SEIFERT

ERESCO MF4

Reliable, lightweight, portable X-ray Generator
ERESCO MF4 – For the toughest of tasks

Radiation unit including Generator and X-ray tube

The robust, transportable construction of the ERESCO MF4 x-ray units enable reliable use under the toughest application conditions in the world. Special power electronics enable an alternative power supply in the field as well as the easy integration into crawlers. The compact power electronics and the robust metal-ceramic X-ray tube enable the ERESCO MF4 to generate high output power with extremely low ripple and high radiation dose. This results in the shortest exposure times and thus higher productivity.

Advantages at a glance

- Highest power output, with best image definition in its class
- High X-ray dose permitting short exposure times with associated increases in productivity
- Operation with 100% Duty Cycle at 30°C at 1 hour operation time
- Light weighted and compact design
- Robust construction for hostile environments (IP65)
- Wide range of accessories to facilitate positioning

A glance at the benefits

The metal/ceramic technology ensures both continuous operation and a long operating life.

Operation starts from 5 kV to enable optimized exposure of low-density materials (such as aluminum, composites and plastics) resulting in high-contrast images.

Optimized for maximum cooling effect

MF4 cooling system supports continuous operation.

The power electronics of ERESCO units provide extremely low power consumption between 1 to 2 kW/h.

Control

With the portable ERESCO digital control unit every X-ray generator of the MF4 series can be operated.

Advantages at a glance

- Integrated real time clock, enabling intelligent and automatic warm-up of the generating unit, taking past operational intervals into account
- Robust and ergonomic design for operation in different working position
- Easily adapts to different main supplies, including portable generators and batteries
- Built-in fail-safe warning lamp
- Emergency stop button, in compliance with international standards

A modern microprocessor platform enables faster and safer device control with intelligent functions like automatic tube detection, operation with recording of events, multilingual user interface (around 20 languages) and different exposure programs (including freely configurable exposure programming mode and offline administration).

In addition to interfaces for warning lights, safety circuits and pumps the MF4-Control also has a serial interface for external control or communication with PC-based tools and is compatible with Waygate Technologies Software Rhythm Insight RT.

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A full graphic, transreflective and backlit display for contrast-optimized indoor and outdoor operations combined with an intuitive user interface, ensure simple and logical operation.

A built-in exposure computer is used to determine the optimal exposure settings and the further reduction in exposure time with the unique ERESCO power operation function*.

Several programming and administration functions shorten preparation and evaluation work.

* In power operation, the maximum tube current is calculated and set in order to minimize the exposure times.

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**MF Technology for constant potential high dose output**

A medium frequency output (around 20 kHz) can be used to produce a high power output with extremely low ripple.

<table>
<thead>
<tr>
<th>Width (mm)</th>
<th>Description</th>
<th>Mains Power In</th>
<th>High Voltage Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>Simple X-Ray Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Basic CP Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>ERESCO MF High Performance Unit</td>
<td>AC Waveform</td>
<td>Output Power of the ERESCO MF Units</td>
</tr>
</tbody>
</table>

**Applications**

The ERESCO MF4 range of X-ray generators finds application throughout the industrial spectrum in the inspection of welds and in the examinations for structural integrity.

**Accessories**

A wide range of accessories complements the ERESCO MF4 generators.

- Four legged stands for tube heads to ensure stability
- Laser centring device
- Lead plug for the tube window
- Remote warning flash lamp
- Exchangeable lead diaphragms
- Aluminium transport boxes
- Remote control
- Adapter cables
- Transport and Positioning Cart

**Other available accessories**

- Carrying cradle
- Door contact cable
- Bracing belts
- Interface cables
- Diaphragm caps for panoramic units
- 20 m extension cable
- PC based exposure calculator
- MF4 Administrator Kit (Serial Interface cable and SW CD-ROM)
- Pipe inspection carriage to facilitate transport and set-up

**With direct and panoramic emission models as well as small focal spot radioscopy units, the ERESCO MF4 range offers a comprehensive solution to meet virtually all customer portable X-ray generation needs.**
## Technical Data

### ERESCO MF4 – Series

<table>
<thead>
<tr>
<th>ERESCO-Type</th>
<th>200 MF4-R</th>
<th>300 MF4-R</th>
<th>32 MF4-C</th>
<th>42 MF4</th>
<th>52 MF4-CL</th>
<th>65 MF4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Radioscopic applications that require geometric magnification or short exposure times</td>
<td>Radioscopic applications that require geometric magnification or short exposure times</td>
<td>Panoramic exposure unit designed for pipeline and butt-weld inspection</td>
<td>Weld inspection, Aluminum casting and also composite materials</td>
<td>Panoramic exposure unit designed for pipeline and butt-weld inspection where high penetration power is demanded</td>
<td>Weld inspection, Aluminum casting and composite materials, especially where high penetration power is demanded</td>
</tr>
<tr>
<td><strong>Emergent Beam</strong></td>
<td>Direct Emission</td>
<td>Direct Emission</td>
<td>Direct Emission</td>
<td>Direct Emission</td>
<td>Panoramic Emission</td>
<td>Direct Emission</td>
</tr>
<tr>
<td><strong>Penetration of Steel in 10 min</strong></td>
<td>-</td>
<td>65 mm (2.55&quot;)</td>
<td>32 mm (1.26&quot;)</td>
<td>42 mm (1.65&quot;)</td>
<td>52 mm (2.04&quot;)</td>
<td>65 mm (2.55&quot;)</td>
</tr>
<tr>
<td><strong>High Voltage Range</strong></td>
<td>10 - 200 kV</td>
<td>300 kV</td>
<td>10 - 200 kV</td>
<td>5 - 200 kV</td>
<td>5 - 300 kV</td>
<td>5 - 300 kV</td>
</tr>
<tr>
<td><strong>Tube Current Range</strong></td>
<td>0.5 - 10 mA</td>
<td>6 mA</td>
<td>0.5 - 10 mA</td>
<td>0.5 - 10 mA</td>
<td>0.5 - 6 mA</td>
<td>0.5 - 6 mA</td>
</tr>
<tr>
<td><strong>Tube Current at U max</strong></td>
<td>3.0 mA / 200 kV</td>
<td>3.0 mA / 300 kV</td>
<td>3.0 mA / 200 kV</td>
<td>4.5 mA / 200 kV</td>
<td>2.0 mA / 300 kV</td>
<td>3.0 mA / 300 kV</td>
</tr>
<tr>
<td><strong>Continuous Rating</strong></td>
<td>600 W</td>
<td>900 W</td>
<td>600 W</td>
<td>900 W</td>
<td>600 W</td>
<td>900 W</td>
</tr>
<tr>
<td><strong>Nominal Focus Spot Value</strong></td>
<td>1.0 mm (EN 12 543)</td>
<td>0.5 (IEC 336)</td>
<td>1 mm (EN 12543)</td>
<td>0.4 x 4.0 mm (EN 12543)</td>
<td>15 (IEC 336)</td>
<td>0.5 x 5.5 mm (EN 12543)</td>
</tr>
<tr>
<td><strong>Anode Material</strong></td>
<td>Tungsten (W)</td>
<td>Tungsten (W)</td>
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<td>Tungsten (W)</td>
<td>Tungsten (W)</td>
</tr>
<tr>
<td><strong>Target Angle</strong></td>
<td>20°</td>
<td>15°</td>
<td>22°</td>
<td>20°</td>
<td>22°</td>
<td>20°</td>
</tr>
<tr>
<td><strong>Emergent Beam Range</strong></td>
<td>Elliptical, 40° × 60°</td>
<td>Elliptical, 30° × 60°</td>
<td>40° × 360°</td>
<td>Elliptical, 40° × 60°</td>
<td>38° × 360°</td>
<td>Elliptical, 40° × 60°</td>
</tr>
<tr>
<td><strong>Inherent Filtration</strong></td>
<td>0.8 mm × 0.1 mm, Be</td>
<td>0.8 mm × 0.1 mm, Be</td>
<td>0.4 mm Fe/Ni/Cu + 2.0 mm, Al</td>
<td>0.8 mm × 0.1 mm, Be</td>
<td>0.4 mm Fe/Ni/Cu + 3.0 mm, Al</td>
<td>0.8 mm × 0.1 mm, Be</td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td>Air-cooled</td>
<td>Air-cooled</td>
<td>Air-cooled</td>
<td>Air-cooled</td>
<td>Air-cooled</td>
<td>Air-cooled</td>
</tr>
<tr>
<td><strong>Duty Cycle</strong></td>
<td>100 %</td>
<td>100 %</td>
<td>± 1 %</td>
<td>± 1 %</td>
<td>± 1 %</td>
<td>± 1 %</td>
</tr>
<tr>
<td><strong>Current and Voltage Stability</strong></td>
<td>± 1 %</td>
<td>± 1 %</td>
<td>± 1 %</td>
<td>± 1 %</td>
<td>± 1 %</td>
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</tr>
<tr>
<td><strong>Power Supply Requirements</strong></td>
<td>160 V - 253 V AC, 80 V - 127 V AC, 50/60 Hz *</td>
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</tr>
<tr>
<td><strong>Weight of Tube Head</strong></td>
<td>26.8 kg (59.1 lbs)</td>
<td>40.0 kg (88.2 lbs)</td>
<td>31.0 kg (68.3 lbs)</td>
<td>26.8 kg (59.1 lbs)</td>
<td>36.0 kg (79 lbs)</td>
<td>40.0 kg (88.2 lbs)</td>
</tr>
<tr>
<td><strong>Certifications</strong></td>
<td>CE Conformity, NFC 74100 **, BfS Certification (PTB Approval) **</td>
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* Operation with reduced output is possible at main voltages below 205 V and 100 V respectively
** Available for selected models