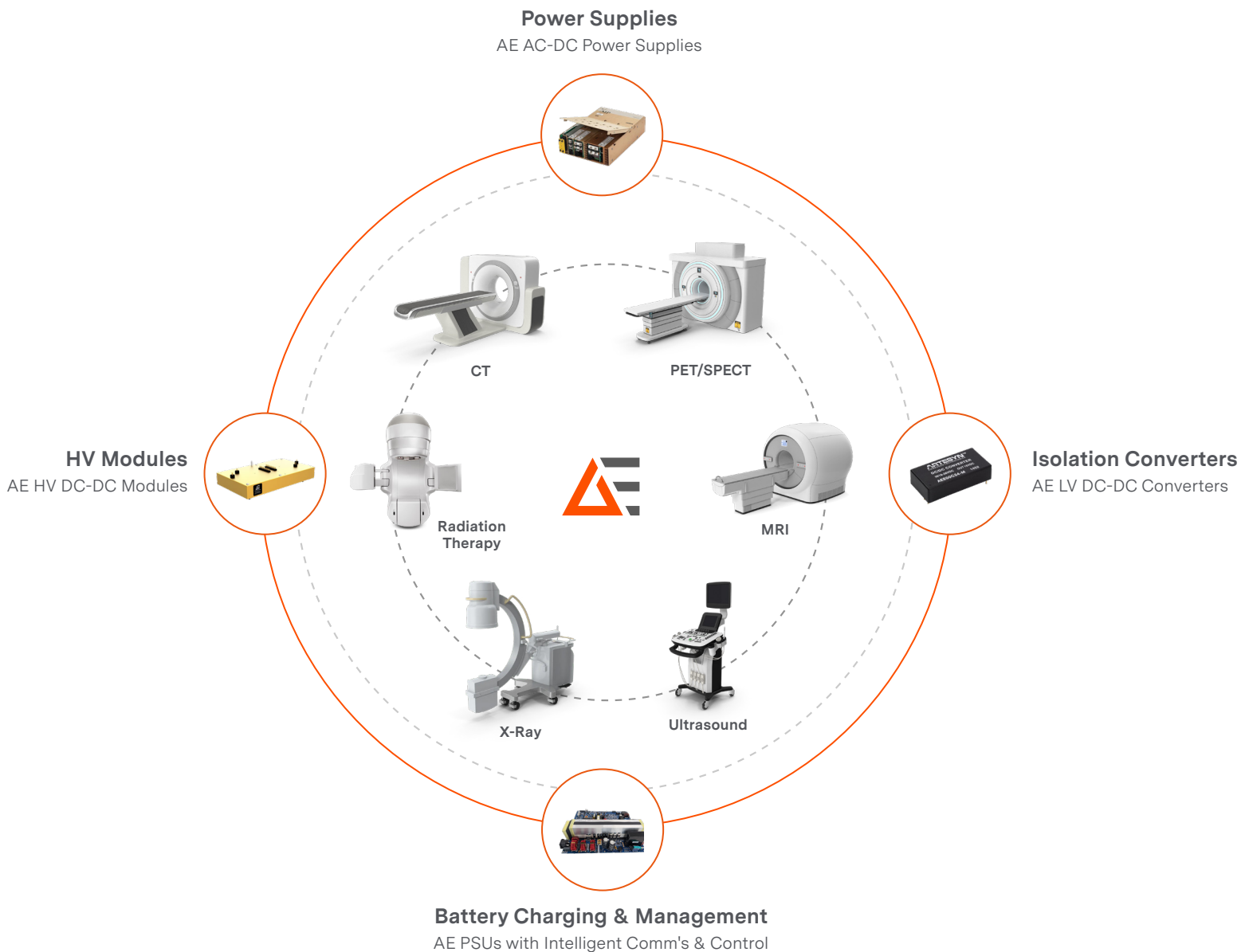


# Imaging

Our power solutions are designed for optimum performance and reliability, and to meet the latest regulatory and safety standards such as IEC60601-1 3rd Edition, IEC60601-1-2 4th Edition EMC, 2XMOPP, and low leakage current. Some products are dual-fused, some are suitable for B or BF rated applications. Please consult individual data sheets for specific details.



**CHALLENGE**

**ULTRASOUND CASE STUDY**

**SOLUTION**

A major medical device company was looking for a PSU with BMS for their new ultrasound units

- AC/DC power supply with modular output and battery charging & management system
- Handling up to 5 smart batteries
- Broad medical portfolio of highly reliable products

Customized AC-DC power supply

- Based on an existing, proven and complete AC-DC
- Expanded with a battery charging & management system
- Meeting the very stringent size requirements
- covering IEC60601-1-2 4th Edition



**CONCLUSION**

Exceptional technical support & proactive communication enabled an accelerated development cycle and improved speed to market

**CHALLENGE**

**X-RAY CASE STUDY**

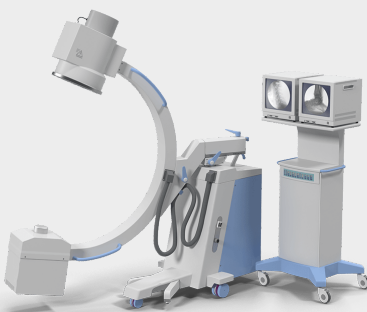
**SOLUTION**

A major medical device company was looking for DC-DC solutions for their new mobile X-ray

- Power supply powered from a battery generated DC voltage
- Maintain consistent performance while battery discharging
- Provide multiple, different low voltage outputs to power other system components

Customized power supply

- Combination of 5 different high-efficiency baseplate cooled DC-DC modules
- Additional input & output caps with In- and output connectors in one enclosure
- Exceeded customer requirements



**CONCLUSION**

Flexible engineering & exceptional technical solution reconfirmed reputation for highest standards

## CHALLENGE

## CT CASE STUDY

## SOLUTION

A major medical device company was looking for a PSU for their new CT system

- Configurable AC-DC power supply for the rotating part of the CT gantry
- Delivering > 1,5 kW withstanding the high G-forces
- Broad medical portfolio of highly reliable products

Modified standard configurable AC-DC power supply

- Based on an existing, proven modular AC/DC
- Meeting the very stringent size requirements
- Covering IEC60601-1-2 4th Edition



## CONCLUSION

Exceptional local technical support & use of standard products with short lead times enabled an accelerated development cycle and improved speed to market.

## CHALLENGE

## MRI CASE STUDY

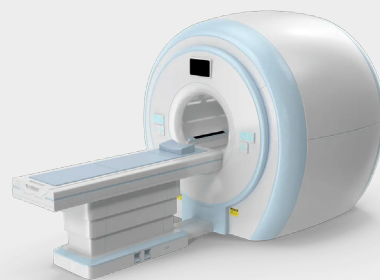
## SOLUTION

A major medical device company was looking for a PSU for the table in their new MRI unit

- Single output AC/DC power supply with high reliability
- Very low EMI for low interference / disturbance of the magnetic field
- Broad medical portfolio of highly reliable products

Standard modular AC-DC power supply

- iMP1 with 1500 Watt power supply, with different output possibilities (12 - 48V)
- Meeting the customer requirements and offering a terminal block
- Broad adjustment range of +/- 20%
- Covering IEC60601-1



## CONCLUSION

Exceptional local support & standard product met all different customer requirements

## CHALLENGE

## PET/SPECT CASE STUDY

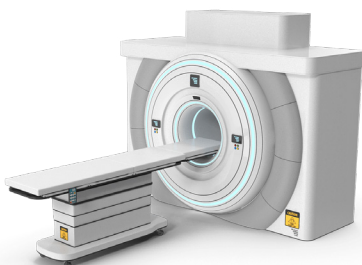
## SOLUTION

A major medical device company was looking for a PSU for their PET system

- AC-DC power supply for 3-phase HV input and configurable DC outputs
- High power density and broad DC output range from 2 up to 60 Vdc
- A vendor with broad medical portfolio of highly reliable products

Modified AC-DC power supply

- iVS8 with a total Power of 4 kW
- Full turn-key solution with PMBus compliant I2C serial interface
- Meeting the very stringent customer requirements for 14 individual slots
- Power Factor 0.99 tvp @ full case load



### CONCLUSION

Exceptional expert FAE support & fast sample delivery enabled an accelerated development cycle and customer satisfaction

## CHALLENGE

## RADIATION THERAPY CASE STUDY

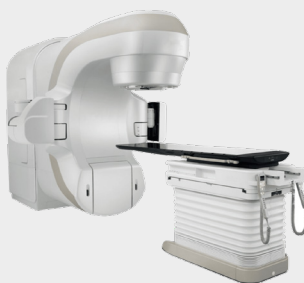
## SOLUTION

A major medical device company was looking for HV DC/DC supplies for their RT unit

- HV DC-DC power supplies with the optimal price performance ratio for their waveguide and bending magnet
- Meeting requirements for total output, complete power and low ripple
- Broad medical portfolio of highly reliable products

Standard HV DC-DC solutions

- AA24 series for the waveguide and 15C24 with CA-20KV-1000 for the bending magnet
- Miniature PCB mount up to 6 kV and 30 W with very low ripple output
- Unipolar 15 kV high power model with according cable assembly
- Controlled high voltage overshoot







### CONCLUSION

Exceptional technical support & fast sample delivery enabled an accelerated testing and improved development cycle

# ADVANCED ENERGY'S BROAD MEDICAL PORTFOLIO PROVIDES MULTIPLE OPTIONS FOR NEXT GENERATION IMAGING DEVICES

	ULTRASOUND	X-RAY	CT
	<p>Ultrasound is an Imaging procedure, where echoes of soundwaves are used to generate the image. Mainly used to look at soft tissue and flow. The waves are generated via the piezoelectric effect and are on average in a range of 1 MHz – 20 MHz</p>	<p>X-ray is the oldest Imaging technique, high energy electromagnetic radiation passes through the body and the energy is partially absorbed, the final image (2D) is composed from the remaining X-rays.</p>	<p>Computed Tomography is volumetric X-ray, where the tube and a detector are rotating around the body. The volumetric images are then calculated.</p>
<b>Power Solutions</b>	600 Watt to 1200 Watt	Up to 3000 W, powering all kind of motors, movements or detectors	Powering the stationary and rotating part of a standard CT, on average between 600 and 3000 W and beyond. High Voltage for new detector technology and iHP potential for the partial PDU powering
<b>Products</b>	<ul style="list-style-type: none"> <li>ARTESYN               <ul style="list-style-type: none"> <li>• LPS Series</li> <li>• CNS Series</li> <li>• LCM Series</li> <li>• LCC Series</li> <li>• LV DC-DC</li> </ul> </li> <li>EXCELSYS               <ul style="list-style-type: none"> <li>• UX Series</li> </ul> </li> <li>SL POWER               <ul style="list-style-type: none"> <li>• ME Series</li> <li>• MENB Series</li> <li>• MINT Series</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ARTESYN               <ul style="list-style-type: none"> <li>• LPS Series</li> <li>• CNS Series</li> <li>• LCM Series</li> <li>• LCC Series</li> <li>• AXA Series</li> <li>• AEE Series</li> </ul> </li> <li>EXCELSYS               <ul style="list-style-type: none"> <li>• CoolX Series</li> </ul> </li> <li>SL POWER               <ul style="list-style-type: none"> <li>• Internals</li> <li>• Externals</li> </ul> </li> <li>ULTRAVOLT               <ul style="list-style-type: none"> <li>• A Series</li> <li>• AA Series</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ARTESYN               <ul style="list-style-type: none"> <li>• uMP Series</li> <li>• iMP Series</li> <li>• LCM Series</li> <li>• LCC Series</li> <li>• iHP Series</li> </ul> </li> <li>EXCELSYS               <ul style="list-style-type: none"> <li>• CoolX Series</li> </ul> </li> <li>ULTRAVOLT               <ul style="list-style-type: none"> <li>• C Series</li> <li>• L Series</li> <li>• M Series</li> <li>• Modified</li> </ul> </li> </ul>
<b>Critical Factors</b>	Low electrical noise - EMI class B with 6 dB margin	Stability due to usage conditions - potential ruggedization for mobile systems / moveable parts	High G-forces demand robust reinforcement in the rotating component, ensuring reliable operation at elevated temperatures.
<b>Critical Sensing &amp; Control</b>	N/A	N/A	N/A

	MRI	PET/SPECT	RADIATION THERAPY
	<p>Magnetic Resonance Imaging (aka NMR Nuclear Magnetic Resonance) is using a constant magnetic field and oscillating magnetic fields, created through RF-waves, to create images from inside the body. MRI can be used to create pictures from the anatomy as well as to image physiological processes.</p>	<p>In Positron Emission Tomography as well as Single Photon Emission Computed Tomography the physiological function is measured over a period of time. Radiopharmaceuticals are injected and changes in metabolic processes are measured.</p>	<p>In Radiation Therapy intense ionizing radiation is mainly used to kill or control growth of malignant cells. A very precise radiation beam of either X-rays, gamma rays, electrons or protons is generated by an accelerator - very often a so called LINAC, linear accelerator and directed towards the targeted body parts</p>
<b>Power Solutions</b>	<p>Powering different parts of the MRI unit, mainly in the electrical cabinet but also table or the PIN-Diode switching in the coils are possible</p>	<p>PET / SPECT units are mostly combined with CT or MRI units. They themselves don't need X-ray tubes, so "just" power for the detector and the surroundings</p>	<p>Radiation Therapy systems consists of a lot of "subsystems", which do need their own power supplies and that also depends then on the type of radiation and connected Imaging device. All needs to be asked</p>
<b>Products</b>	<p> <b>ARTESYN</b></p> <ul style="list-style-type: none"> <li>• uMP Series</li> <li>• iMP Series</li> <li>• LCM Series</li> <li>• LCC Series</li> <li>• iHP Series</li> </ul> <p> <b>EXCELSYS</b></p> <ul style="list-style-type: none"> <li>• CoolX Series</li> <li>• Neo Power</li> </ul> <p> <b>ULTRAVOLT</b></p> <ul style="list-style-type: none"> <li>• 1C24 for PIN Diode switching</li> </ul>	<p> <b>ARTESYN</b></p> <ul style="list-style-type: none"> <li>• uMP Series</li> <li>• iMP Series</li> <li>• iVS Series</li> <li>• NeoPower</li> <li>• iHP Series</li> <li>• LCM Series</li> <li>• LCC Series</li> <li>• AVO Series</li> </ul> <p> <b>EXCELSYS</b></p> <ul style="list-style-type: none"> <li>• CoolX Series</li> </ul> <p> <b>ULTRAVOLT</b></p> <ul style="list-style-type: none"> <li>• A Series</li> </ul>	<p> <b>ARTESYN</b></p> <ul style="list-style-type: none"> <li>• iVS Series</li> <li>• NeoPower</li> <li>• iHP Series</li> <li>• AYA Series</li> <li>• AVO Series</li> <li>• AVD Series</li> <li>• LCM Series</li> <li>• LCC Series</li> </ul> <p> <b>EXCELSYS</b></p> <ul style="list-style-type: none"> <li>• CoolX Series</li> </ul> <p> <b>ULTRAVOLT</b></p> <ul style="list-style-type: none"> <li>• A Series</li> <li>• C Series</li> </ul>
<b>Critical Factors</b>	<p>High accuracy &amp; stability in A and V, low electrical noise</p>	<p>Reliability &amp; compactness - very often modularPSUs are preferred</p>	<p>Strongly depending, where the power is needed, any of the previous may apply</p>
<b>Critical Sensing &amp; Control</b>	<p>Luxtron® Fiber Optic Temperature Sensors might be of interest</p>	<p>Luxtron® Fiber Optic Temperature Sensors might be of interest</p>	<p>Luxtron® Fiber Optic Temperature Sensors might be of interest</p>