



Felss Systems Technology

Axial Forming of high-strength, high-precision splines

Machine design

Traditionally, high-precision splines have been made by rolling, broaching, milling, or by advanced metal forging operations. Felss Systems has developed a machine technology that is capable of net-shape forming of high-strength, high-precision splines by a special and patented low-force, recursive movement cold forming process. The process is called axial forming and is applicable for both external and internal splines, and for hollow and solid parts.

The net-shape spline forming is achievable at a close and consistent tolerance class of IT 5 to 6. The spline quality is improved typically by 40%, and this is possible thanks to the special frequency cold forming process and a special high-stiffness tool system, which allows for a fine adjustment of the inner diameter of the spline forming die.

The machine technology is branded as Felss Aximus and available with a horizontal process layout for longer parts (up to 1,800mm), and with a vertical layout for shorter parts (up to 300mm). Both machines have 600kN in press force.

The machine technology is also available in other, customized equipment layouts, for example as integrated units in transfer lines.

Use in industry

The axial forming machine technology has been broadly adopted by the German automotive industry for low and high-volume production of a broad variety of parts with spline characteristics. Examples of such parts are transmission main shafts, transmission input / output shafts, camshafts, rear axle shafts, or steering shafts. Machine technology is currently developing into new, non-automotive applications.

STRECON is the official agent for the Felss Group in Scandinavia.



Felss Aximus horizontal Axial Forming machine



The axial forming process of an external spline profile



Examples of spline parts formed by Felss axial forming technology