



// SOURCE: voxeljet AG

FROM IDEA TO INDUSTRIAL REALITY

voxeljet USES KONTRON'S KISS RACKMOUNTS FOR ITS INDUSTRIAL 3D PRINTERS

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3D PRINTING SYSTEMS HAVE REVOLUTIONIZED MANY INDUSTRIAL SECTORS. THE AUTOMOTIVE INDUSTRY, AIRCRAFT MANUFACTURERS, THEIR SUPPLIERS, ARCHITECTS AND ARTISTS AND NUMEROUS OTHER INDUSTRIES ARE PROFITING FROM 3D PRINTING.



// Voxeljet's TOPSELLER: THE HIGH-PERFORMANCE AND MULTIFUNCTIONAL 3D PRINTING SYSTEM VX1000.

voxeljet, with headquarters in Friedberg in Bavaria, is one of the leading manufacturers of industrial 3D printing systems for the toolless manufacture of molds and models for metal casting. The KISS rackmount systems from Kontron are used as central control elements in the printer families.

The cornerstone for voxeljet was laid in 1995 with the first success in drop dosing for UV resins. The first 3D printing tests were conducted in the framework of the frequently tabled "Generation of 3D structures" project at the Technical University of Munich. In 1996, the project was entered in the First Munich Business plan contest and in 1998 the first patent was granted. The company was founded in the following year. Today voxeljet is one of the leading providers of industrial 3D printing systems for the toolless manufacture of molds and models for metal casting. In addition to the company headquarters, voxeljet has locations in China, Great Britain, India and the USA.

The voxeljet systems business unit is responsible for the development, manufacture and marketing of these 3D printing systems that are performing well throughout the market. Due to the finely coordinated product range, the company in Friedberg is a sought-after partner for customers all over the world. The range includes small entry level models and extends to large format machines. With this range of products, the company covers virtually every task that customers expect from a professional 3D printer.

PROTOTYPE PRODUCTION FROM THE 3D PRINTING SERVICE PROVIDER

In addition to selling its systems, voxeljet also offers the production-on-demand of sand molds and plastic models in its progressive voxeljet services business unit service center. These are manufactured individually for each customer on the basis of CAD data. This service is targeted at manufacturers of small series and prototypes who appreciate this automatic, toolless manufacture of their casting molds and 3D models. The customers for these services are well-known automakers and their suppliers, such as foundries. But innovative companies from the art and design sector, as well as visual artists, also make use of this service in order to bring their artistic ideas to life.

The flourishing exchange of ideas among the business units and the experience gained in dialogues with customers are important for stimulating new developments. Combined with continuous technological development, these factors result in innovative solutions and services.



// ARTWORK PRODUCED BY ONE OF voxeljet AG'S 3D PRINTING SYSTEMS. THE SYSTEMS MAKE IT POSSIBLE TO MANUFACTURE ALMOST OPTIONALLY COMPLEX COMPONENTS BASED ON DIFFERENT MATERIALS – LIKE SAND OR PLASTIC (SOURCE: voxeljet AG)

TECHNOLOGICAL PARTNERSHIPS CREATE SYNERGIES

Partnerships in the technology area are especially significant for voxeljet. "The most modern components are significant elements in our 3D printing systems and are crucial for their quality," explains Björn Matthes, Electrical System Planner at voxeljet AG. "We offer our systems individually with different configuration options to match the customer's requirements. Because the devices are designed for industrial use, they must be reliable in use around the clock. We also expect the electronic components that we use in our printing systems to reach the high availability and quality targets."



// KONTRON KISS KTQ87 SERIES

STANDARDIZED INDUSTRIAL COMPONENTS ARE IN DEMAND

When the development of a new generation called for new control units for the 3D printing systems, voxeljet looked around the market and investigated diverse marketable products. Until that time, the manufacturer had used solutions that it built and configured itself, but these were no longer up-to-date. The company wanted to move to standard-based solutions in the future in order to equip the printing systems with the most modern technology. After an intense selection process, the award went to the KISS products from the Kontron embedded specialists which their partner Aaronn from Puchheim (near Munich) individually assembled for voxeljet. The decision criteria were the short delivery times, the KISS rackmount systems' high performance and storage capacity, and Kontron's commitment to long-term component availability. "We must be able to count on control unit availability for years to come in order to guarantee our customers ongoing availability of their solutions," explains Matthes.



// THE BIGGEST INDUSTRIAL 3D PRINTING SYSTEM FOR SAND MOLDS IS LOCATED IN THE SERVICES HALL OF voxeljet IN FRIEDBERG (BAVARIA). IT COMES WITH A CONTIGUOUS CONSTRUCTED SPACE (LxWxH) OF 4.000 x 2.000 x 1.000 mm. ITS HIGH QUALITY COMPONENTS ARE MADE FOR CONTINUOUS OPERATION. (SOURCE: voxeljet AG)

CUSTOMIZED UPON CUSTOMER REQUEST

On the basis of the platform delivered by Kontron, Aaronn configured and tested the solutions that voxeljet had in mind. Intensive talks to work out the individual requirements had been completed. In close coordination with the technology department at voxeljet, the Aaronn sales staff worked out diverse solutions that covered the printer manufacturer's individual need. Aaronn's own technicians handled the configuration and assembly of the required individual KISS components in Puchheim. "As an authorized manufacturing partner for the KISS product family, we buy the individual components from Kontron and assemble the systems according to the customer requirements in our facilities," explains Christian Squarra, Account Manager at Aaronn. "This allows us to respond to our customer's requirements quickly and very flexibly." The short delivery time of two to four weeks is possible because the Kontron partner standardly has a multitude of necessary components on hand and can consequently begin with the individual configuration very promptly.

BROAD RANGE OF SOLUTIONS FOR INDUSTRIAL USE

Different KISS 19" rackmount servers with overall heights of 1U, 2U and 4U are used for the solutions that voxeljet ordered. The Aaronn technicians integrated and tested various graphic cards from third-party suppliers into servers. Furthermore, depending on the requirement of the individual system, a very wide selection of CPUs and SSDs are installed to ensure that the systems deliver exactly the performance required by the customers of the 3D printing systems. Different operating systems are likewise preinstalled. And dust protection that complies with the IP52 standard ensures operation of the industrial printers even under extreme conditions found during use in harsh environments.

According to Kontron partner Aaronn, the KISS family is optimally equipped for use in the industrial environment in which the 3D printing systems from voxeljet are used. "The products offer an impressive industrial design and very robust housing made of hot-dip zinc-coated steel," Squarra points out. "Other advantages are the optimized thermal design and the low sound levels. The Kontron products are furthermore extremely reliable, because they use only components with industrial capability."

THE DEMAND FOR FLEXIBILITY AND LONG-TERM AVAILABILITY

Quality criteria and the low installation depth of the Kontron components were important factors for voxeljet when selecting the new solutions. "The high level of flexibility and scalability are extremely important in the printing environment," Björn Matthes explains. "For example, CAD data for creating prototypes are very extensive and must be reliably and fully available for the 3D printing." The robustness of the components is likewise vitally important in the industrial setting. Because investments in 3D printing systems have a substantially higher volume than those for conventional printers, the long-term availability of the component data is also important to the supplier. voxeljet knows that it will continue to be well looked after in the partnership with Kontron in the future as well, because the specialist for embedded systems guarantees availability that goes far beyond the seven years commonly offered in the sector. voxeljet consequently finds that it is optimally safeguarded and equipped for the future.

KONTRON PARTNER AARONN

Aaronn Electronic GmbH in Puchheim near Munich has been one of the most successful marketing partners and system integrators for Kontron embedded systems for years. The cooperation between Kontron and Aaronn goes back more than 20 years, and the partners have worked together to carry out a multitude of customer projects during this time. Thanks to Kontron's extensive range of hardware, software and service solutions and Aaronn's expertise and flexibility, the partners achieve the optimum possibilities for each individual customer application.

About Kontron

Kontron, a global leader in embedded computing technology and trusted advisor in IoT, provides a complete and integrated portfolio of hardware, software and services. Kontron creates many of the standards that drive the world's embedded computing platforms, bringing to life numerous technologies and applications. The result is an accelerated time-to-market, reduced total-cost-of-ownership, product longevity and the best possible overall application with leading-edge, highest reliability embedded technology.

Kontron is a listed company. Its shares are traded in the Prime Standard segment of the Frankfurt Stock Exchange and on other exchanges under the symbol "KBC".

For more information, please visit: www.kontron.com



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