NOVATEST
Testing Solutions

BETRATRON

Portable Betatron systems are a range of compact circular electron accelerators producing a high energy directional X-Ray beam. The Betatron systems are easy to assemble, operate and maintain. They contain no moving parts or cooling liquids so maintenance required on the systems is minimal. They are capable of producing radiographs of very high contrast, sensitivity and resolution allowing operators to meet the tightest inspection standard.

The Betatron range consists of 4 systems each with a different maximum energy, the outputs are 2.5, 6, 7.5 and 9 MeV. The energy produced on the systems varies from 2 Mev up to the maximum and adjustments can be made in 0.1 MeV increments. The systems offer cost savings and a greater degree of portability than systems such as linear accelerators (Linacs) which are much larger, non-portable and can cost up to 10 times the price of a Betatron.

APPLICATIONS:
The Betatron systems range has been designed for a wide variety of applications in many sectors of the NDT industry. Examples include the inspection of large thick parts, castings, valves, beams, ship hulls, pressure vessels, engine blocks, thick welds, composites, reinforced concrete buildings, bridges and infrastructure.

> Portable X-Ray Betatron PXB2.5D (2.5 MeV)
The PXB2.5D portable X-Ray Betatron is designed to produce high energy ionising radiation for industrial radiographic non-destructive testing. Half Value Layer (HVL) for Steel is 20mm
The PXB2.5D produces radiographs of very high contrast, sensitivity and resolution. The PXB2.5D is recommended for radiographic testing of weld joints and castings with a steel thickness of 30 to 120mm, concrete and other materials from 100 to 300mm. The irradiation field equals 350mm x 350mm @ 1m focal distance.

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The PXB2.5D can replace cobalt isotope gamma sources which may not give acceptable quality and require costly periodic replenishment.

> Portable X-Ray Betatron PXB6M (6 MeV)
The PXB6M is recommended for radiographic testing of weld joints and castings with a steel thickness of 50 to 200mm, concrete and other materials from 200 to 900mm. Half Value Layer (HVL) Steel 28mm.
The irradiation field equals 250mm x 250mm @ 1m focal distance. In operation the PXB6M has no need for compensating filters that improves the uniformity of the radiation field.

> Portable X-Ray Betatron PXB7.5M (7.5 MeV)
The PXB7.5M produces radiographs of very high contrast, sensitivity and resolution. Half Value Layer (HVL) STEEL: 32mm
The PXB7.5M is recommended for radiographic testing of weld joints and castings with a steel thickness of 50 to 300mm, concrete and other materials from 200 to 1200mm.
The irradiation field equals 250mm x 250mm @ 1M focal distance. In operation the PXB7.5M has no need for compensating filters that improves the uniformity of the radiation field.

> Portable X-Ray Betatron/Cyclotron PXB9 (9 MeV)
The JME Portable Betatron is a compact circular electron accelerator producing a high energy directional X-Ray beam. Containing no moving parts except small airflow fans, and no circulating liquids, the Betatron is easy to assemble, operate and maintain.

2.5MeV Portable X-Ray Betatron

7.5MeV Portable X-Ray Betatron

6MeV Portable X-Ray Betatron

9MeV Portable X-Ray Betatron

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TECHNICAL FEATURES:

> Portable X-Ray Betatron PXB2.5D, technical specification:
• Peak X-Ray Output: 2.5MeV
• Dose rate @ 1m: >0.7R/minute
• Focal Spot Size: 0.2 x 2mm
• Duty Cycle Radiation Beam: 75% per hour
• Beam Coverage: 350 x 350mm @1m
• Radiographic Sensitivity: Down to 1%
• Supply Voltage: Single-phase, 110V or 220V, 50/60Hz
• Adjustment range of energy: 1.0 to 2.5MeV in 0.1MeV increments
• Power Consumption: 1.0kW (4.5A @220V, 9A @ 110V)

DIMENSIONS AND WEIGHT
• Accelerator (Radiator): 440 x 300 x 150mm, 31kg
• Power Unit: 445 x 245 x 390mm, 20kg
• Control panel: 235 x 200 x 115mm, 1.5kg
• Pulse converter: 415 x 205 x 240mm, 10.5kg

> Portable X-Ray Betatron PXB6M, technical specification:
• Peak X-Ray Output: 2 to 6MeV
• Dose rate @ 1m: >3R/minute
• Focal Spot Size: 0.3 x 3mm
• Duty Cycle Radiation Beam: 75% per hour
• Beam Coverage: 250 x 250mm @1m
• Radiographic Sensitivity: Down to 1%
• Supply Voltage: Single-phase, 110V or 220V, 50/60Hz
• Adjustment range of energy: 2.0 to 6MeV in 0.1MeV increments
• Power Consumption: 2.0kW (9A @220V, 18A @ 110V)
(Single or Three Phase available upon request)

DIMENSIONS AND WEIGHT
• Accelerator (Radiator): 600 x 400 x 230, 109kg
• PSU: 590 x 380 x 360, 60kg
• Control panel: 130 x 200 x 30, 0.5kg

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> Portable X-Ray Betatron PXB7.5M (7.5 MeV), technical specification:
• Peak X-Ray Output: 2 to 7.5MeV
• Dose rate @ 1m: >5R/minute
• Focal Spot Size: 0.3 x 3mm
• Duty Cycle Radiation Beam: 75% per hour
• Beam Coverage: 250 x 250mm @1m
• Radiographic Sensitivity: Down to 1%
• Supply Voltage: Single-phase, 110V or 220V, 50/60Hz
• Adjustment range of energy: 2.0 to 7.5MeV in 0.1MeV increments
• Power Consumption: 3.0kW (13.6A @220V, 27A @ 110V)
(Single or Three Phase available upon request)

DIMENSIONS AND WEIGHT
• Accelerator (Radiator): 600 x 400 x 230, 109kg
• PSU: 590 x 380 x 360, 60kg
• Control panel 130 x 200 x 30, 0.5kg

> Portable X-Ray Betatron/Cyclotron PXB9 (9 MeV), technical specification:
• Peak X-Ray Output: 2 to 9MeV
• Dose rate @ 1m: >20R/minute
• Focal Spot Size: 0.3 x 3mm
• Duty Cycle Radiation Beam: 50% per hour
• Beam Coverage: 250 x 250mm @1m
• Radiographic Sensitivity: Down to 1%
• Supply Voltage: 3-phase (220V/380V), 50/60Hz
• Adjustment range of energy: 2.0 to 9MeV in 0.1MeV increments
• Power Consumption: 5.0kW (7.6A per phase)

ACCESSORIES:

• Accelerator (radiator)
• Power supply
• Control Panel
• Cables and accessories

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