

Voxeljet: 3D printer with highly durable precision linear technology from Bosch Rexroth

## Precision in Three Dimensions

Established in 1999 and situated in Friedberg, Germany, voxeljet AG is one of the most renowned international providers of technologies for additive manufacturing solutions, today. The enterprise, which has also set up a branch office in the US in 2014, produces several different models of 3D printers including an industrial large-format machine. The extraordinary precision and durability of voxeljet products is largely due to pre-finished linear systems and profiled rail guides from Rexroth.

3D printing revolutionizes manufacturing processes in many ways: Even the most complex geometrics with undercuts can be realized with the utmost precision – quietly and cleanly, without any waste chips or use of cooling lubricants. On a Cartesian axis system, the print head moves along exactly defined paths over a box filled with sand or plastic particles. It uses more than 10,000 microscopic nozzles to spray an anorganic agent onto the particles to bind them and produce components, e. g. for the automotive sector, layer by layer. In order to achieve the required precision and stability during the printing process, voxeljet AG takes advantage of pre-finished linear modules from Rexroth consisting of aluminium profiles with integrated and especially durable BSHP high-precision ball rail systems.

### Fast and highly precise

The 20 kg print head of the machine VX1000 is guided along the y-axis by means of a gantry axis with two Rexroth tooth-belt driven MKR-080-NN-2 linear modules – at traversing speeds of up to 1 m/s. Along the x-axis, an MKK-080-NN-2 linear module with ball screw drive facilitates the positioning of the print head with a repeat accuracy of 0.005 mm. Rexroth ball rail systems are used to guide the sand box along the z-axis. The backlash-free roller rail systems are suitable for micro-movements between 100 and 350 µm and high loads up to 400 kg. Even higher precision can be facilitated by means of the linear module MKR-080-NN-2 with an integrated measuring system MSI-I, which will be tested in the near future. This configuration allows the positioning of the print head with repeat accuracies of +/-0.25 µm, which previously required the use of glass scales.

### Tough application

Powerful, durable, and economic high-precision machines for 3D printing.

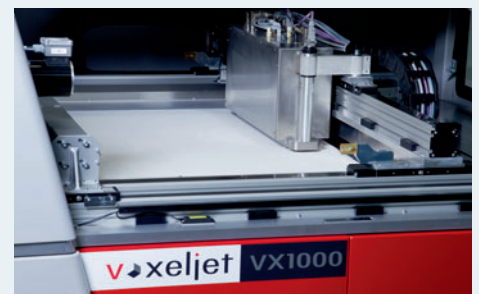
### Ingenious solution

Pre-finished and extremely robust Rexroth linear modules facilitate high positioning accuracy along the x- and y-axes.

### Exactly

*“Our machines are running 24 hours a day, and it is extremely important to us that all components are operating precisely and durably. Here we can rely on Rexroth expertise.”*

Bastian Heymel, voxeljet AG



### Solved with

- ▶ Rexroth linear modules MKR-080-NN-2 with tooth belt drives and MKK-080-NN-2 with ball screw drives