

Finding the right angle

13 January 2021

Freeform bending machines with simultaneously controlled axes

Jörg Neu GmbH has long been regarded as a leader in freeform bending technology and continues to develop the process, based on the requirements of a wide range of industries. Since its foundation, the company has worked in partnership with Mitsubishi Electric whose CNC controllers enable full synchronisation over six axes. Both companies view a strong focus on the customer and their requirements as the key to success.

Freeform bending enables round tubes and profiles to be shaped into any three-dimensional form. As the process involves pushing the material, also known as extruding, the shaped parts retain their structure. This includes uniform wall thickness and flawless appearance, making the technique ideal for further finishing processes such as hydroforming. The technology is suitable for materials such as aluminium, steel and stainless steel. Thin wall thicknesses can even be realised with the highest-grade steels without compromising on safety.

The process is also attractive from an economic point of view as just one set of tools is sufficient per profile. Form changes are programmed and no tool changes are required which means that cycle and idle times are significantly reduced. With high volumes common in the automotive and supply industry, the machines quickly pay for themselves.

Wide range of applications

Since the 1990s, Jörg Neu GmbH, based in Grünstadt, Germany, has continued to independently develop the bending process that originated in Japan. The company is regarded as the leader in the technology, with customers all over the world using its five- and six-axis machines.

While the process of freeform bending was originally used in the manufacture of frames for furniture, a major German automotive manufacturer became aware of the technology in the early 2000s and supported the concept. Since then, customer-driven development and collaboration have continued on an ever-increasing scale at Jörg Neu.

There is also potential to support the very latest and diverse applications, for example, the machines are used to manufacture electric scooters where visual aesthetic is essential. Jörg Neu is currently also investigating the freeform bending of titanium for the aviation industry.

A successful future is ahead

The CNC control systems for the machines are supplied by Mitsubishi Electric, whose innovative M700 series CNC controller play a decisive role in enabling the synchronisation of the axes in the latest generation of machines. In the future, Jörg Neu plans to use Mitsubishi Electric's M800 series which includes expanded safety features.

The two companies have forged a close collaborative partnership over the years. "Mitsubishi Electric has been by our side as a reliable partner ever since the beginning of our collaboration. The company has always provided high quality components, together with excellent communication as well as support, and the cost

is competitive – just what you want,” comments Lothar Kummermehr, tube bending expert at Jörg Neu.

Its global presence also means that Mitsubishi Electric spare parts are immediately available worldwide and customer service can be provided in the local language. There is a key value that both companies share: the importance of focusing on the customer and their requirements. No matter the challenge presented by the customer, if a solution isn't already available, they will work together to develop one.

Image captions:



Image 1: Jörg Neu is a world leader in the field of freeform bending, a technology which enables the seamless, three-dimensional bending of tubes and profiles with various radii. [Source: Jörg Neu GmbH]



Image 2: The control systems for Jörg Neu's machines have been provided by Mitsubishi Electric since 1996. [Source: Mitsubishi Electric Europe B.V., Jörg Neu GmbH]

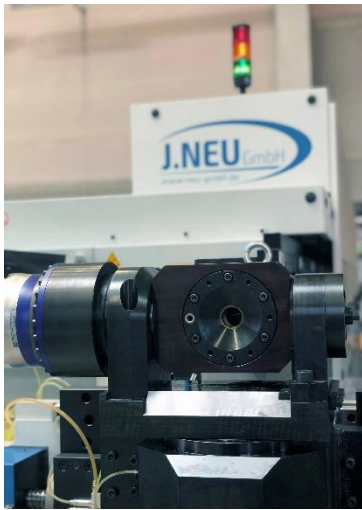


Image 3: The material is pushed through a bending die and seamless geometries can be formed by a dynamically controlled movement around six axes. [Source: Mitsubishi Electric Europe B.V., Jörg Neu GmbH]

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Embracing the spirit of its corporate statement, Changes for the Better, and its environmental statement, Eco Changes, Mitsubishi Electric endeavours to be a global, leading green company, enriching society with technology.

With around 146,500 employees the company recorded consolidated group sales of 40.9 billion US Dollar* in the fiscal year ended March 31, 2020.

Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

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*At an exchange rate of 109 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2020

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