



SOLUTION OVERVIEW

Computed Tomography (CT) is one of the most used diagnostic imaging techniques that delivers volumetric and detailed images of the body. The prominent visible components of a CT scanner are the Gantry and the patient table, traversing the bore during a scan. The Gantry internally can be divided further into a stationary and a rotating part. The Power requirements for a CT vary depending on the market segment the CT is planned for. On many occasions, the patient table is manufactured by a third party and receives a single line input from the

gantry. It has its own power supply which typically ranges between from 300 W and 1 kW. The PSU in the stationary Gantry ranges between 600 W and 1.5 kW, providing between 12 and 48 VDC. The power requirements of the rotating Gantry, which drives mainly the detector units and the related thermal stability elements, are by far more demanding due to the physical stress caused by high g-forces and accelerated aging during X-ray radiation. The output typically ranges between 2V to 24V with a total need of up to 3.5 kW.

Artesyn iMP or uMP series together with the LCM series offer a powerful combination to meet any of the above system requirements along with sharing capabilities, digital configurable controls and high-power densities..



Target Markets/Customers

Tier 1 imaging manufacturers focused on diagnostic imaging are already on our radar. The following Tier 2 companies have CT systems in their portfolio (not all CT manufacturers are referenced here as there are also smaller local ones).

- Analogic
- Arineta
- Beijing Wandong Medical Technology
- Bozwin
- Canon Medical Systems
- Curvebeam
- Edan Medical
- Fujifilm medical
- Genoray
- iCRco Inc.
- Idetec Medical Imaging
- Jiangsu Aegean Technology

- Jiangsu First-Imaging Medical
- Kangda Intercontinental Medical
- Minfound Medical Systems
- Neurologica (part of Samsung)
- Neusoft Medical
- NewTom
- PlanMed
- Plexus Medical Technologies
- Scanco Medical
- Shenzhen Anke High-Tech
- SinoVision
- SternMed GmbH
- Tianjin Jinxi Medical
- United Imaging Healthcare
- Xoran Technologies

Where to Avoid

- Low volume custom solutions – these customers can be pushed to our standard

product offerings.

- Companies looking for a lowest cost and low-quality solutions.

Audience – who to engage and when

Who to engage:

- Focus on imaging manufacturers for CT and target positions such as R&D Director or Senior Manager dedicated to the CT application
- **Functions:** Engineering Manager, Principle Electrical Design Engineer, Sourcing Manager, Product (line) Manager, Engineering and Technical Purchasing
- **Seniority levels:** Director and Manager
- **When to engage:** Always – keep relationships throughout product lifecycle. When prospects are in early design or renewal stages (++) or have completed their designs (+) and start

to look for the required components. We can then position our products and also our organizational capabilities as solutions to their problems.

Business Benefits

Power platforms that keep our customers ahead of the competition:

- Proven and highly reliable medical power supply solutions
- Broadest medical power portfolio
- Highest performance and unsurpassed quality
- Best in class Quality Management System
- Dedicated & experienced medical engineering and customer support
- Standard off the shelf and full custom solutions

CT GANTRY

Qualifying Questions

- What are your overall power requirements in the stationary part of the gantry?
- How could a modular output PSU support your CT requirements in the stationary part of the gantry?
- How do you plan to solve your different LV DC-DC requirements in the stationary part of the gantry?
- What are your overall power requirements in the rotating part of the gantry?
- How big are your space constrains, the g-Forces and what is the potential orientation of the PSUs towards?
- How do you plan to solve your different LV DC-DC requirements in the rotating part of the gantry?
- Which detector technology are you planning to use in your next gen CT system (EID or PCD)?

In case of PCD:

- What are the overall power requirements for the detector & the read-out electronics?
- What is most important factor for you in powering the PCD detector (e.g. response time, source & sink, ripple, etc.)?

INTERNAL CONTACTS



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Customer Challenges

Stationary gantry: To ensure sufficient & reliable power for all of the current and future requirements in an efficient manner which includes powering tables, sensors, displays, switches, controllers, fans etc. and simultaneously monitoring the PSU as it is an important part of the CT system.

Rotating gantry: To ensure reliable power of 3 kW or more despite the physical forces (up to 90g) and constrains in space ranging from 2 V up to 48 V and at the same time being able to monitor the PSU as

important part of the CT system.

Detector & read-out electronics: Understanding which detector technology is currently used or will be used in future (EID / PCD). Power requirements can vary so ensuring the least changes and coping with the HV DC-DC in the new PCD technology.



Key Features & Specs (high-level differentiators)

The LCM Series of AC-DC Power supplies provides outstanding quality and high efficiency (>= 90%) at a low cost:

- Single output, ranging from 12-48 VDC, with optional 5 VDC standby
- Up to 10 units in parallel, up to 4 with I-share connected
- Broad range of operating temperature without derating

The intelligent MP Series of AC-DC Power supplies with microprocessor-controlled PFC front end provides:

- Modular, up to 7 slots, outputs ranging from 2-60 VDC, mixing & matching, connecting parallel or series

- Fully configurable (input & output signals, up & down sequencing)

- Intelligent fan speed control.

The UltraVolt LE Series of regulated DC-DC converters offer outstanding stability for precision high-voltage applications:

- Single output, positive and negative polarity models
- Up to 30 W output power
- Very low ripple (max 50 mV @ 1000V = 0,005%)

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COMPETITIVE ANALYSIS

Competitor	DELTA	TDK
Their Positioning & Selling Points	<ul style="list-style-type: none"> They provide products at a high volume for a low price direct to customers Spread across lots of market segments (industrial, data center, computing) An energy-saving solutions provider with core competencies in power electronics 	<ul style="list-style-type: none"> They offer a broad range of standard offerings in AC-DC and DC-DC (low voltage) TDK claims that they are the only company in the market that offers everything from development and manufacturing to sales and maintenance They offer fully custom solutions
Our Differentiation	<ul style="list-style-type: none"> Dedicated engineering teams (BU) to support our imaging customers Modified and custom solutions also for lower volumes AE has a highly skilled distributor network and serve low and medium volume customers 	<ul style="list-style-type: none"> AE has one of the broadest portfolios of AC-DC and DC-DC (low and high voltage) DC-DC products along with broad domain knowledge in medical applications AE also offers the same as TDK and additionally has a dedicated Medical BU We have dedicated engineering teams to support customers through global CECs
Comparative Positioning	<ul style="list-style-type: none"> AE offers one of the broadest portfolios of PSUs used for system power in Medical Imaging Our reputation for excellence in quality, innovation and customer support Customers have access to our global network of engineers Our product specifications help our address our customer needs such as portability, high-resolution imaging, digital communication capabilities, and regulatory compliance 	<ul style="list-style-type: none"> Our product specifications help us address our customer needs such as portability, high-resolution imaging, digital communication capabilities, and regulatory compliance AE's power supplies are ruggedized to withstand extremes in shock and vibration, ideal for use in the rotational gantry of CT equipment AE understands regulatory compliance challenges for CT applications Our broad portfolio of medically approved power platforms allows AE to do modifications and customizations quickly with proven technologies



CT GANTRY

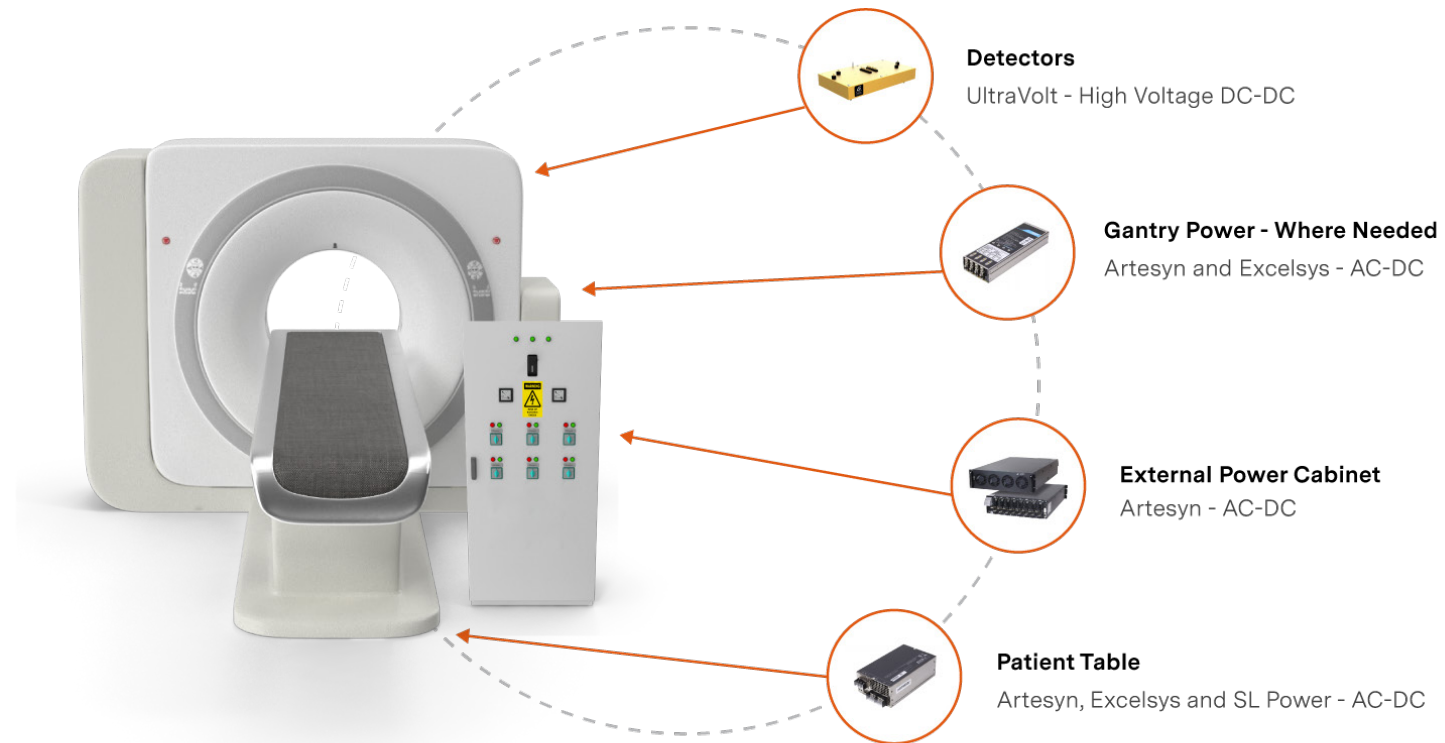
COMPETITIVE ANALYSIS

Competitor	XP Power
Their Positioning & Selling Points	<ul style="list-style-type: none"> ▪ They claim to provide leading solutions for medical devices and healthcare equipment ▪ XP has a broad HV DC-DC range of standard products used in semi applications
Our Differentiation	<ul style="list-style-type: none"> ▪ AE is dedicated to the design, development and support of medically certified solutions for imaging applications ▪ AE is a leader in developing HV DC-DC specifically for medical applications ▪ We have multiple design locations in North America, EMEA and APAC
Comparative Positioning	<ul style="list-style-type: none"> ▪ AE offers a very broad portfolio and ensures supply continuity & strong disaster recovery capabilities ▪ AE offers deep expert knowledge in the medical sub-markets, coupled with expert regional sales and FAE support globally ▪ AE continues to invest in dedicated engineering teams to design medically certified products

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Cross Sell Opportunities

- Every CT has a need of several LV DC-DC, check on the manufacturers design need:
- LGA or AVD family e.g.



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Block Diagram

