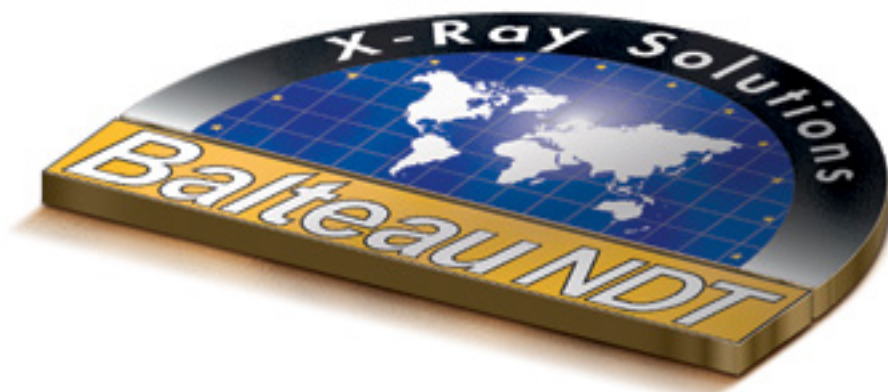


CATALOGUE OF PRODUCTS



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CATALOGUE.

X-RAY

PRODUCTS

INTRODUCTION

With this edition, we are presenting you a non-exhaustive preview of the different ranges and products we can offer and we would like to thank you for the interest you have in Balteau NDT as a company and for its products.

As an NDT manufacturer, Balteau is covering most industries by having portable units, stationary & mobile equipment, real time systems (standard and customized), NDT software, digital imaging, etc. Balteau is one of the most experienced and complete x-ray generators manufacturer and we proud ourselves for delivering high quality and highly reliable x-ray equipment for all type of industries since 1932.

For the first time we are introducing into our catalogue our products for digital applications. Understanding new requirements is very important to us as we are always looking to answer your needs with the best possible solutions. To ensure your satisfaction, Balteau has evolved into more digital applications, and developed products such as software suite, calibration tools, etc.

After sales service is one of the most important aspect for the end user and this is why we worked very hard to offer one of the best service possible. Thanks to our large and worldwide network in more than 40 countries, we are able to be responsive and offer a fast delivery for your equipment and allow every users to have fast maintenance and / or repairs in case the equipment needs it.

Highly qualified engineers, a customer orientated staff and an extensive network is one of the main reason to the success of our brand and to your possibility of always getting, from the selection of your equipment to the follow up in service and maintenance, a qualified and professional support.

Balteau NDT team.

TABLE OF CONTENT





BALTOSPOT

■ The portable range

Pulsed wave and constant potential generators, from 1 to 300kV and up to 12mA

Baltospot stands for Portable equipment used in various fields of activity where portability is the key. Used on any kind of mobile inspections, the Baltospot series provides the user with a versatile equipment, directional or panoramic, constant potential or pulsed wave from 5 to 300kV with power up to 1500 W all air cooled.

Baltospot equipment can be used for field inspections such as Shipyard building sites, foundries, power plants, tank reservoirs, pressure vessels, digital applications, aeronautics and much more. They can also be used in other various environment like laboratories, training centers, museums, etc.





Thanks to their lightweight and 100% duty cycle, they can be operated by one person only and increase productivity. As we like to think further in terms of technology or application, our portable equipment can also be used for laboratory inspections or within our shielded cabinet.

Made of 3 different Series such as, LLX (Constant potential), CERAM (Ceramic tubehead, pulsed wave) and GF (Glass tubehead, pulsed wave), the three series have different specificities and are corresponding to different applications, field of activities or budgets. Different control units are available including Balteau's wireless remote control, the Hand-X.

LLX SERIES

- Aeronautics, composites & plastics
- Building sites
- Digital applications (flat panels, CR or linear detectors)
- X-ray cabinets
- Art , museum (LLX110)





The LLX series is an air cooled, high frequency constant potential generator. It is dedicated to high technology applications like aerospace where specific requirements and speed of inspection are needed. These units are CP type and are controlled by a DC1 or Hand-XD and can be used in combination with digital detectors.

BALTOSPOT LLX110-DA	BALTOSPOT LLX160-DA	BALTOSPOT LLX200-DA	BALTOSPOT LLX200-PA PANORAMIC TUBEHEAD
			
High voltage range: 5 to 110 kV	High voltage range: 5 to 160 kV	High voltage range: 5 to 200 kV	High voltage range: 5 to 200 kV
Tube current range: 0,5 to 12 mA	Tube current range: 0,5 to 12 mA	Tube current range: 0,5 to 12 mA	Tube current range: 0,5 to 12 mA
Beam angle: 40° x 40°	Beam angle: 40° x 40°	Beam angle: 60° x 40°	Beam angle: 360° x 40°
Tubehead: Metal-ceramic	Tubehead: Metal-ceramic	Tubehead: Metal-ceramic	Tubehead: Metal-ceramic
Anode cooling type: Air	Anode cooling type: Air	Anode cooling type: Air	Anode cooling type: Air
Duty cycle: 100 %	Duty cycle: 100 %	Duty cycle: 100 %	Duty cycle: 100 %
Weight*: 16 kg	Weight*: 16 kg	Weight*: 18,1 kg	Weight*: 18,1 kg
Control unit: DC1 or Hand-XD	Control unit: DC1 or Hand-XD	Control unit: DC1 or Hand-XD	Control unit: DC1 or Hand-XD
<small>* Without rings</small>	<small>* Without rings</small>	<small>* Without rings</small>	<small>* Without rings</small>

GF SERIES

- Oil & gas
- Shipyard building & Building sites
- Petrochemical & Power plants
- tank, reservoirs & pressure vessels
- Inspection companies & training centers
- Conventional films or CR applications



The GF series derivates from the Crawler technology and is providing a reliable and cost effective solution for price sensitive markets. These units have to be combined to one of the two available type of control units, CF2000 or Hand-X with very lightweight new generation of cables.

BALTOSPOT GFD165	BALTOSPOT GFC165 PANORAMIC TUBEHEAD	BALTOSPOT GFC205 PANORAMIC TUBEHEAD	BALTOSPOT GFC305 PANORAMIC TUBEHEAD
			
High voltage range: 50 to 160 kV	High voltage range: 50 to 160 kV	High voltage range: 70 to 200 kV	High voltage range: 140 to 300 kV
Tube current range: 1 to 5 mA	Tube current range: 1 to 5 mA	Tube current range: 1,5 to 5 mA	Tube current range: 1 to 5 mA
Beam angle: 55°	Beam angle: 360° x 40°	Beam angle: 360° x 40°	Beam angle: 360° x 40°
Tubehead: Glass	Tubehead: Glass	Tubehead: Glass	Tubehead: Glass
Anode cooling type: Air	Anode cooling type: Air	Anode cooling type: Air	Anode cooling type: Air
Duty cycle*: 100 %	Duty cycle*: 100 %	Duty cycle*: 100 %	Duty cycle*: 100 %
Weight**: 12 kg	Weight**: 12,3 kg	Weight**: 25,5 kg	Weight**: 35 kg
Control unit: CF2000 or Hand-X	Control unit: CF2000 or Hand-X	Control unit: CF2000 or Hand-X	Control unit: CF2000 or Hand-X
<small>* At 30°C reduced mA. ** Without rings</small>	<small>* At 30°C reduced mA. ** Without rings</small>	<small>* At 30°C reduced mA. ** Without rings</small>	<small>* At 30°C reduced mA. ** Without rings</small>

CERAM SERIES

- Oil & Gas
- Shipyard building & Building sites
- Petrochemical & Power plants
- Foundries
- Railway parts
- Boiler or pressure vessels manufacturers





The series is made of 2 different generators based on a ceramic insert with a 100% duty cycle. The generators are specifically designed to be operated in difficult environments with a constant output. Both units have to be combined to one of the two available control units, CF2000 or Hand-X, equipped with very lightweight new generation of cables.

BALTOSPOT CERAM235	BALTOSPOT CERAM35
	
High voltage range: 70 to 235 kV	High voltage range: 100 to 300 kV
Tube current range: 0,1 to 5 mA	Tube current range: 0,5 to 5 mA
Beam angle: 40°	Beam angle: 40°
Tubehead: Ceramic	Tubehead: Ceramic
Anode cooling type: Air	Anode cooling type: Air
Duty cycle: 100 %	Duty cycle: 100 %
Weight*: 27 kg	Weight*: 29 kg
Control unit: CF2000 or Hand-X	Control unit: CF2000 or Hand-X
<small>* Without rings</small>	<small>* Without rings</small>

CONTROL UNITS



Exposure parameters are sometimes very different from one application to another. With our control units, all these values are accessible by well identified keys and can be stored in built in non volatile memories for further retrieval and use. These units are specifically designed for field operations because of their large handles, metallic covers and shock proof design.

BALTOSPOT CF2000	BALTOSPOT HAND-X	BALTOSPOT DC1	BALTOSPOT HAND-XD
			
Mains supply AC: 170 to 260 V	Mains supply AC: 170 to 260 V	Mains supply AC: 170 to 260 V	Mains supply AC: 170 to 260 V
Frenquency: 45 to 66 Hz	Frenquency: 45 to 66 Hz	Frenquency: 45 to 66 Hz	Frenquency: 45 to 66 Hz
Duty cycle: 100%	Duty cycle: 100%	Duty cycle: 100%	Duty cycle: 100%
kV min step: 1 kV	kV min step: 1 kV	kV min step: 1 kV	kV min step: 1 kV
mA min step: 0,1 mA	mA min step: 0,1 mA	mA min step: 0,1 mA	mA min step: 0,1 mA
Display: 4 line, green back lighting	Display: 4 line, green back lighting	Display: 4 line, green back lighting	Display: 4 line, green back lighting
Weight: 13 kg	Battery: 8 hours	Weight: 9,2 kg	Battery: 8 hours
Generators: Ceram & GF series	Generators: Ceram & GF series	Generators: LLX series	Generators: LLX series

CRAWLERS From Baltospot

Pulsed wave & constant potential generators, from 120 to 300 kV and up to 3 mA

Crawlers are generators used in crawlers applications that are mostly pipeline and pipe inspections using batteries as a main power supply. Very often mounted on mechanical carriages, Baltospot Crawlers are largely known for their flexibility, high compatibility and robustness in cold or very warm countries where operations are taking place.

Balteau NDT offers a complete assembly including the mechanical carrier, the well-known Balteau NDT X-ray generator, the chopper and a range of accessories in order to make the most out of this equipment and ease the job as much as possible.

When buying an equipment from Balteau, you are sure of receiving the best quality to price value. Thanks to our 100 years of continuous business under the same name as an independent X-ray manufacturer, you stay assured that you'll get a continuous support all through the very long lifetime of the equipment you purchase.

ATTENTION,
RAYONS X:

A COMPLETE CRAWLER SYSTEM IS COMPOSED OF:

1 THE PANORAMIC X-RAY GENERATOR

« Highly compatible, our generators can be adapted to any mechanical carriage of the main manufacturers »

As a major supplier in the crawlers industry, Balteau has designed generators that are specifically designed to be used for pipeline inspection and on mechanical carriers. The Balteau NDT range of generators for crawlers includes the following product: GFC160C, GFC200C, GFC300C, GCP180C & GCP200C. These generators are amongst the most robust and reliable units on the market. With a very light weight and high performances in terms of steel penetration, this equipment is clearly a reference when you are looking for an efficient, cost saving, easy and profitable pipelines inspection.

2 THE CHOPPER

« As our generators, Balteau's chopper can be adapted to any mechanical carriage of the main manufacturers »

Entirely renewed in 2014, our new chopper has already become a extremely reliable equipment and contains all features that the previous version was already offering and more. Being the power converter between the batteries and the generator, the CF3 is an intelligent regulator which will offer the most stable and constant output all along exposures. The CF3 and its CFR allow you to set all the parameters for your X-ray exposure and retrieve memory of all generators used before. The CFR also holds memory on the preheating time by retrieving the data stored in the CF3.

3 THE MECHANICAL CARRIER

« Particularly robust in order to face harsh environment and intensive use »

Depending on your needs different type of carrier can be chosen. This motorized battery powered vehicle is an essential part of the equipment. This is the reason why, this has to be particularly robust in order to face harsh environment and intensive use. They can also be preprogrammed to react to various orders given from the outside of the pipe by either a Radioactive source or a non Isotope system. More than being active on the crawler market for many years, Balteau NDT has become an essential and reliable player, with carriers to be used for all size of pipes (6"-16" / 10"-60" / 24"-72").

4 THE BATTERIES

« At least one full shift can be covered by only one battery pack»

A specific process has been developed on the CF3 to improve the operating possibilities of the battery pack, so much more exposure can be taken before the battery is discharged. This also improves the battery lifetime by a better management of discharge cycles. A 220 V optional power box allows you to use your x-ray generator on mains or with a power generator without the batteries of its mechanical carrier or for the preheating of the generator (tube).

GFC SERIES

The GFC series has been designed by Balteau's engineers to provide robust and reliable generators to be used with any mechanical carriage available on the market. These units have to be combined with a mechanical carriage, a chopper (control unit) and a set of batteries.

BALTOSPOT GCP180C & 200C



GCP180C	GCP200C
120 to 180 kV	120 to 200 kV
Approx. tube current:	2,3 mA
Beam angle:	360° x 45°
Focal spot size (IEC336):	5 X 0,6
Control unit:	Built-in chopper
Anode cooling	Forced air
Duty cycle:	50%
Steel penetration at max (*):	26 mm
Operating temperature:	Max. 70°C
Weight (without rings):	16,7 kg

*FFD= 200mm/Film Carestream Industrex AA400/D=2.0/t=1min.

BALTOSPOT GFC160C



High voltage range:	112 to 160 kV
Approx. tube current:	3 mA
Beam angle:	360° x 45°
Focal spot size (IEC336):	4 X 0,9
Control unit:	BNDT chopper or others
Anode cooling	Air
Duty cycle:	50%
Steel penetration at max (*):	12,5 mm
Operating temperature:	-10 to 40°C
Weight (without rings):	11 kg

*FFD= 700mm/Film Carestream Industrex AA400/D=2.0/t=10min.

BALTOSPOT GFC200C



High voltage range:	140 to 200 kV
Approx. tube current:	3 mA
Beam angle:	360° x 45°
Focal spot size (IEC336):	4 X 1,2
Control unit:	BNDT chopper or others
Anode cooling	Air
Duty cycle:	50%
Steel penetration at max (*):	24 mm
Operating temperature:	-10 to 40°C
Weight (without rings):	20 kg

*FFD= 700mm/Film Carestream Industrex AA400/D=2.0/t=10min.

BALTOSPOT GFC300C



High voltage range:	150 to 300 kV
Approx. tube current:	3 mA
Beam angle:	360° x 45°
Focal spot size (IEC336):	4 X 1,3
Control unit:	BNDT chopper or others
Anode cooling	Air
Duty cycle:	50%
Steel penetration at max (*):	44 mm
Operating temperature:	-10 to 40°C
Weight (without rings):	23,5 kg

*FFD= 700mm/Film Carestream Industrex AA400/D=2.0/t=10min.

AN EASY WAY TO FIND WHICH GENERATOR SUITS WHICH CRAWLER VEHICLE...





BALTOGRAPH

The mobile & stationary range

Monopolar and bipolar, mobile and stationary, from 1 to 450kV and up to 50mA

Baltograph range is a mobile and stationary set of equipment. These equipments are to be used in high demanding applications or in places where production cycles are requiring high power or water/oil cooled tubes.

The entire range has been designed to answer the industry new requirements, excels in production line operations and also has extremely high performances when it comes to digital applications. Baltograph equipment are used in various NDT applications and inspections such as energy, aeronautics, transport, military, bio-medical, and much more..

The difference between the Baltograph series and a portable equipment is that different combinations of tubes are available with the same generator and that no compromise has been made with the power and weight.

When you buy an equipment from Balteau, you are certain of getting the best quality to price value and thanks to our 100 years of continuous business under the same name as an independent X-ray manufacturer, you rest assured that you'll get a continuous support all through the very long lifetime of the equipment you bought.

XSD SERIES

MOST COMMON APPLICATIONS

- Oil & Gas
- Energy
- Aeronautical/ aerospace
- Transport
- Military
- Bio-medical & agriculture

A full X-ray equipment is made up of a generator (XSD), a control unit (LS1), a tubehead (TSD or TSC) and a cooling unit (WCU or OACU). Balteau XSD generators are 19" racks, built around a sealed, oil and gas free, solid stage voltage multiplier. SMD (surface mount devices) electronic is used to reduce maintenance time, size and weight. XSD are either monopolar or bipolar: generators are 100, 160, 225, 320, 420 and 450 kV. Powers available are 4 to 4,5 kW.

BALTOGRAPH XSD160/4KW



High voltage range:	5 to 160 kV
Tube current range:	0,1 to 50 mA
Max. output power:	4000 W
Tubehead:	Metal-ceramic
Anode cooling type:	Water
Duty cycle:	100 %
Weight:	68 kg
Control unit:	LS1 or LS1C2

BALTOGRAPH XSD225/4KW



High voltage range:	5 to 225 kV
Tube current range:	0,1 to 30 mA
Max. output power:	4000 W
Tubehead:	Metal-ceramic
Anode cooling type:	Water
Duty cycle:	100 %
Weight:	109 kg
Control unit:	LS1 or LS1C2

BALTOGRAPH XSD320/4,5KW



High voltage range:	5 to 320 kV
Tube current range:	0,1 to 30 mA
Max. output power:	4500 W
Tubehead:	Metal-ceramic
Anode cooling type:	Oil
Duty cycle:	100 %
Weight:	136 kg
Control unit:	LS1 or LS1C2

BALTOGRAPH XSD450/4,5KW



High voltage range:	5 to 450 kV
Tube current range:	0,1 to 30 mA
Beam Max. output:	4500 W
Tubehead:	Metal-ceramic
Anode cooling type:	Oil
Duty cycle:	100 %
Weight:	218 kg
Control unit:	LS1 or LS1C2

COOLING UNITS

To ensure the best colling possible and the most reliable equipment with always 100% duty cycle (24h/day). Water cooling units are used for our monopolar tubeheads up to 3000W or 4000W and oil cooling unit for bipolar tubeheads up to 4500W.

BALTOGRAPH WCU3000



Dimensions:	442 x 398 x 446 mm
Coolant capacity:	3,7 l
Cooling capacity:	3000 W
Water flow:	6 l/min
Noise level:	55 dBA
Max. forward pressure:	8 Bar
Weight:	38,5 kg
Operating temp.:	Up to 40°C

BALTOGRAPH WCU4000



Dimensions:	400 x 320 x 550 mm
Coolant capacity:	5 l
Cooling capacity:	4000 W
Water flow:	4,4 l/min @ 4.0 bar
Noise level:	72 dBA
Max. forward pressure:	6,7 Bar
Weight:	40 kg
Operating temp.:	Up to 45°C

BALTOGRAPH OACU4500



Dimensions:	750 x 350 x 650 mm
Coolant capacity:	23 l
Cooling capacity:	4500 W
Water flow:	> 23 l/min
Noise level:	63 dBA
Max. forward pressure:	9,3 Bar
Weight:	54 kg
Operating temp.:	Up to 40°C

XMD SERIES

MOST COMMON APPLICATIONS

- Oil & Gas
- Energy
- Aeronautical/ aerospace
- Transport
- Military
- Bio-medical & agriculture

CONTROL UNITS



XMD is the mobile version of the XSD. A robust trolley has been specially designed to bring your powerful XSD to the very location of your inspections. Equipped with 2 wheels, well balanced to be easily handled by its hooks if necessary, the trolley is taking all accessories including the 3 or 4 kW closed circuit water cooling unit. No matter if you have narrow doors to pass, the width has been calculated to be kept to the minimum. XMD can be delivered as a 160 or 225 monopolar unit.

The Baltograph series have 2 available control units, our well known and classic LS1 and its rack version, the LS1C2. Providing all controls and comfort options to help the user and the production in getting the best of the inspection. Both of these units software have been entirely renewed to ensure your daily jobs stay easy. All characteristics from the previous version are still available but also more...

BALTOGRAPH XMD160/4KW



High voltage range:	5 to 160 kV
Tube current range:	0,1 to 50 mA
Max. Power output:	4000 W
Tubehead:	Metal-ceramic
Anode cooling type:	Water
Duty cycle:	100 %
Weight:	185 kg
Control unit:	LS1

BALTOGRAPH XMD225/4KW



High voltage range:	5 to 225 kV
Tube current range:	0,1 to 30 mA
Max. Power output:	4000 W
Tubehead:	Metal-ceramic
Anode cooling type:	Water
Duty cycle:	100 %
Weight:	250 kg
Control unit:	LS1

BALTOGRAPH LS1



Measure of kV & mA:	True measure
kV step:	1 - 2 - 5 kV
mA step:	0,1 - 0,2 - 0,5 mA
Display:	TFT colour screen
memories:	10.000
Duty cycle:	100 %
Weight:	4,8 kg
Modes:	Standard, Supervisor, SAV

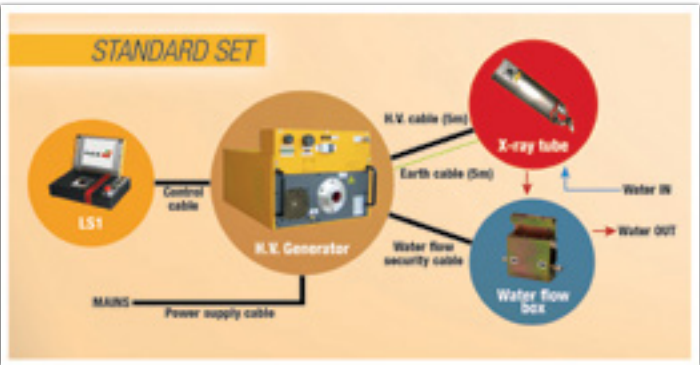
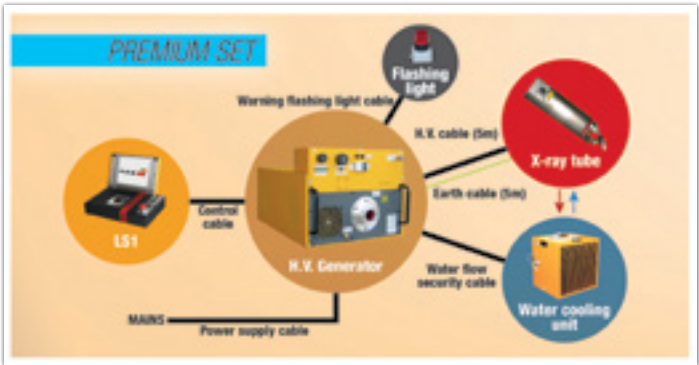
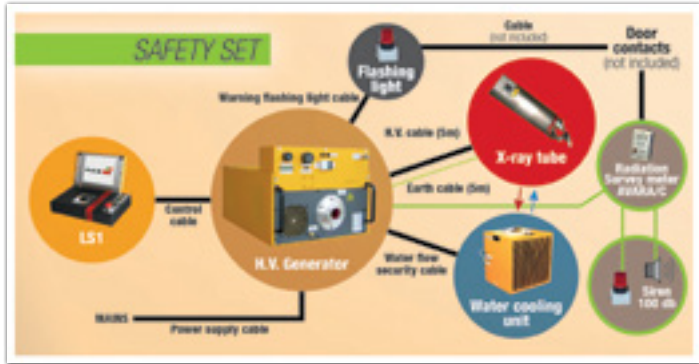
BALTOGRAPH LS1C2



Measure of kV & mA:	True measure
kV step:	1 - 2 - 5 kV
mA step:	0,1 - 0,2 - 0,5 mA
I/O:	4 x Sub-D9
memories:	10.000
Duty cycle:	100 %
Weight:	4,8 kg
Modes:	Standard, Supervisor, SAV

3 DIFFERENT AVAILABLE SETS, SAFETY, PREMIUM AND STANDARD.

(Feel free to contact us for more details on our sets and / or our products at sales@balteau-ndt.com)





Monopolar tubes are giving the user the required flexibility for fixed or mobile installations. These tubes are made out of an insert into a shielded housing with a ceramic HV cone to connect the generator. Inside the housing the cooling circuit is made of a serpentine tube in which the coolant fluid (water and eventual additive for cold countries) which will remove calories at the very heart of the anode.

PANORAMIC TUBEHEADS

TSC200

- Max. high voltage: 200 kV
- Max current: 10 mA
- Nominal power: 600 W
- Focal spot size*: 4 x 0,4
- Anode cooling type: Water
- Weight: 13 kg




TSC160

- Max. high voltage: 160 kV
- Max current: 12 mA
- Nominal power: 1000 W
- Focal spot size*: 4 x 0,4
- Anode cooling type: Water
- Weight: 8 kg




DIRECTIONAL TUBEHEADS




TSD225-0		
	S. focal	L. focal
Max. high voltage:	225 kV	225 kV
Max current:	15 mA	30 mA
Nominal power:	640 W	3000 W
Focal spot size*:	1	5,5
Anode cooling type:	Water	Water
Weight:	13 kg	13 kg

TSD225-1		TSD225-3		TSD225-4	
S. focal	L. focal	S. focal	L. focal	S. focal	L. focal
225 kV	225 kV	225 kV	225 kV	225 kV	225 kV
15 mA	30 mA	14,5 mA	30 mA	18 mA	30 mA
640 W	1600 W	800 W	1800 W	900 W	2500 W
1	3	0,4**	1	1	3
Water	Water	Water	Water	Water	Water
11 kg	11 kg	11 kg	11 kg	12 kg	12 kg



TSD160-0		
	S. focal	L. focal
Max. high voltage:	160 kV	160 kV
Max current:	15 mA	40 mA
Nominal power:	640 W	3000 W
Focal spot size*:	1	5,5
Anode cooling type:	Water	Water
Weight:	8 kg	8 kg

TSD160-1		TSD160-3		TSD160-5	
S. focal	L. focal	Focal	S. focal	L. focal	L. focal
160 kV	160 kV	160 kV	160 kV	160 kV	160 kV
15 mA	40 mA	15 mA	20 mA	40 mA	40 mA
640 W	1600 W	640 W	800 W	1800 W	1800 W
1	3	1	0,4**	1	
Water	Water	Water	Water	Water	Water
8 kg	8 kg	8 kg	8 kg	8 kg	8 kg



TSD100-1		
	S. focal	L. focal
Max. high voltage:	100 kV	100 kV
Max current:	24 mA	24 mA
Nominal power:	1000 W	1000 W
Focal spot size*:	3	3
Anode cooling type:	Water	Water
Weight:	3,5 kg	3,5 kg

* Measurement method of focal spot size EN12543

** 30% Threshold



When HV increases, the dielectric strength of even advanced materials is very often not sufficient to provide a good electrical insulation. This is the basic reason for building Bipolar tubes when more than 225kV is expected. These tubes are easily recognizable by the fact that two HV ends are present with a specific Anodic and Cathodic identification. Due to the high difference of potential, the cooling media is always dielectric oil.

DIRECTIONAL TUBEHEADS



TSD450-0C		
	S. focal	L. focal
Max. high voltage:	450 kV	450 kV
Max current:	20 mA	30 mA
Nominal power:	1500 W	4500 W
Focal spot size*:	2,5	5,5
Anode cooling type:	Oil	Oil
Weight:	116 kg	116 kg

TSD450-0		TSD450-2	
S. focal	L. focal	S. focal	L. focal
450 kV	450 kV	450 kV	450 kV
10 mA	24 mA	6 mA	14 mA
900 W	4500 W	700 W	1500 W
2,5	5,5	0,4**	1
Oil	Oil	Oil	Oil
95 kg	95 kg	95 kg	95 kg



TSD420-0A		
	S. focal	L. focal
Max. high voltage:	420 kV	420 kV
Max current:	10 mA	30 mA
Nominal power:	900 W	4500 W
Focal spot size*:	2,5	5,5
Anode cooling type:	Oil	Oil
Weight:	95 kg	95 kg

* Measurement method of focal spot size EN12543

** 25% Threshold



TSD320-0		
	S. focal	L. focal
Max. high voltage:	320 kV	320 kV
Max current:	15 mA	30 mA
Nominal power:	1500 W	4200 W
Focal spot size*:	3	5,5
Anode cooling type:	Oil	Oil
Weight:	41 kg	41 kg

TSD320-2		TSD320-3		TSD320-5	
S. focal	L. focal	S. focal	L. focal	S. focal	L. focal
320 kV	320 kV	320 kV	320 kV	320 kV	320 kV
9 mA	20 mA	11 mA	25 mA	15 mA	35 mA
640 W	1600 W	800 W	1800 W	1500 W	4200 W
1,9	3,6	0,4**	1	3	5,5
Oil	Oil	Oil	Oil	Oil	Oil
40 kg	40 kg	40 kg	40 kg	40 kg	40 kg

ACCESSORIES SUCH AS COLLIMATOR, SHUTTER, PREHEATING BOX, TRIPOD, ETC. ARE AVAILABLE FOR TUBEHEADS, PLEASE CONTACT US VIA SALES@BALTEAU-NDT.COM OR YOUR LOCAL SALES REPRESENTATIVE FOR MORE DETAILS.

YOU DIDN'T FIND WHAT YOU WERE LOOKING FOR ?...
ONLY A FEW OF OUR AVAILABLE TUBEHEADS ARE PRESENT IN THIS CATALOGUE, WE MAY ALREADY HAVE WHAT YOU REQUIRE. AND IF WE DON'T HAVE IT, WE HAVE THE ABILITY TO DESIGN IT FOR YOU ACCORDING TO YOUR OWN TECHNICAL REQUIREMENT.

All specifications are non contractual and are subject to change without prior notice.

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All specifications are non contractual and are subject to change without prior notice.

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BALTOMATIC ■ Real time Systems

Complete Standard & customized real time systems

Baltomatic is incorporating all elements used with Automatic inspection systems. Equipment proposed in this series are designed to fit in automatic or semi automatic systems aiming to provide inspection solutions to various type of demands and fiels of operations.

Equipment proposed are elements that can be used alone or in combination to perform inspection tasks according to specific requirements. Standard or customized, elements can be shielded cabinets, manipulators, flat panels, etc.

The Baltomatic series is showing you a basic overview of what has been produced by Balteau in the recent years and all systems presented in this catalogue can be adapted or modified to fit exactly into your own requirements.

WHAT IS A COMPLETE SYSTEM MADE OF?

Due to the various different systems made by Balteau (standard or customized), we can now propose any type of combinations: different generators, digital or analogical detectors, cabinet sizes or different ways of manipulating the object can be proposed and will drive the final result offered to your review. Here are the main components our systems are made with:

SHIELDED X-RAY CABINET (CBN)



When you don't have the proper irradiation room, Balteau can design it for you. Made of Steel-Lead-steel sandwich plates, our cabins can be equipped with hinged or sliding doors, with or without shielded window. Thanks to their robust and rigid constructions our cabins can also be moved from location with the appropriate lift trucks. Shielding is calculated by Balteau following International standards and all cabins can be delivered with a Shielding Certificate issued by a third party. Cabins are equipped with electrical connexions, switches and lighting. Sometimes, a separate section can also host the generator and cooling device.

X-RAY SOURCE (SCE)



We provide x-ray sources from 100 to 450 kV with different characteristics. Once Energy and power have been defined according to the application, any corresponding Balteau units can be selected or proposed to be integrated into a system. Mostly common integrations are Baltograph series with a monopolar or bipolar tubehead depending on the selected equipment. When budget are limited and applications are allowing it, we can also propose Baltospot units (portable equipment) to be integrated to the system.

MANIPULATOR (MNP)



Variety of possible manipulation of an object is such that it is difficult to describe them all. Basically one can move the object, the detector and or source or all of them. The selection of the proper manipulator is one of the most important thing that will condition the versatility of your system in the future. When moving the object, things like weight, size of the object, travelling distances and area coverage will define what need to move, with what accuracy and speed. We have a list of standard manipulators from 2 to 6+ axis on both object and Source/ Detector, from 5 kg to 500 kg. Other manipulators, up to 9 axis are available upon request.

COLLIMATOR (CLM)

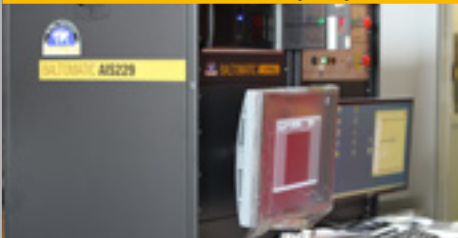


Not only for shielding efficiency and reduction but also for improving image quality with the reduction of scattering, collimators are existing to be used on the detector or the source side.

It can be composed of 2 or 4 independent motorized sliding shutter, from 100 kV to 450 kV.

By closing all shutters, the collimator will also increase the lifetime of the detector.

CONTROL DESK (CTL)



All elements are gathered in a control desk which can have different form and sizes. The control desk is feeding the system and hosting the necessary switches, fuses or breakers to make the installation as independent as possible. Most of our control desks are 19" compatible.

The control desk presented here encloses a dual 19" PC Rack, A LS1C2 control unit, dual monitors (high brightness B&W, color), and more.

DETECTOR (DTR)



Any type of detector can be placed into a system when it has been properly designed. Film, LDA (linear detector arrays), Flat Panels or Image intensifier, Balteau can propose the integration of various solutions according to the specification or application. The selection of components integrated can either be the selection of the customer or a documented proposal when the customer wants a specific resolution or result. The main criteria after Performance will be price and therefore our specialists can certainly help you in that field to assist you in the proper selection.

INSPECTION SUITE

When radiography becomes digital, your system will need an Image Processing Software but not only; this is the reason Balteau's engineers developed a complete suite of software, able to control every parts of your installation that have been baptised «The Inspection Suite».

Part of the Baltoscope family and a direct successor of our well known IPS011, the Inspection Suite is made of different software modules, including our brand new IPS012. Discover all the possibilities the Baltoscope Inspection Suite can offer to your everyday jobs.

For further information about the suite, please refer to the Baltoscope range on page 24 and do not hesitate to contact one of our sales manager.

A few example of Balteau's most popular systems with a brief description. If you want more details, do not hesitate and contact us via sales@balteau-ndt.com

AIS 229 - Multipurpose X-Ray Solution

Latest standard & automatic real time system developed by Balteau. It has been designed to do series inspection in a wide variety of industry. Composed of a shielded cabinet, 5 axis manipulator and equipped with the version of the Inspection suite, it will facilitate and accelerate the everyday inspection jobs thanks to its software allowing to record motions to automatized the inspection. The operator will also be able to process the image with the included IPS012 image processing software.

MAIN CHARACTERISTICS

- Shielded cabinet
- A 5 axes motorized manipulator
- An x-ray generator type XSD
- An x-ray tube head type TSD or TSC
- A flat panel FP Digit (14 or 16 bits)
- A diaphragm 4 shutters (CLMT 4-4)

- A control desk
- Inspection Suite of software

APPLICATIONS

Multipurpose real time inspection system



AIS 912 - Honeycomb composite material

The AIS912 has been created with the aim to automate the inspection of composite material with honeycomb structure and as a result to accelerate the inspection process. Thanks to its 9 motorized axes and with the different software developed by our engineers, the AIS912 allows the records of different motions the operator needs in order to radiography the whole sample with only one action. Every picture is then saved on a server database and can be processed by our Image processing system IPS012.

MAIN CHARACTERISTICS

- A 9 axes motorized manipulator
- An X-ray generator type XSD
- An X-ray tube head type TSD or TSC
- A flat panel FP Digit
- A control unit type LS1
- A control desk

APPLICATIONS

Aerospace, Automotive, Composite and large objects



AIS203RD - Metallic & non-metallic components

The AIS203RD has been created to inspect metallic and non-metallic components. It has been built for every single element to be configurable and highly flexible to be used in different applications in digital radiography. The system is built around a robot for the detector/source manipulation in order to provide the user with every possible inspection angle for any components that can be fitted on the main manipulator. All sequences of inspection can be unique or repeated using the 'record and play' functions.

MAIN CHARACTERISTICS

- Shielded cabinet (optional)
- An X-ray generator type XSD
- An X-ray tube head type TSD or TSC
- A flat panel FP Digit
- A control desk
- A collimator

- A manipulator with horizontal rotating motion
- An industrial robot with multiple axes
- Inspection Suite of software

APPLICATIONS

Aerospace, Hollow forgings, In line production

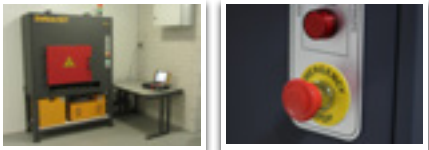


AIS958 - Small to middle size components



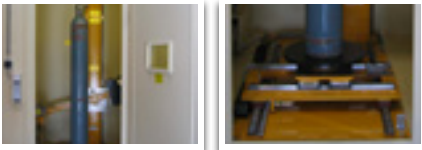
Very compact complete digital X-ray system allowing the inspection of a wide variety of samples. The 5 axis motorized manipulator can inspect a sample from all angles and thus, achieve a complete inspection. It can also be mobile with its installation in a trailer (optional), allowing to move over a wide area and respond effectively to customer requests.

AIS228- Small to middle size components



Very compact equipment that has been designed to inspect a wide variety of samples with different thicknesses. This shielded cabinets includes a directional X-ray generator from Baltospot range. The cabinets is made of a steel structure with lead reinforcement «sandwich» type assembly (steel-lead-steel). Can be equipped with a rotating plate (optional).

AIS201 - Inspection of welded cylinders



Real Time system especially designed for the control of welded cylinders. This cost effective inspection system will drastically cut down the inspection time and cost, thanks to its motorized (automatic optional) handling 5 axis manipulator. Equipped with the XSD160 specially suited to the RTR inspection, thanks to its high dose stability.



BALTOSCOPE

Digital Imaging

Digital imaging & radioscopic modular software solution

Digital detectors have become unavoidable in Radiography. Benefiting from fast electronics progresses and also from volume production which has driven prices down and quality standards up. Digital detectors have now reached all sectors of Industries and have been adapted to fit to the most stringent requirements like harsh environment, high and very high energies, etc...

Digital imaging is not only taking care of environmental aspects by removing chemical processes in radiography, but also improves production efficiency and quality by providing faster and better images with larger latitude for increased legibility of indications.

But detectors themselves are useless without the right software to use them and process snapshots. This is why Balteau has designed a modular software solution able to control & process every part of a radioscopic installation.



Flat panels are a combination of electronic and Silicon technologies which gives a direct conversion media for displaying radiographic images instead of using films. Flat panels are basically a two dimension array of detectors which sensitivity is 10 to 100 times greater than conventional films. This helps in reducing exposure time but also gives an extended range of thicknesses with the same use of energy. Balteau provides a wide range of flat panels of different sizes, dimensions and pitches to fit in your applications and requirements with also a « Phantom » allowing calibrations. Please contact us with your requirements.

BALTOSCOPE FPDIGIT13-127	BALTOSCOPE FPDIGIT11-200	BALTOSCOPE FPDIGIT22-200	BALTOSCOPE PHANTOM
Pixel area: 19,5 x 24,4 cm	Pixel area: 20,5 x 20,5 cm	Pixel area: 41 x 41 cm	Dimensions: 326 x 275 mm
Pixel pitch: 127 µm²	Pixel pitch: 200 µm²	Pixel pitch: 200 µm²	Homogeneity measurement
Spacial resolution: 3,94 lp/cm	Spacial resolution: 25 lp/cm	Spacial resolution: 25 lp/cm	Distortion measurement
AD/conversion: 16 bits	AD/conversion: 14 or 16 bits	AD/conversion: 14 or 16 bits	Linearity measurement
Frame rate: Up to 30	Frame rate: Up to 30 (14bits)	Frame rate: 1 (14bits)	Sensitivity measurement with:
Standard shielding: 225 kV	Standard shielding: 160 kV	Standard shielding: 160 kV	2 zones of holes IQI
System interface: Gigabit Ethernet	System interface: Gigabit Ethernet	System interface: Gigabit Ethernet	MTF measurement with:
Weight: 2,51 kg	Weight: 3,7 kg	Weight: 8,8 kg	Duplex IQI

Linear Diodes arrays (LDA) are also available, up to 1.2m length with different versions of scintillators. Contact us with your requirements at sales@balteau-ndt.com
An image acquisition module is delivered with Balteau NDT dectector such as flat panel or LDA showing the image in real time like in fluoroscopy.

INSPECTION SUITE

« The inspection suite can be delivered with any already owned installation and is always supplied with our standard and customized real time inspection systems »

A complete suite of software made of modules for each part of your inspection system able to communicate between each other but not only. Discover what can offer the Balteau NDT Inspection Suite. From manipulator motions to source settings, every step of your inspection can be previously taught and recorded to the system to be retrieved from the database when it is needed. All modules combined offer one the most powerful solution available on the market of x-ray inspection.

AUTOMATION

Module Integrator

Automation is the module that will merge and lead all others such as XRRC, ARC, DRC, Etc. into one window and offer access to all controllers on only one screen. Automation also includes a teaching mode (optional) which will allow records of motions, x-ray settings, time of exposure, etc. to automate the inspection of components. A database add-on (optional) is also available which will memorise, store and indexed all data recorded to allow an easy retrieval by doing a research on the metadata.



IPS012

Image Processing System

IPS is the Image Processing System that will convert the electronic data into an intelligible image that you will be able to store, process, print or transfer to other users. Based on a Windows platform, this software is embedding all common and usual processing algorithms. Combined with the acquisition module, snapshots can be sent directly to the IPS as long as computers are plugged on the same network.

Possible add-on:

- SRb: Basics Spacial Resolution
- SNR: Signal to Noise Ratio
- Diconde: Diconde reader
- DB: Database

ACQUISITION

Detectors module

Drives detectors such as flat panel or digital camera. Showing images in real time, the user can take snapshot whenever he's satisfied and it will be automatically stored on the selected disk. This module can support Diconde, Dicom, Tiff, Jpeg, Png, Bmp and raw images.



- Type of dectectors:
- Image intensifier (Bix)
 - Flat panel (FPDigit)
 - Linear Detector Array

XRRC

X-Ray Remote Control

Connects to the X-ray source using a serial link and is able to control all operations remotely, directly on the computer screen. Allowing you to interact with the mA, kV, start and stop the X-ray from running, view of the tube characteristics and state, start and stop preheating.



- Type of sources:
- Balteau NDT
 - Others

ARC

Axis Remote Control

This module will control the motors of the equipement, such as manipulators, doors, etc. It works with the latest technology and allows up to 9 axes. This module can also be driven by remote control when used for teaching inspection process.



- Type of motion objects:
- Motor drive
 - Low torque
 - High torque

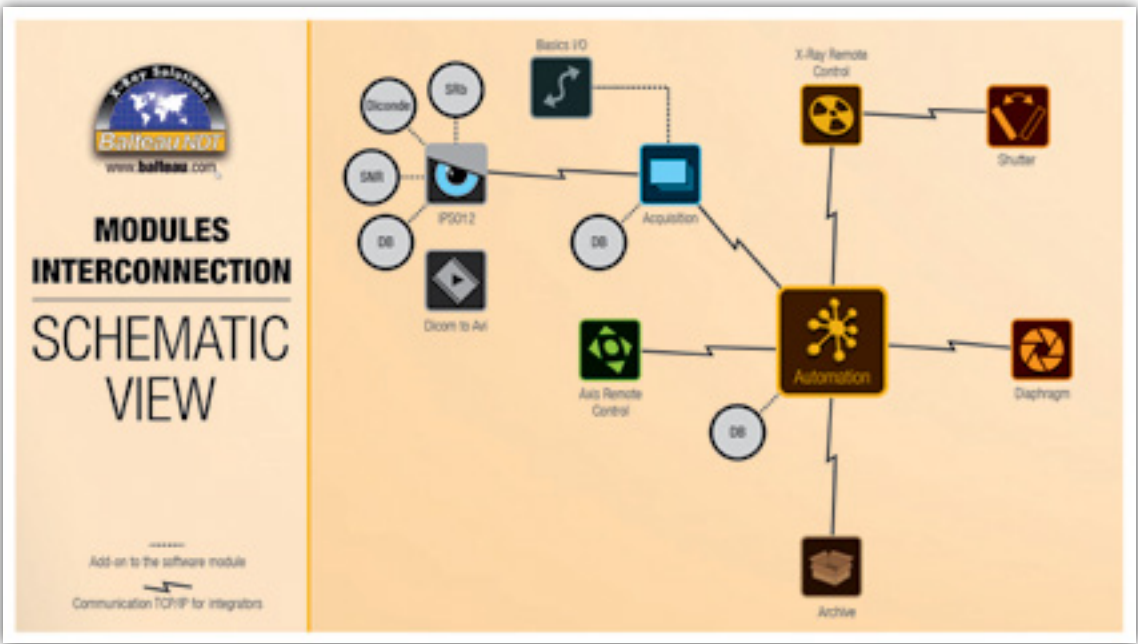
DRC

Diaphragm Remote Control

Controls the motors of the different shutters of the collimator. It works with the latest technology regarding motors control and allows up to 4 shutters.



- Type of collimators:
- Balteau NDT CLMT
 - Others



DICOM TO AVI

Image converter

DICOMtoAVI is a stand alone software and also an add-on to IPS012. It will convert high quality DCM images into a more compact and portable AVI file for sharing with customers or third parties. It uses native Windows Media Player or any other basic video player for sequence playing. AVI generated in high compression will lead to approximately 1,5 MB for 40 DCM images.

BASIC I/O

Peripherals module

Peripherals is the link between the computed system and all accessories such as radiation alert & switches. The driver will send impulsion to the system to inform of the accessory statut.

- Type of peripherals:
- Safety & emmergency switches
 - Avara
 - Etc.

SRC

Shutter Remote control

Linked to XRRC, SRC will control and collimate the x-ray beam when required by the user.

ARCHIVE

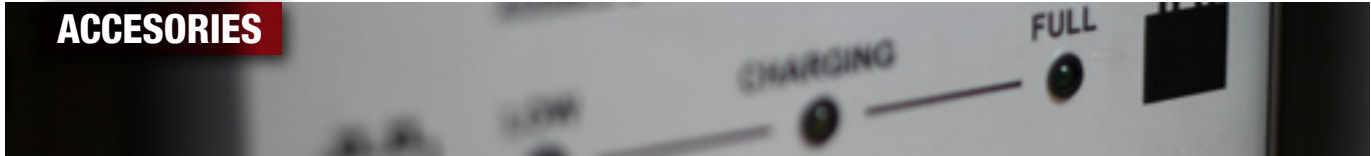
Storage module

Old components will be stored in archive in case an old design need repairs, maintenance or inspections.



ACCESSORIES.

For Balteau products, safety, measurement & quality improvement



Balteau offers a lot of different accessories made to serve the existing ranges of products or to ensure a complete inspection from beginning to end with Balteau's products.

AVARA/P



Audible visible automatic radiation alert

AVARA/P is the unavoidable tool for an efficient control of a specific area in order to guarantee a maximum security to the operator and other people standing close to the working zone.


CLIGNOTIX



Warning flashing light with 20 m cable

An external warning Flash light (Clignotix) can be connected to the control unit, indicating the emission of X-rays.


AVARA/C



Audible visible automatic radiation alert

AVARA/C is the cabin version of the portable version of the avara, allowing the operator to monitor closely the working area.

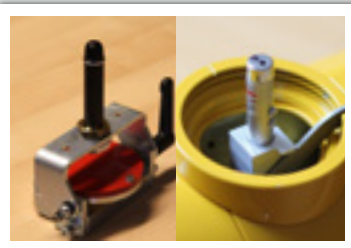
LEAD OBTURATOR



Led obturator for preheating

Ensuring better safety of the user while preheating and also lengthen the life of a digital camera such as flat panels or bix with stopping the x-rays aging the unit.


LASER CENTERING DEVICE



Laser centering device

It is a module that has to be attached to the window the tubehead. It consists of a metallic attachment with a smaller laser pen, available for Baltospot & Baltograph.

DIAPHRAGM



Diaphragm 10 x 48 mm or 10 x 24 mm

Using diaphragms will help having a better quality of the image taken and also lower the scattering as the beam of x-ray will be reduced.

FLS02



Four legs support (FLS02)

This four legs stand facilitates the accurate positioning of the generator to the support. Units are surrounded and protected by a steel frame which can be securely fastened on the height adjustable legs.

PROTECTIVE CRADLE



Protective cradle

The cradle provides good protection for directional generators against shocks and simplifies their handling. It can be easily turned into a four leg stand or adapted to the hydraulic stand.

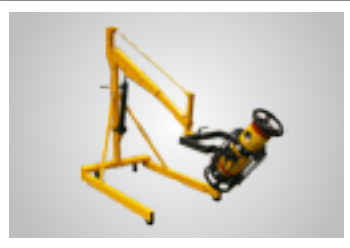
TRANSPORT CASE



Transport case

The best way to transport balteau's generators and it's accessories is this transport case, protecting and securing the equipment at all time.

HYDRAULIC STAND



Hydraulic stand with yoke and cradle

The X-ray beam can be oriented at any angle between the vertical and horizontal positions. The crane can be mounted with any of the tubeheads. and is mounted on the hydraulic appropriate clamp.

TRIPOD



Tripod stand for tubehead

This aluminium robust device is used to ease the work of the operator. The shoulder strap makes the carrying of this tripod very convenient.


UTS01



Universal stand , mechanical lifting

The UTS01 is an assistance for the tube positioning. The tube is held by a strong steel tubing which gives the ability to move the tube in three different axis.

PEX01



Personal exposure assistant - PEX01

It gives you the right exposure time and eliminates the risks of retaken due to calculation errors. It is easy to use thanks to the joystick and the simple menu.

POWER GENERATOR



Power generator 4.2 KVA single 50 Hz 230V 3200 Watts - fuel

Thanks to our equipments ready to work on power generator, Balteau provides a solution to work in every environment, even when there is no power available.

RING LEAD SCREEN



Ring lead screen allowing directional shot and centering rods kit

Most of your work is done with a panoramic tube but sometimes a directional beam would be useful? This ring lead screen is your solution.

WATER SECURITY BOX



Water security box

designed to be used on water cooling network or with water cooling unit without security. The box will permanently verify the pressure and the temperature of the water used to cool down the anode of the tubehead..

PREHEATING BOX



Preheating box for tubehead

To ensure a safe environment during preheating, a shielded box has been designed by Balteau where the tubehead can be placed.

LS1 REMOTE CONTROL



LS1 Remote control

When inspection can't be made in a shielded cabinet, the security of the user can be kept, thanks to this remote control with up to 40m cable plugging to the LS1 control unit.

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