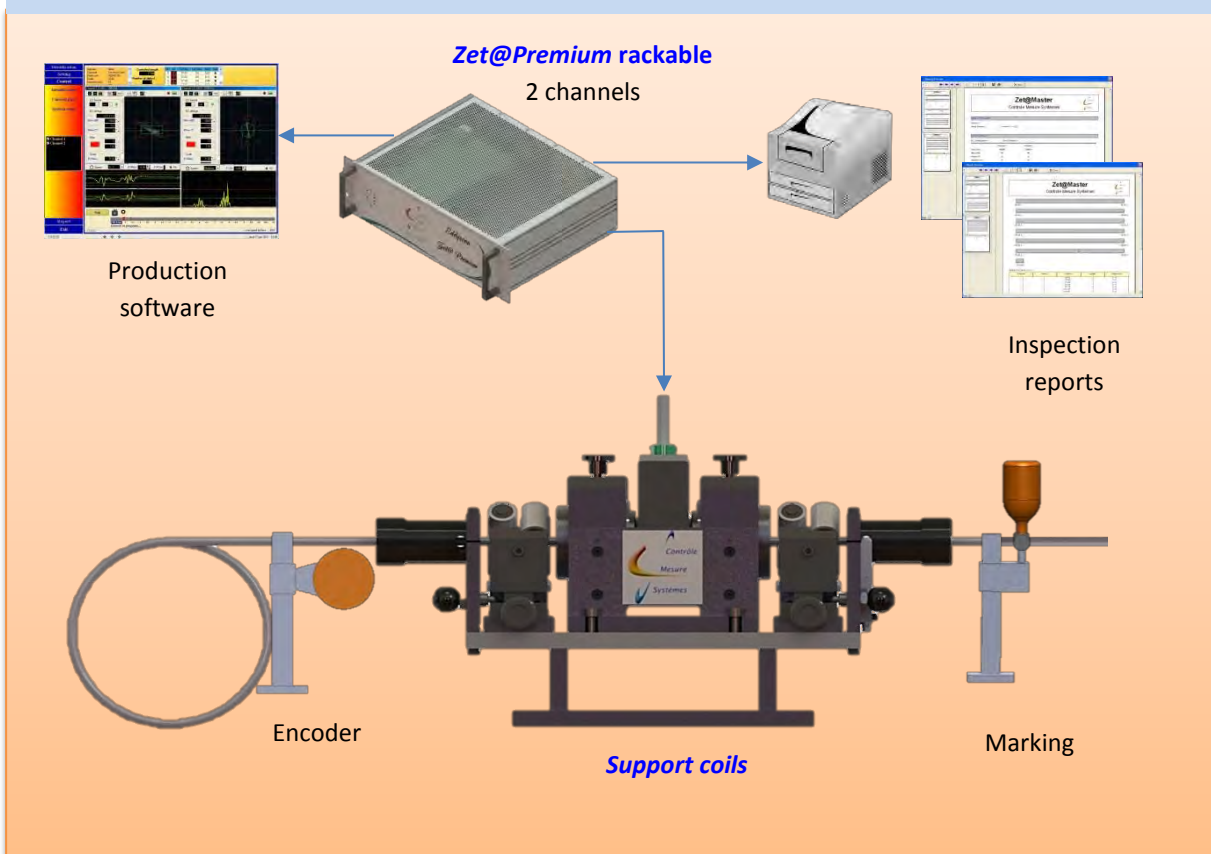


Associated eddy current instruments : Zet@Premium, Zet@Micro

In order to facilitate the integration of our instruments, there are available in different versions : **standard, blind or rackable.**

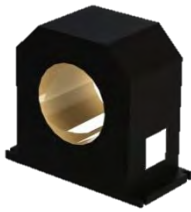


Configuration example : Detection of transverse defects and search of inclusions in aluminium wires



Demagnetizing units :

- Demagnetizing units AC, AC tunnel (demagnetization at high speed), DC. Demagnetizing units DC can be supplied with a low frequency box (optional).



Demagnetizing unit AC



Demagnetizing unit AC tunnel



Demagnetizing unit DC

Range of products

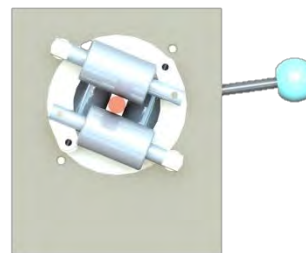
	AC T1	AC T2	AC T3	AC T4	DC T1	DC T2	DC T3	DC T4
Reference	41120	41220	41320	41420	43120	43220	43320	43420
Tunnel version	42120	42220	42320	42420				
Range of ϕ (mm) max	40	90	140	230	40	90	140	230
Power supply max	0-240V 50Hz 3500W	0-240V 50Hz 3500W	0-240V 50Hz 3500W	0-240V 50Hz 3500W	0-240V 50Hz 3500W	0-240V 50Hz 3500W	0-240V 50Hz 3500W	0-240V 50Hz 3500W

Centering devices :

- Centering devices « tripels » are used with EC & UT rotating heads to ensure a proper product guidance. They also exist for magnetizing units (rollers) and for support coils (4 points).



Tripel



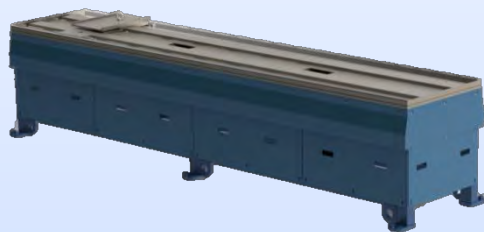
Rollers

Range of products

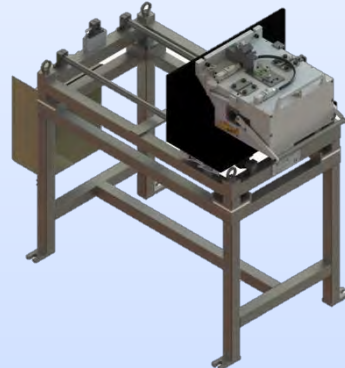
		Tripel T1	Tripel T2	Tripel T3	Tripel T4	Tripel T5
Range of ϕ (mm)		3-25	5-35	5-65	12-130	60-220
Reference Version	Screw and crank	6111	6112	6113	6114	6115
	Pneumatic jack	6121	6122	6123	6124	6125
	Motorized	6131	6132	6133	6134	6135

Mechanical benches :

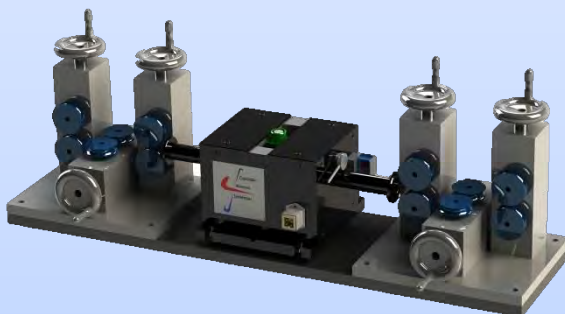
- The mechanical benches are designed to support these centering devices systems. Tripels are often associated to these different benches.



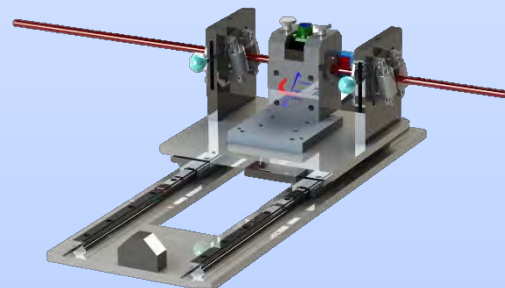
Mechanical bench



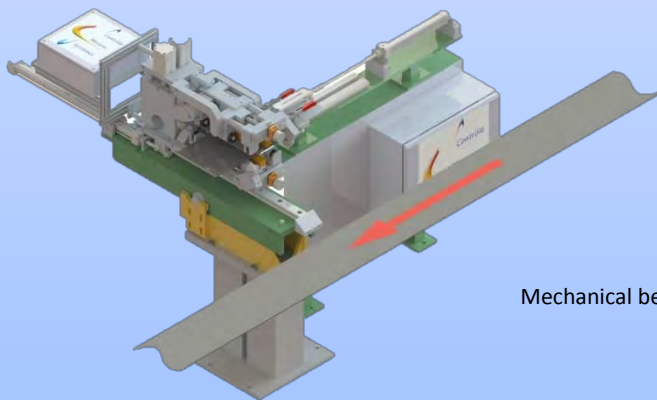
Support bench for opening magnetizing unit



Magnetizing unit with rollers



Lift table with support coils

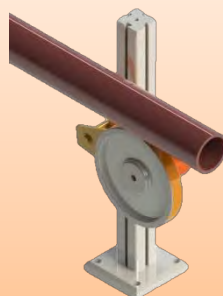


Mechanical bench for aluminium sheet inspection

Other accessories :



Defect saw



Encoder



Marking system



Ultrasonic inspection

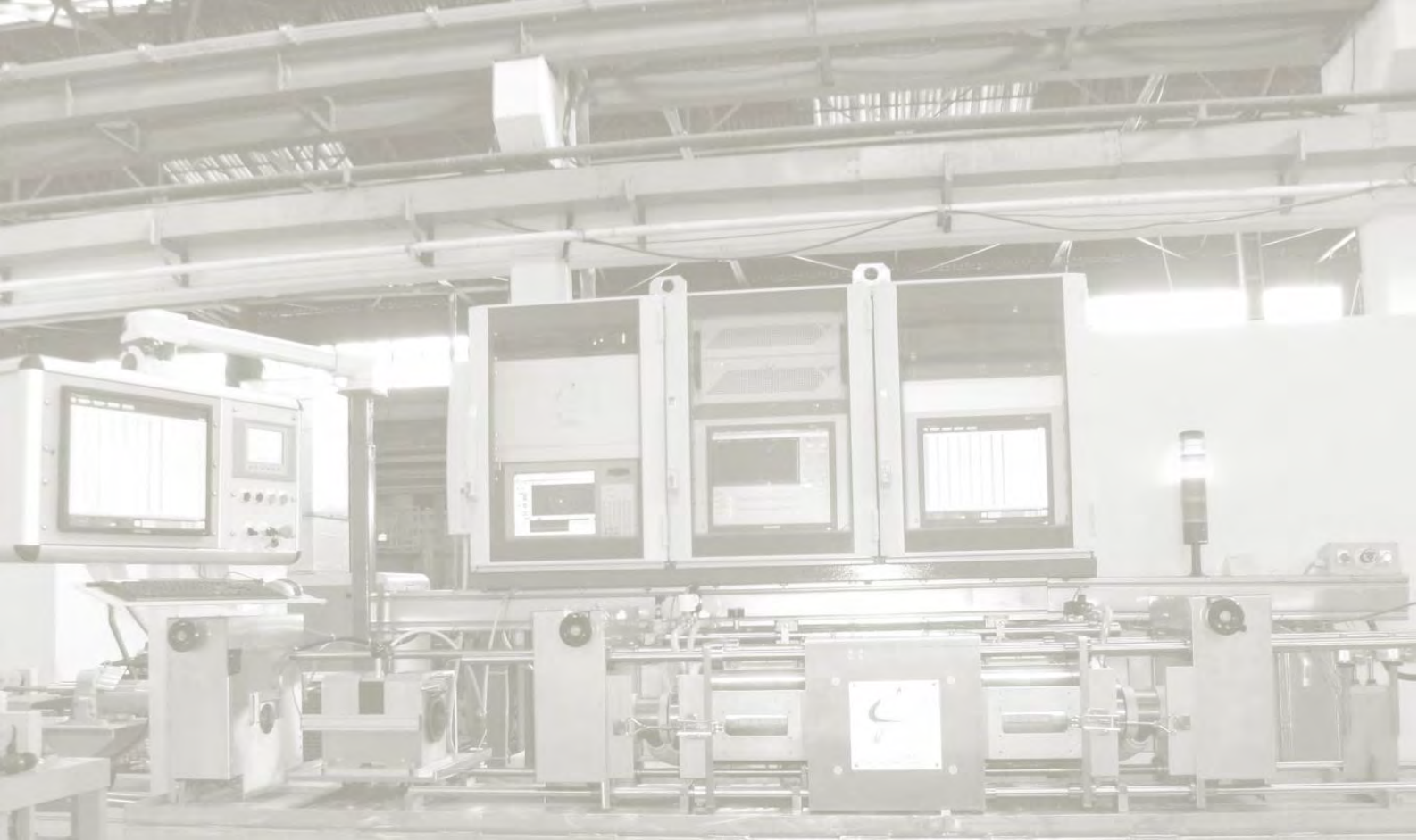




O UR SYSTEMS




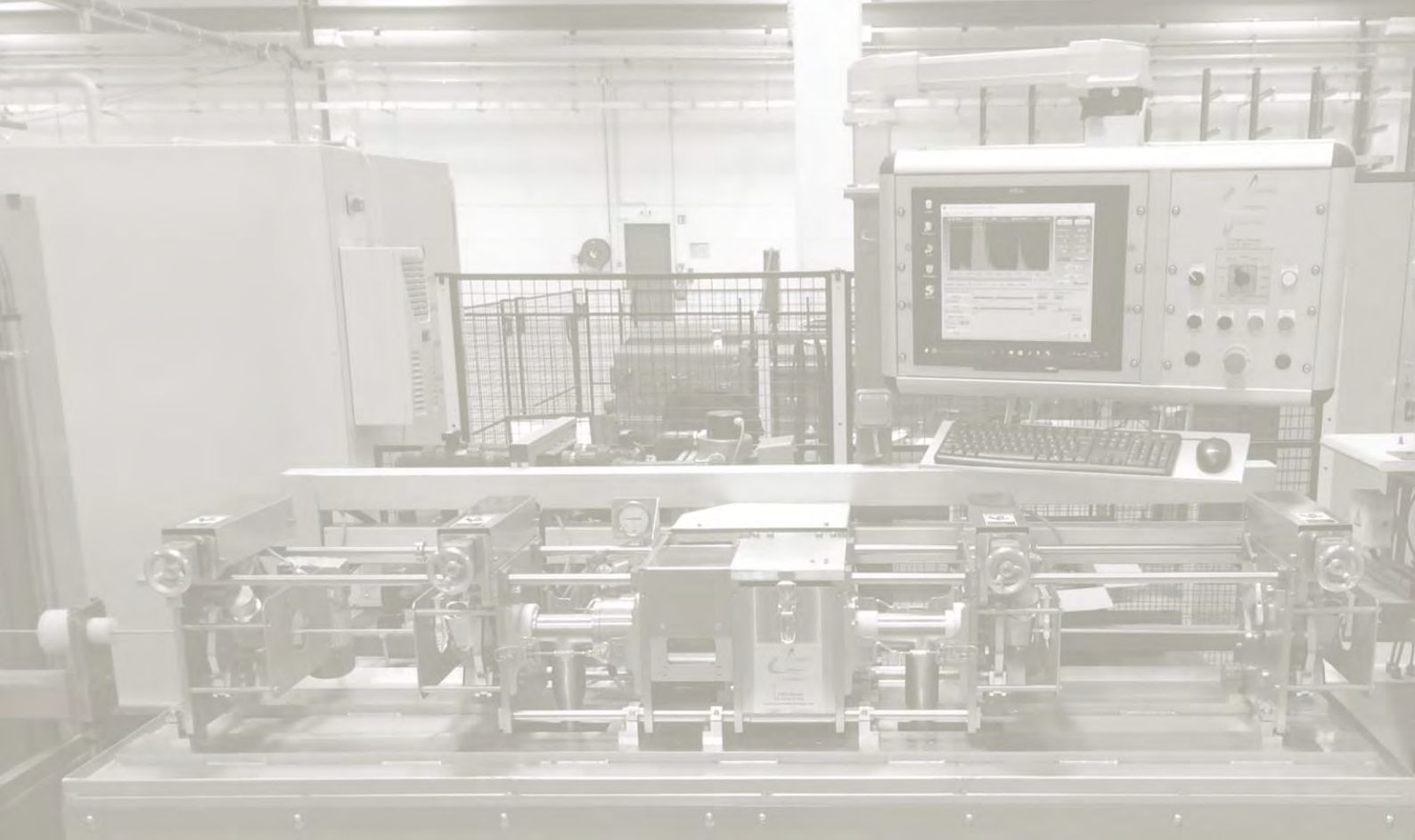
- ROTATING HEADS **ROTOUTSCAN**
- LOCAL IMMERSION TANK



Rotating heads

RotoUTscan





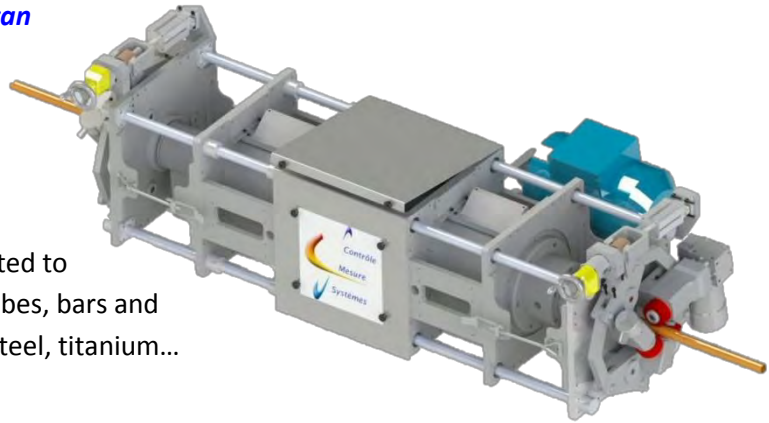
Our range



- **ROTOUTSCAN UTR-25**
- **ROTOUTSCAN UTR-40**
- **ROTOUTSCAN UTR-65**
- **ROTOUTSCAN UTR-90**
- **ROTOUTSCAN UTR-130**
- **ROTOUTSCAN UTR-180**
- **ROTOUTSCAN UTR-250**

Overview :

The ultrasonic rotating head **RotoUTscan** detects the presence of internal and external defects of any orientation, at high speed on the production line and/or performs dimensional measurements (ID, OD, thickness measurement...). It is generally dedicated to the control of long products such as tubes, bars and wires made of stainless steel, carbon steel, titanium...

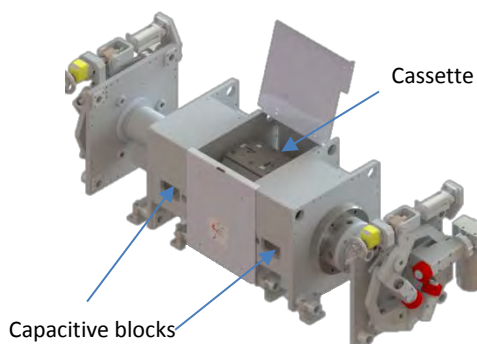


Main advantages :

- ✓ Very high speed inspection
- ✓ Accuracy of defects detected : thickness measurement 25 μm and accuracy measuring $\pm 2 \mu\text{m}$
- ✓ Fully adaptable to the configuration requested
- ✓ Range of products inspected : from 4 to 250 mm diameter

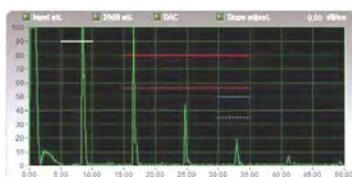
Range of products

	UTR-25	UTR-40	UTR-65	UTR-90	UTR-130	UTR-180	UTR-250
Range of ϕ (mm)	4-25	6-40	12-65	18-90	28-130	42-180	70-250
rotation speed (rpm)	6000	5000	3500	3000	2000	1200	900



Operating principle :

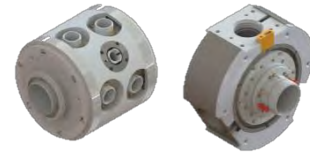
By a translation movement, the product passes through the UT rotating head. Transducers are rotated around the product. The inspection is carried out with a helicoidal step. Orientation and positioning of the transducers are adjustable. The emission and the reception of the transducers are made without contact thanks to capacitive blocks which are located on either side of the cassette (part which contains the transducers).



Defects display in the inspection window

Standard equipment :

- ✓ Modular cassette according to the configuration requested (defects detection and / or dimensional measurement)
- ✓ Capacitive blocks
- ✓ Centering devices (tripels)



Other configurations available :

- ✓ Mechanical bench
- ✓ Supervisor software **Probus** for collect, treatment and analysis of the signals
- ✓ Integration of a EC system for a complete inspection of the product

Associated ultrasonic electronics : Socomate USPC7100, ScanMaster usc-100b

Configuration example : Complete EC and UT inspection of titanium tubes from 10 to 65 mm diameter

Defects to be detect : longi & transverse.

Size (L,I,P) : 12.5 mm ; 0,1 ; 0,1

Measures : OD ; ID, thickness

Shade sorting : by EC

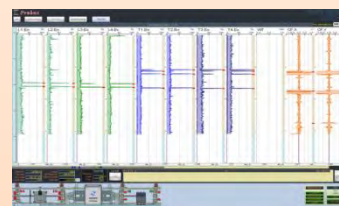
Equipments utilised :

UT inspection **UTR 65 12 vchannels**,

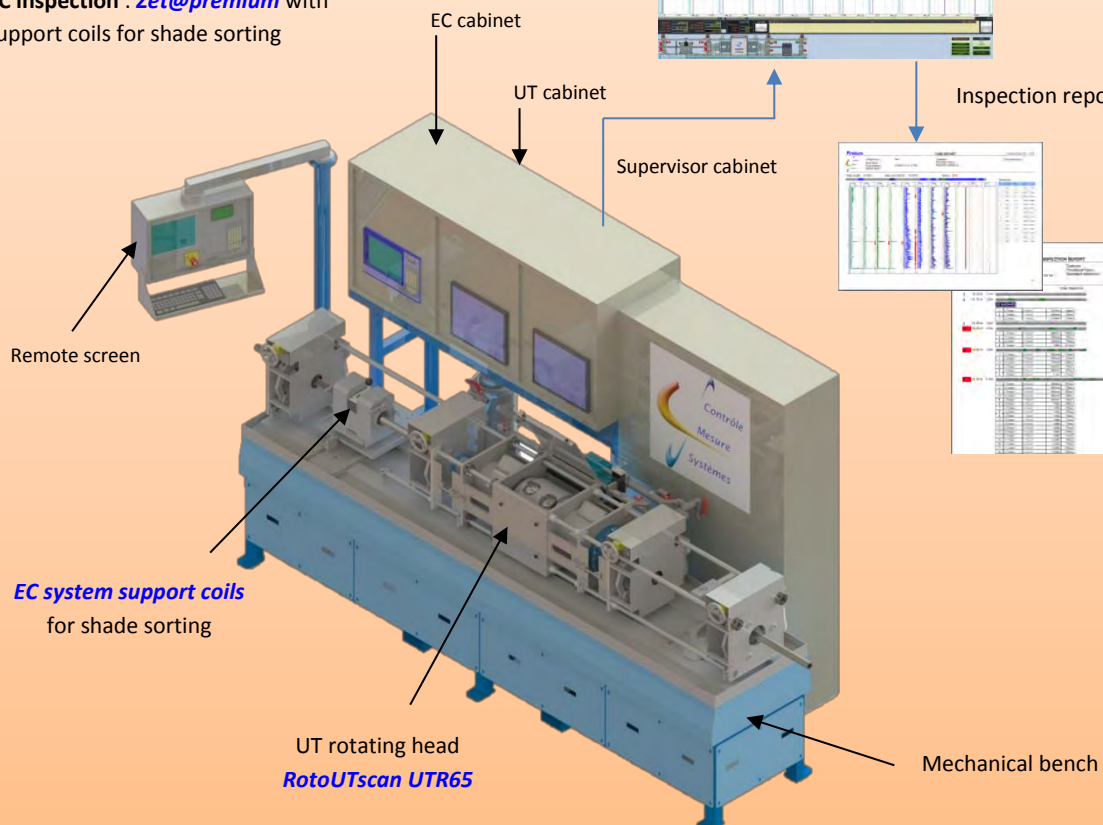
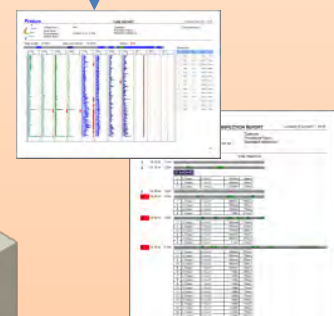
11 transducers, 2 capacitive blocks

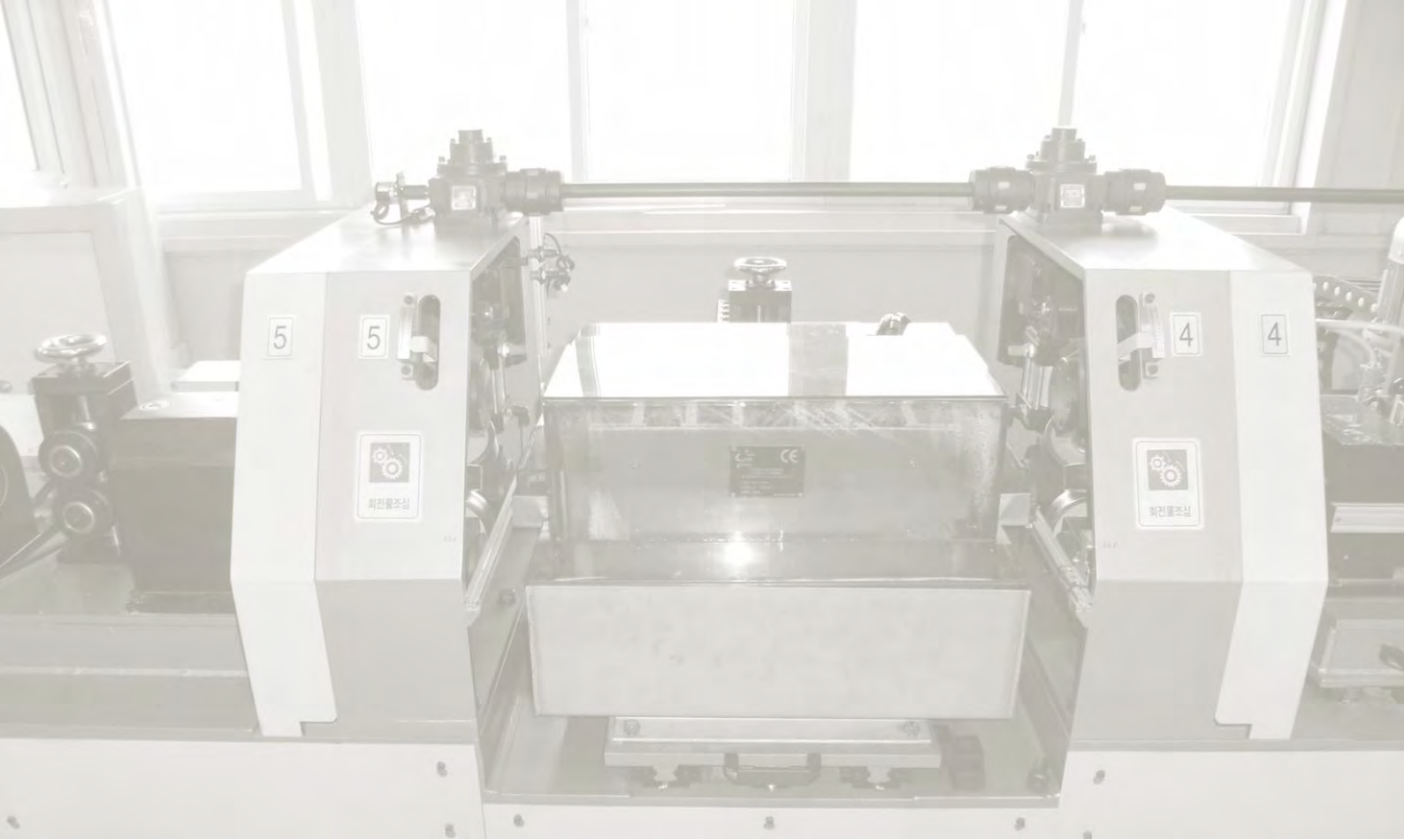
EC inspection : **Zet@premium** with support coils for shade sorting

Probus software : collect and treats EC & UT data signals



Inspection reports





Local immersion tanks





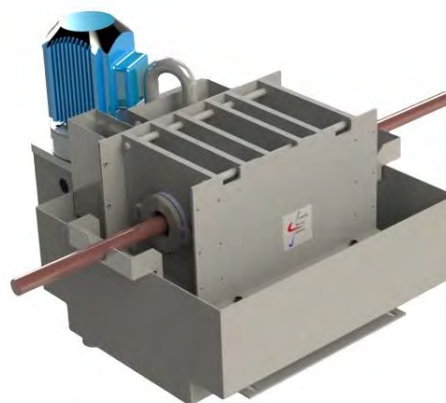
O ur range



- **LOCAL IMMERSION TANK US 1**
- **LOCAL IMMERSION TANK US 2**

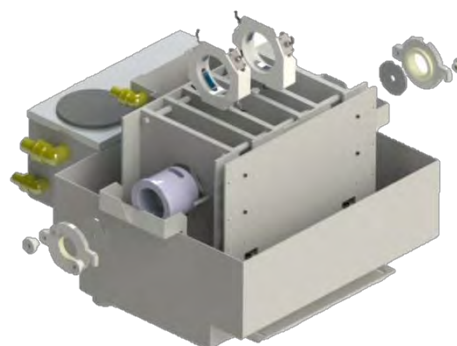
Overview :

The ultrasonic local immersion tank allows the detection of internal defects in long products such as flat bottom and chevrons marking.



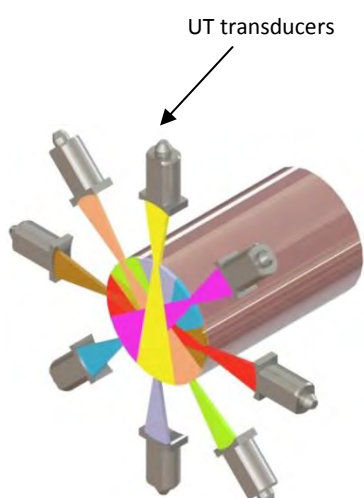
Main advantages :

- ✓ Local inspection
- ✓ Translation of the product
- ✓ High inspection speed
- ✓ Easy change of cassette
- ✓ No mechanical adjustment for changing the product



Range of products

	Local tank US1	Local tank US2
Range of ϕ (mm)	18-35	6-40
Translation speed (rpm)	6000	5000



Operating principle :

The product translates through the immersion tank. Piezo composite UT transducers are fixed on a « cassette ». They are orientable and adjustable according to the type of defects researched. The waves transmission in reflection mode is performed by local immersion of the product. Input and output centering devices ensure a good guidance of the product in the tank.

Standard equipment :

- ✓ Probe holder cassette containing transducers
- ✓ Water tank for immersion of the product
- ✓ Pump and filter for circulating water
- ✓ Photocells for product detection
- ✓ Centering devices

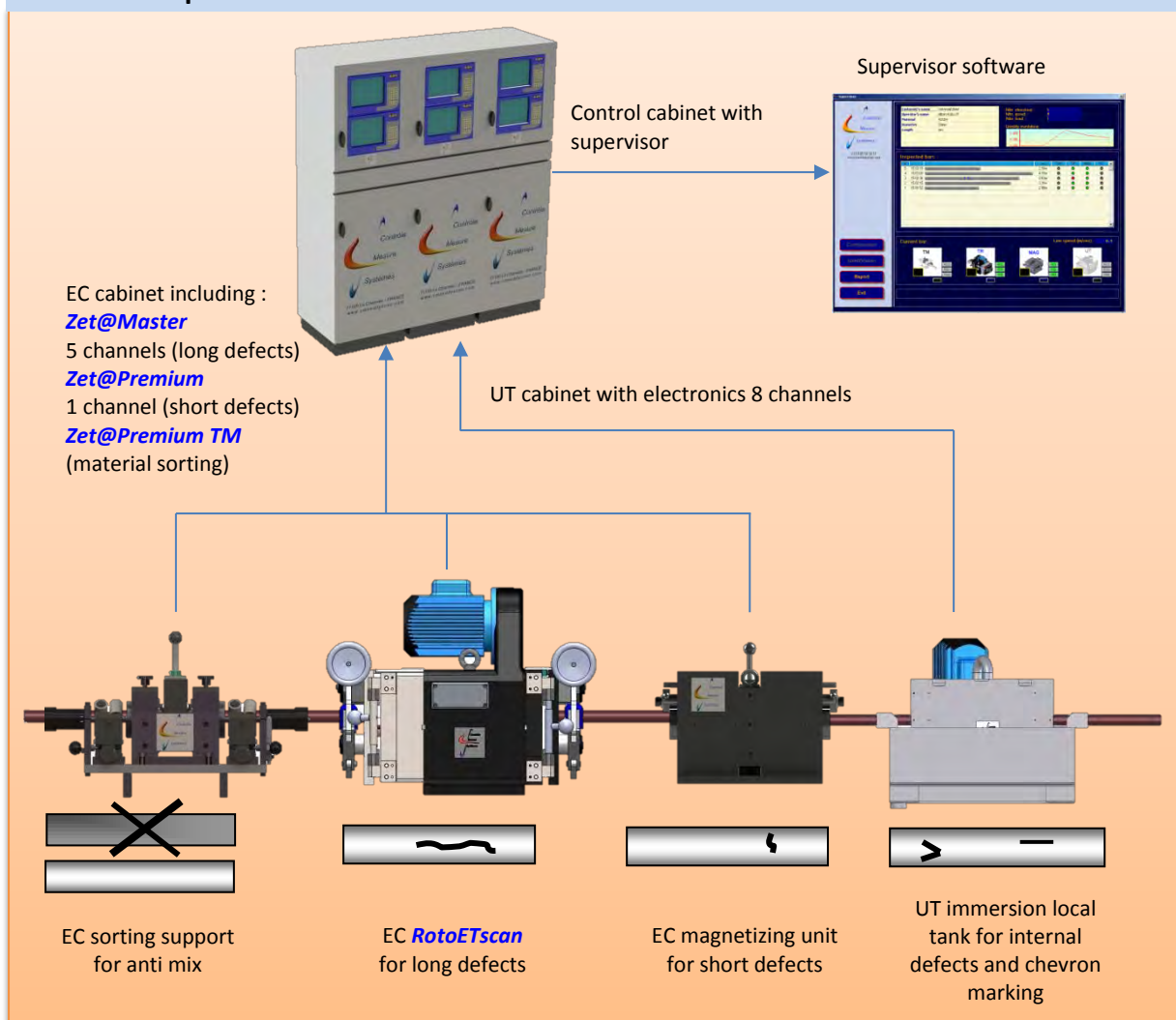


Other configurations available :

- ✓ Conveying systems
- ✓ Modular cassettes according to the defects to be detected
- ✓ Possible integration of EC system for a complete product inspection

Associated ultrasonic electronics: UTScan 100

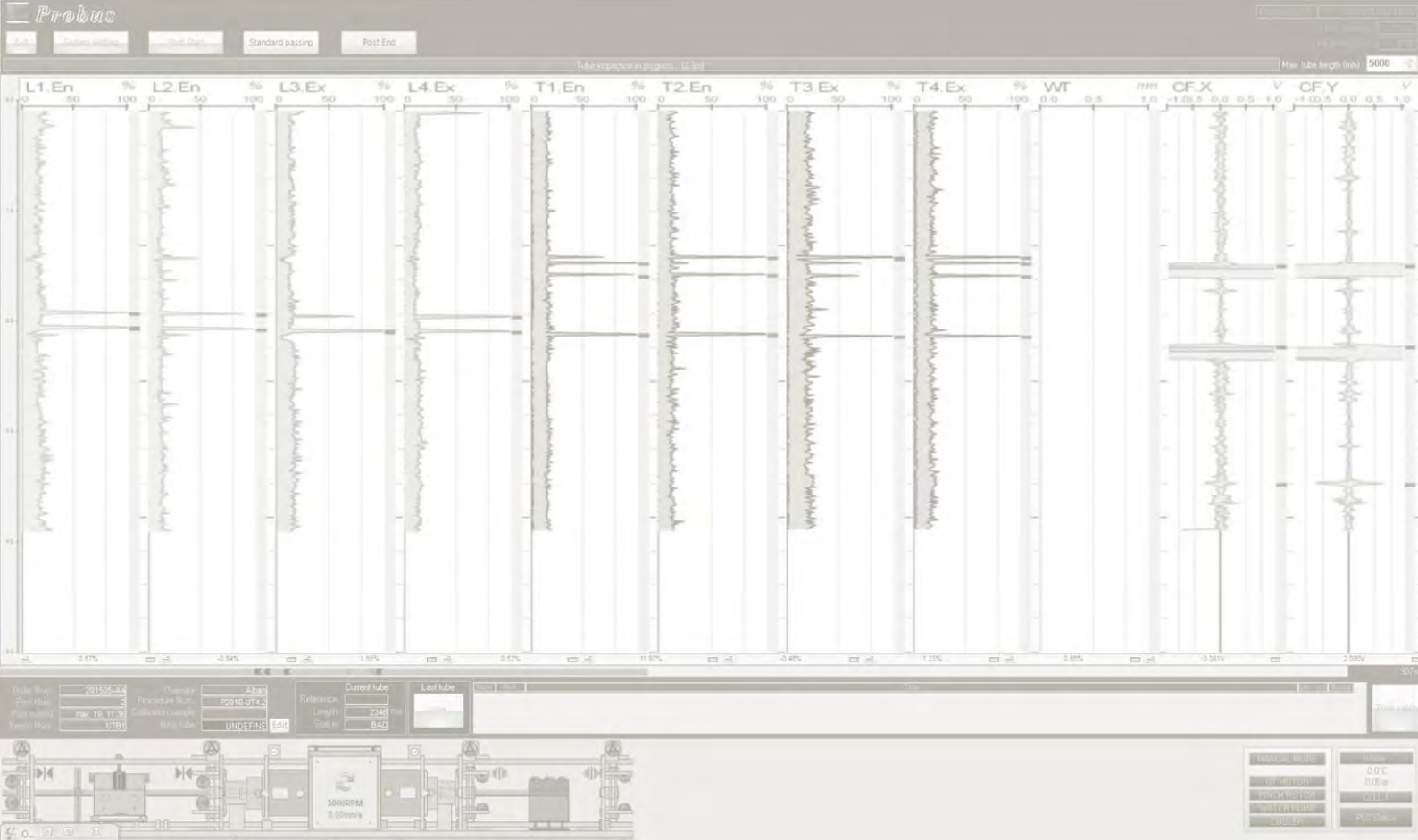
Configuration example : Complete inspection of bars by Eddy Current and Ultrasonic inspections





Softwares





SUPERVISOR AND ANALYSIS SOFTWARE

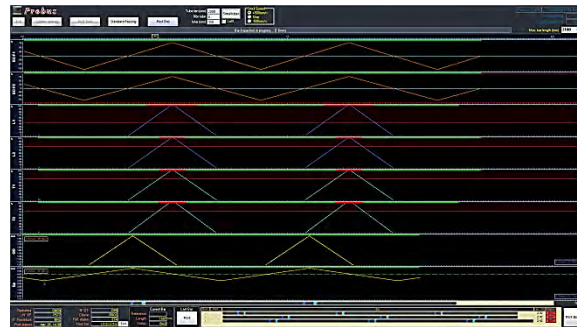


- **PROBUS**

Probus

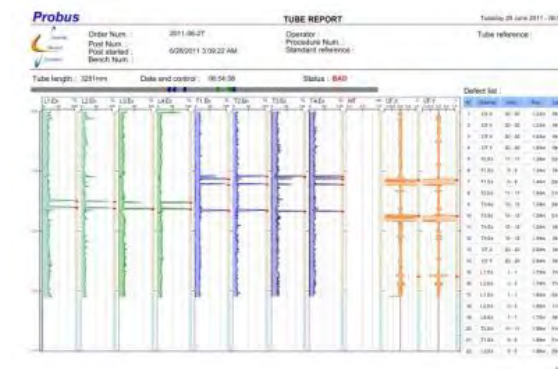
Overview :

Probus is a supervisor software used in Non-Destructive Testing applications particularly for inspection of tubes, bars and wires in production lines. Its goal is to collect measures of various NDT equipments, display, analyze the signals, make a sorting decision and produce inspection reports. **Probus** is the decision making element of the control bench ; it determinates an overall inspection report for each controlled product, manages good / bad sorting, and any marking devices. The application dialogues directly with the automation of the measurement bench, which it serves as Human Machine Interface (HMI). The software stores the inspection results as reports by product and batch ; these reports can be used as control evidences by quality departments and customers..



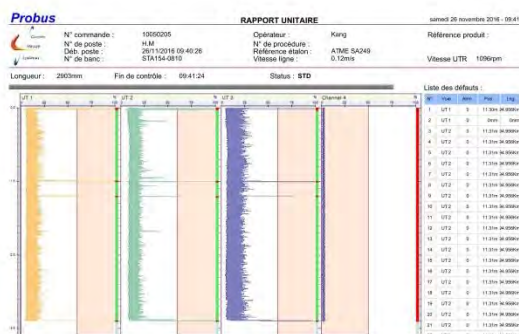
Main advantages :

- ✓ Connection of an EC system for the detection of surface defects
- ✓ Flexible configuration : management of 3 NDT equipments
- ✓ Inspection reports by tube and / or batch displaying the signals of all channels used, and listing the defects detected with their location.
- ✓ Network connection for remote assistance
- ✓ Meet the requirements of international normatives (ASTM, API, DIN, SEP...)



Operating principle :

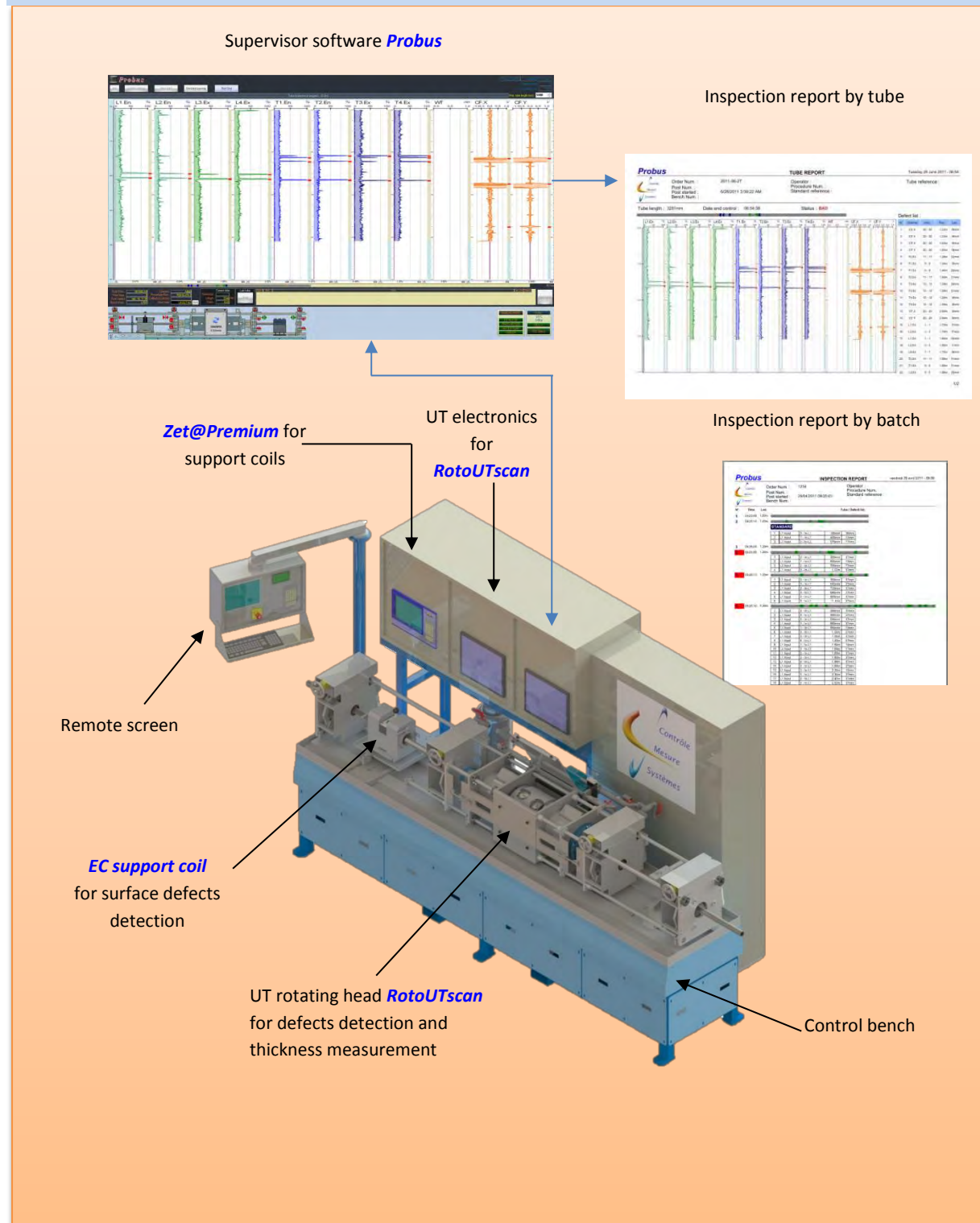
The different NDT equipments communicate with the supervisor software. It memorizes the analog signals (values measured by the NDT equipments). These values are displayed as graphs. Alarms thresholds can be triggered for each channel. When a signal passes the alarm, it is marked on the screen and the tube is then considered as defective. The supervisor software can manage up to 3 types of signals : UT signal used in fault detection, UT signal used in dimensional measurement and EC signal.

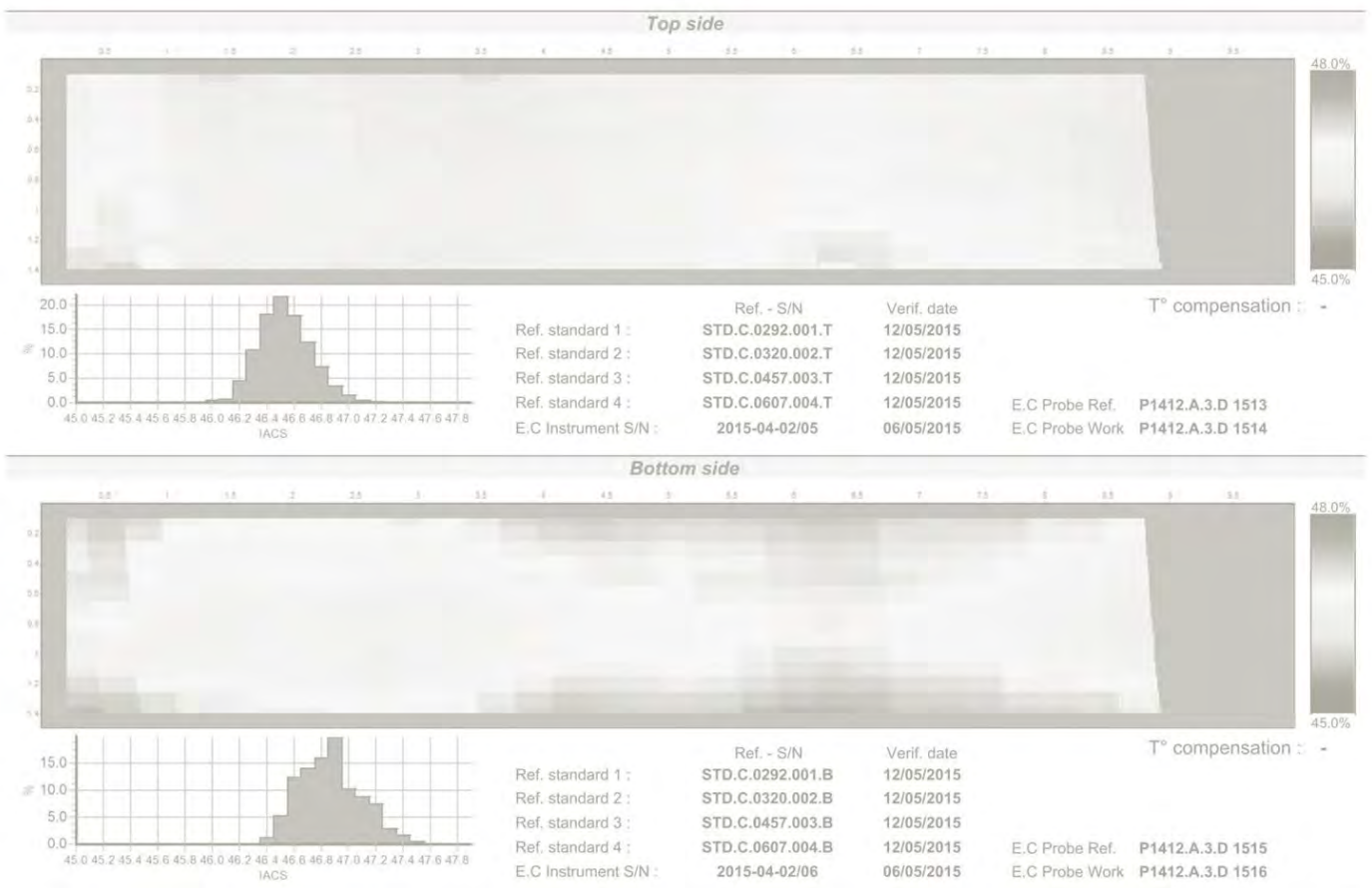


Associated systems :

- ✓ Ultrasonic rotating heads **RotoUTscan**
- ✓ Eddy Current rotating heads **RotoETscan**
- ✓ Eddy Current supports coils

Configuration example : Complete control bench for stainless steel tubes inspection.





CARTOGRAPHY

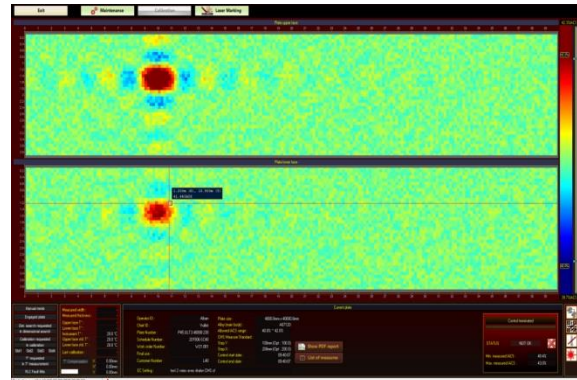


- MAPPING

Mapping

Overview :

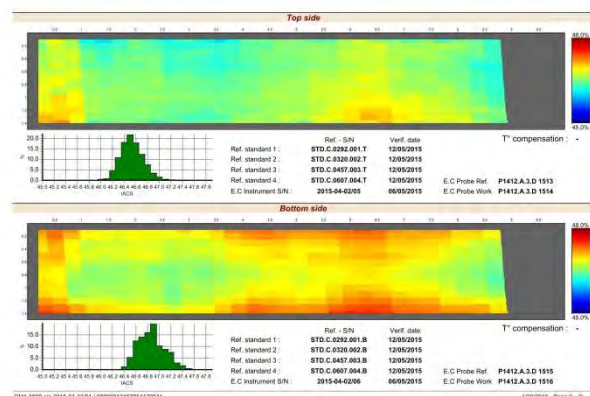
The mapping software is a software used in plate, tube and pipe scanning applications. It centralizes and collects informations from the NDT equipment(s) and maps the inspected product according to preconfigured color palettes. The color variation is representative of the presence of defects, the variation of the size of the defect, or a dispersion of the conductivity measurement value... it is linked to the other components of the control bench : control instrument, PLC...



The inspection reports created can be used as control evidence by quality departments and customers.

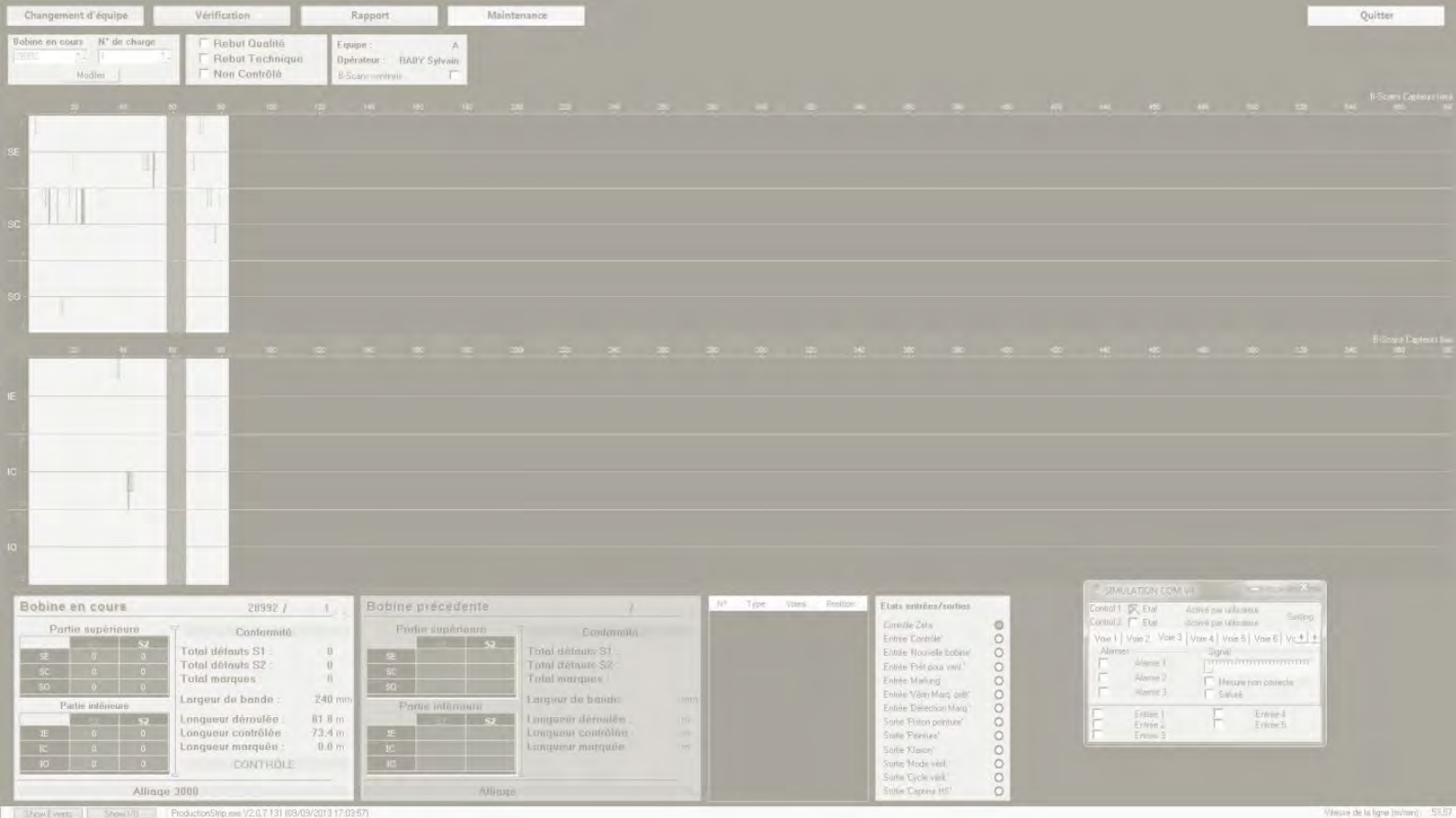
Main advantages :

- ✓ Possible connection of a EC system for detection and positioning of surface defects
- ✓ Exact positioning of each indicator on the cartography with amplitude measurement
- ✓ High resolution of measures
- ✓ Connection with encoders
- ✓ Network connection for remote assistance
- ✓ Meets the requirements of international normatives



Associated systems :

- ✓ Conductivity measurement
- ✓ Inspection of tubes, pipes...



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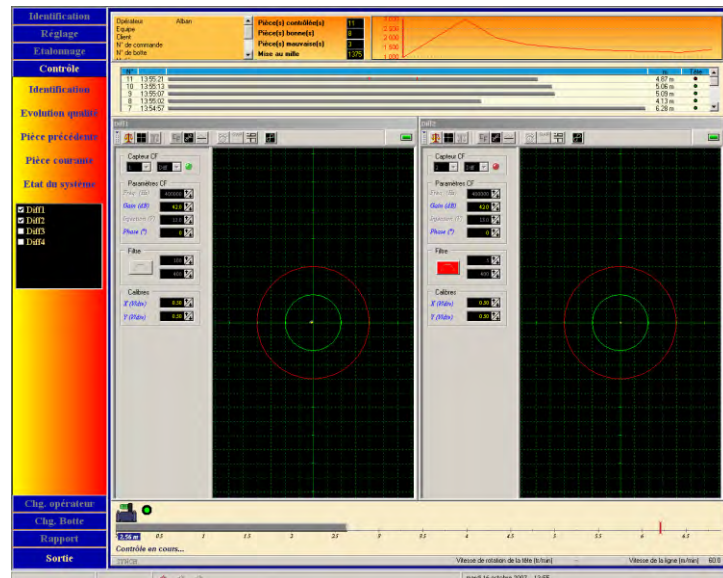
REPORTING

- PRODUCTION
- STRIP PRODUCTION
- POST TREATMENT ANALYSIS
(*Recordviewer*)

Production

Overview :

Production is a software used in Non-Destructive Testing applications, particularly for the inspection of tubes, bars and wires, and production of individual parts. It centralizes and collects informations from the Eddy Current inspection equipment, displays the signals, treats the resulting data, creates and records individual and / or batch inspection reports, and also productivity statistics.



The inspection reports created can be used as control evidences by quality departments and customers.

Main advantages :

- ✓ Information tabs completely adjustable by the customer, on request
- ✓ Management of short and long products
- ✓ Inspection reports by product and / or batch displaying the signals of all the channels used, and listing the detected defects with their location.
- ✓ Network connection for remote assistance
- ✓ Meets the requirements of international normatives

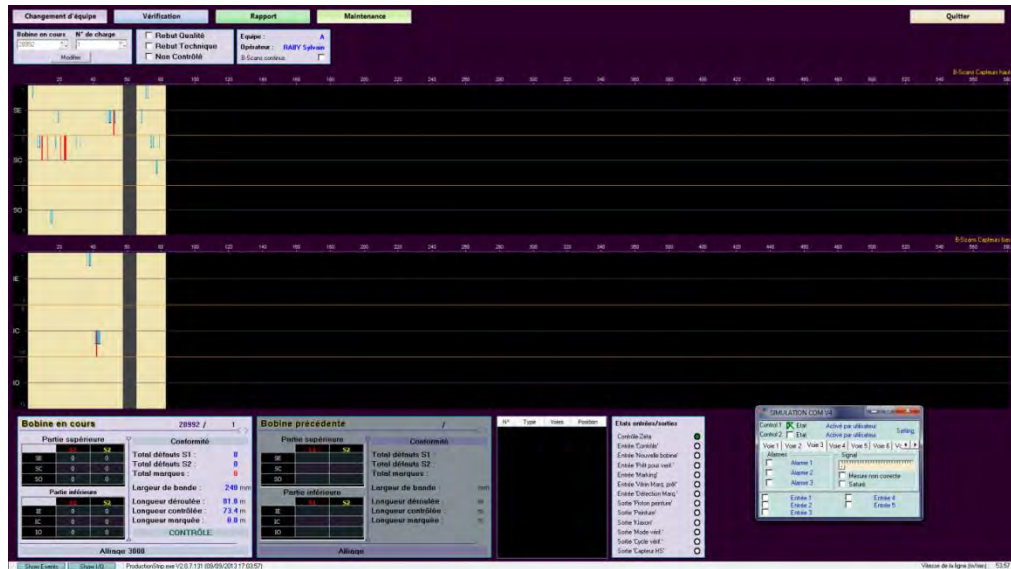
Zet@Master Contrôle Mesure Systèmes			
Version : 2007.02.002			
Paramètres de l'essai			
Détection (CF) : (Data TRAFIC-ADM 100)			
Ala (Hz)	1000	CF1	CF2
Ala (mA)	40	40000	40000
Ala (ohms)	40	40	40
Phase (%)	0	0	0
Phase (V)	0	15	15
Phase (Hz)	40000		
Phase (mA)	40		
Phase (ohms)	40		
Phase (V)	15		
Zone de mesure (mm) : (Valeur de la ligne (mm))			
en parties : (mm)	100		
en parties : (mm)	100		
Bilan : Pas de défauts			
Paramètres			
Paramètres (cf) :	12	Date/Heure du début du contrôle :	16/10/2007 13:45
Paramètres (cf) :	8	Date/Heure de fin du contrôle :	16/10/2007 13:45
Paramètres (cf) :	4	Date/Heure de fin du contrôle :	16/10/2007 13:45
Paramètres (cf) :	100	Date/Heure de fin du contrôle :	16/10/2007 13:45
Paramètres			
Opérateur :	Alban	Matériau :	304L
Boîte :	17	Diamètre (mm) :	10
Client :	Universel Steel	Longueur (mm) :	5
N° de commande :	807845		

Zet@Master Contrôle Mesure Systèmes			
M de boîte 10			
Paramètres (cf) :	12	Date/Heure du début du contrôle :	16/10/2007 13:45
Paramètres (cf) :	8	Date/Heure de fin du contrôle :	16/10/2007 13:45
Paramètres (cf) :	4	Date/Heure de fin du contrôle :	16/10/2007 13:45
Paramètres (cf) :	100	Date/Heure de fin du contrôle :	16/10/2007 13:45
Liste défauts (sans alarme) :			
M de défaut (sans alarme) :			
M de défaut	Alarme	Position	Longueur
1	1	111	1
2	1	111	1
Liste défauts (sans alarme) :			
M de défaut	Alarme	Position	Longueur
1	1	111	1
2	1	111	1
3	1	111	1
4	1	111	1
5	1	111	1
6	1	111	1
7	1	111	1
8	1	111	1
9	1	111	1
10	1	111	1
11	1	111	1
12	1	111	1
13	1	111	1
14	1	111	1
15	1	111	1
16	1	111	1
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18	1	111	1
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98	1	111	1
99	1	111	1
100	1	111	1

Strip Production

Overview:

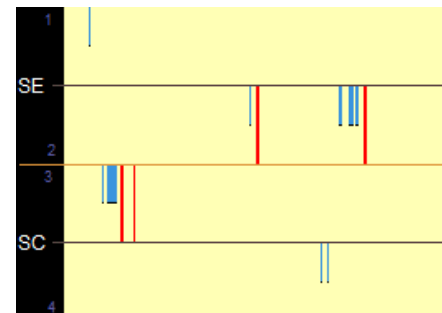
Supervision software used in multi-probes applications, and covering a large range of products (strips, ferrules...)



Operating in a similar way of the production software, it allows in addition to make a slide cartography of the inspected product according to the position of each probe.

Main advantages :

- ✓ Information tabs completely adjustable by the customer, on request
- ✓ Management of short and long products
- ✓ Inspection reports by product and / or batch displaying the signals of all the channels used, and listing the detected defects with their location.
- ✓ Network connection for remote assistance
- ✓ Meets the requirements of international normatives
- ✓ Cartography display
- ✓ Tracking and displaying of data line
- ✓ Communication with a PLC and / or the components of the line
- ✓ Production of reports, in database format available



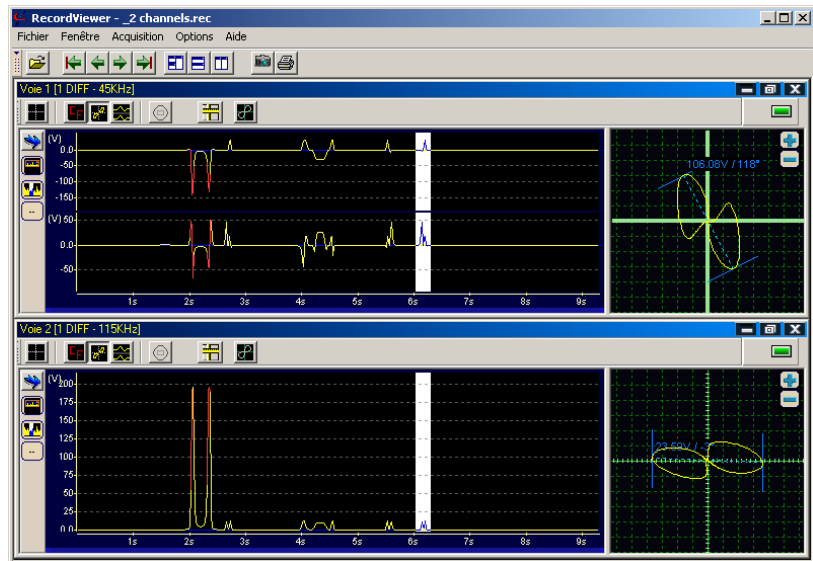
Bobine en cours				28956 /	1
Partie supérieure				Conformité	
SE	S1	S2		Total défauts S1 :	18
SE	9	33		Total défauts S2 :	90
SC	5	21		Total marques :	0
SO	4	34		Largeur de bande :	240 mm
Partie inférieure				Longueur déroulée :	116.6 m
IE	S1	S2		Longueur contrôlée :	96.0 m
IC	0	2		Longueur marquée :	0.0 m
IO	0	0		CONTRÔLE	
				Alliage 3000	

Recordviewer

Overview :

The software allows reading acquisitions of all Eddy Current measures points of a loaded configuration.

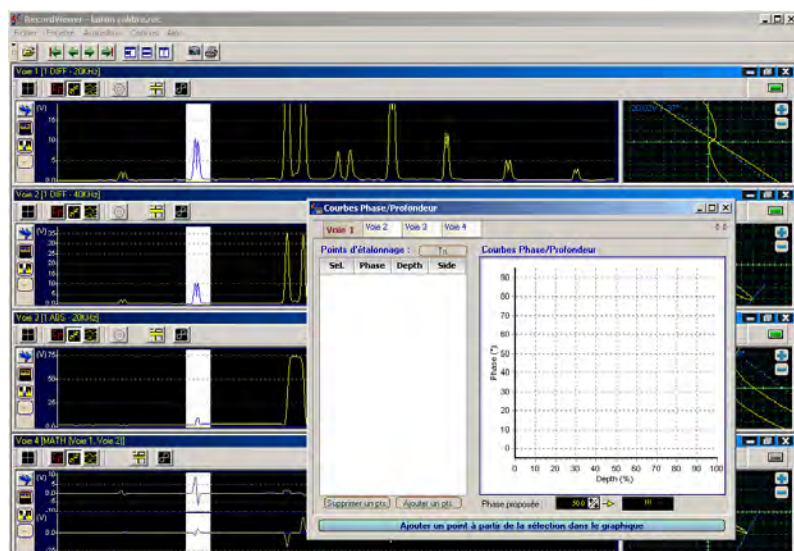
Once the recording is loaded, **Recordviewer** allows to select signal portions, realizes measures and phase measurement, amplitude, signal-to-noise ratio (snr), or measure the background noise.

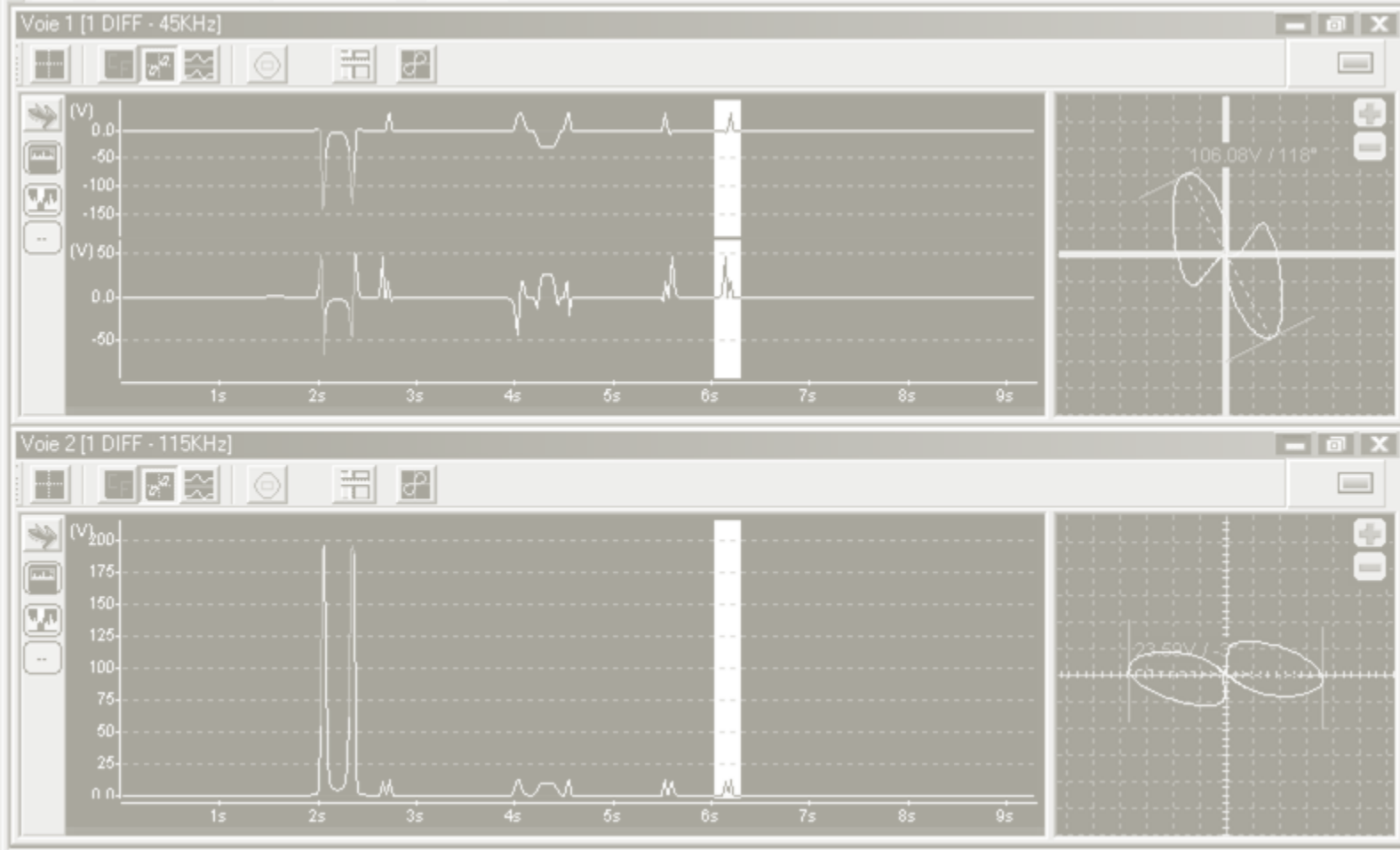


It also allows to improve the defects detection by checking the influence of each filters or to realize an FFT.

Main advantages :

- ✓ Recording of all Eddy Current data in real time
- ✓ Several possibilities of recording, selection, measure, EC signals processing
- ✓ Improve the quality of detection
- ✓ Post treatment analysis





SPECIAL SOFTWARES



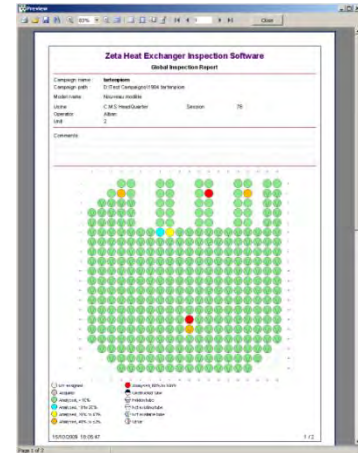
- ZHEIS
- INSPECTION BY INTERNAL PROBE
- SWIMMER POSITION CONTROL

ZHEIS

Overview :

ZHEIS (Zet@ Heat Exchanger Inspection Software) is a software dedicated to the inspection of heat exchanger tubes with Eddy Current internal probe inspection. Its simple interface makes it possible to generate the topography of the exchange by automatically adding and positioning a list of tubes to be controlled, and to classify these after checking, in several categories according to the presence or absence of indications and their importance or depth.

At the end of the campaign, **ZHEIS** generates an inspection report allowing visualizing in different colors, the result of this one.

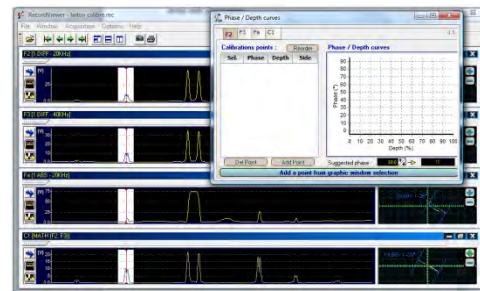


Internal probe inspection software

Overview:

The internal probe inspection software makes it possible to perform an internal inspection of tubes, using a mathematical channel resulting from frequency combinations. It can be used in conventional Eddy Current or Remote Field inspections.

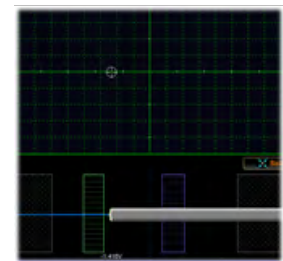
Coupled with the **ZHEIS** software, it allows complete control over the heat exchanger tube.



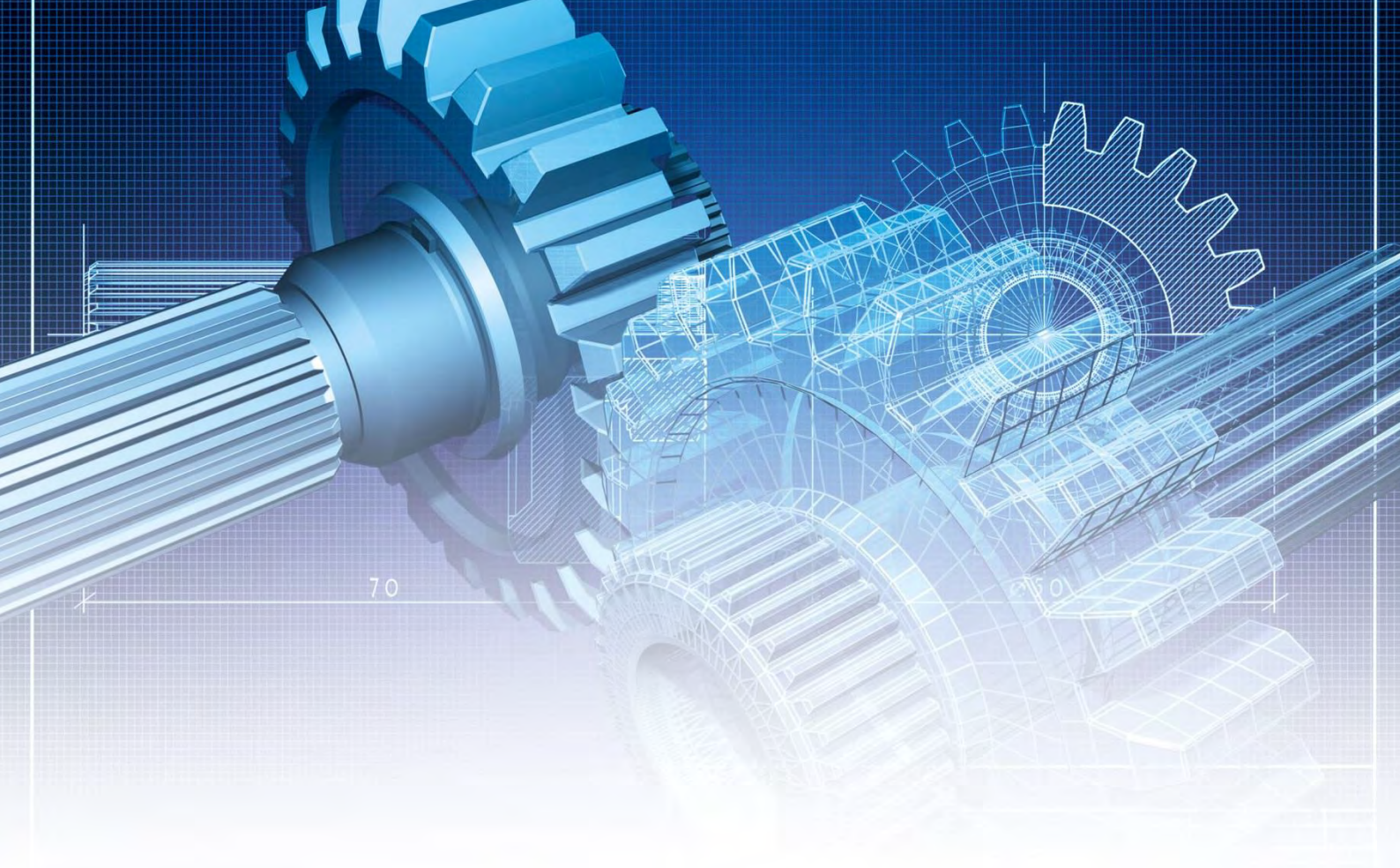
Swimmer position control

Overview :

This software is designed to detect and put in a good position a swimmer inside a seamless double walled tube using Eddy Current inspection. This application has been developed especially for automotive braking systems.



Many other software solutions are available !



Our solutions



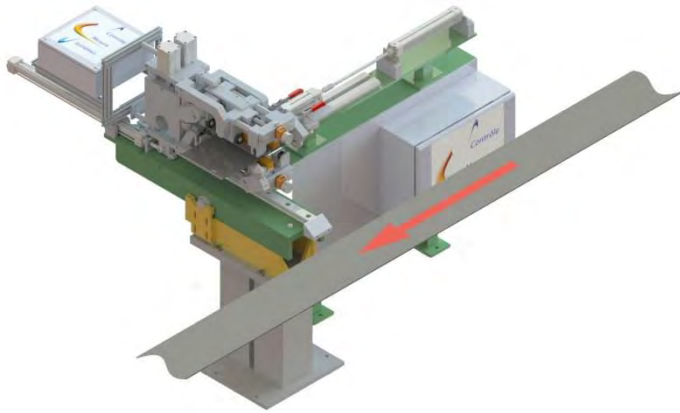


Some applications

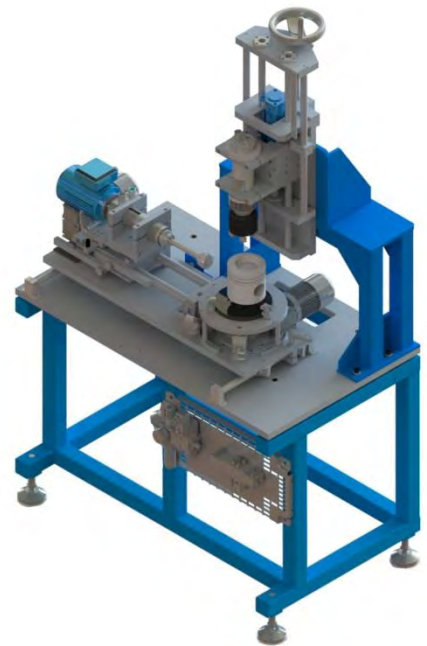


- **ENGINEERING**
- **TURNKEY SYSTEMS**

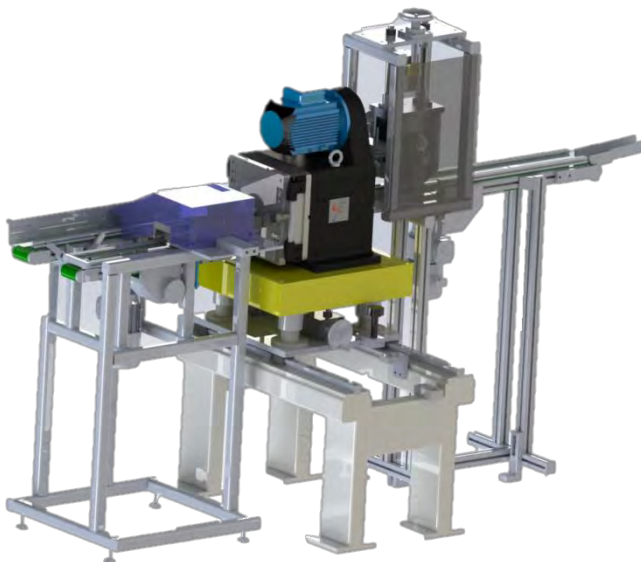
Engineering



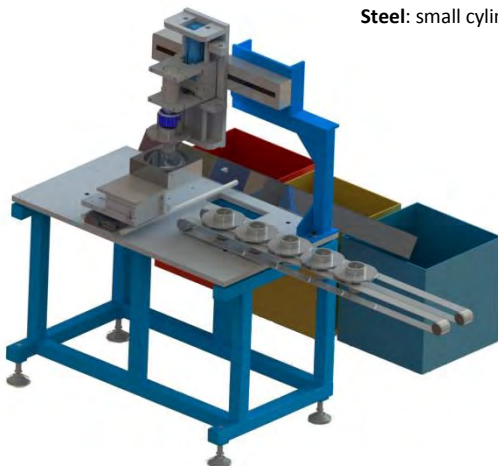
Steel: Aluminium strips inspection



Automotive : Pistons inspection



Steel: small cylindrical parts inspection



Aeronautic : Fuse wheels inspection



Automotive : sorting system for machining parts

Turnkey systems

Aeronautic : conductivity measurement on aluminium plate



Steel: aluminium strips inspection



Aeronautic : Bars inspection in special alloys by UT rotating head **RotoUTscan**



Automotive : Wires inspection by EC rotating head **RotoETscan**



Steel : Complete inspection of tubes by Eddy Current



The assurance of a quality inspection

