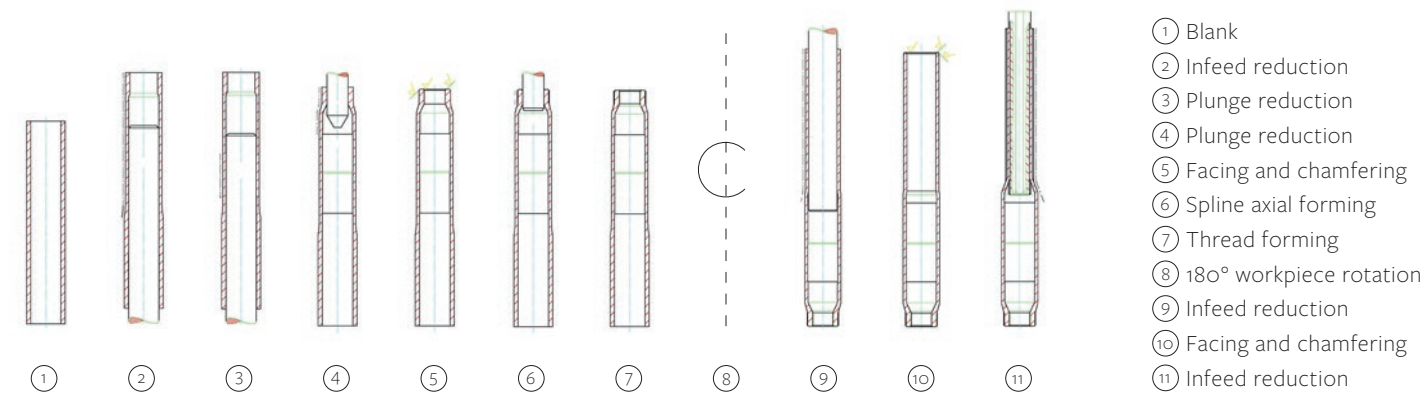


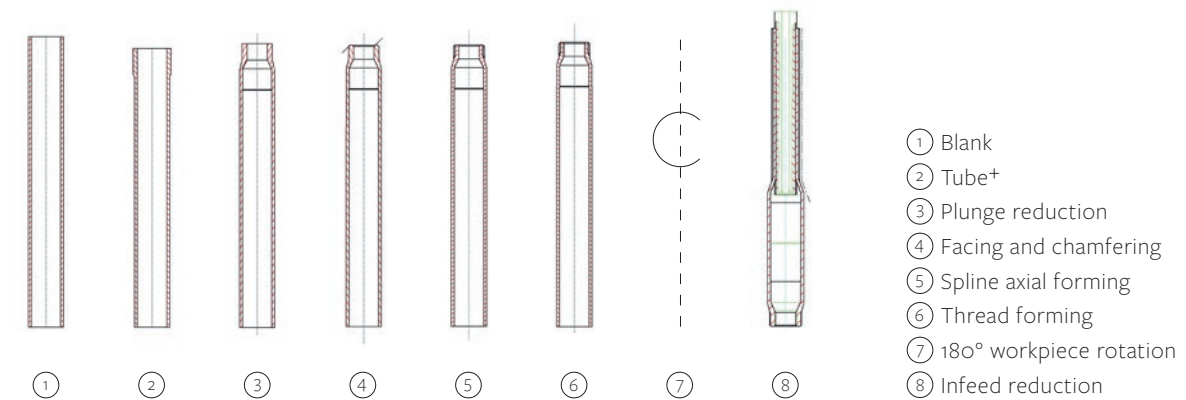
## LESS PROCESS STEPS WITH **Tube+**

**Tube+** is a method for partially thickening tube walls as a supplement or alternative to rotary swaging. It can cut out several process steps and shorten production time.

### CONVENTIONAL PRODUCTION:



### PRODUCTION WITH **Tube+**:



# FELSS

The smarter way of forming.

### THE FELSS GROUP

The Felss Group is your solution provider in the field of cold forming.

As a lightweight construction expert, we develop optimal solutions and processes for our customers - from development to the machine or even to the finished product in component manufacturing.

Worldwide at our locations in Germany, Switzerland, Slovakia, the USA and China, around 800 employees work together with our customers today to meet the challenges of tomorrow.

### FELSS SYSTEMS

Optimal development of machines, manufacturing systems and processes.

### FELSS ROTAFORM

Component manufacturing by specialists, including large-scale production.

FELSS GROUP GMBH  
Dieselstrasse 2  
D-75203 Königsbach-Stein  
T +49 7232 402-0  
F +49 7232 402-122  
info@felss.com

[www.felss.com](http://www.felss.com)

# FELSS

The smarter way of forming.

# MORE EFFICIENT. SHORTER CYCLE TIMES.

**Tube+**: The process to thicken tube walls.

The **Tube+** Process

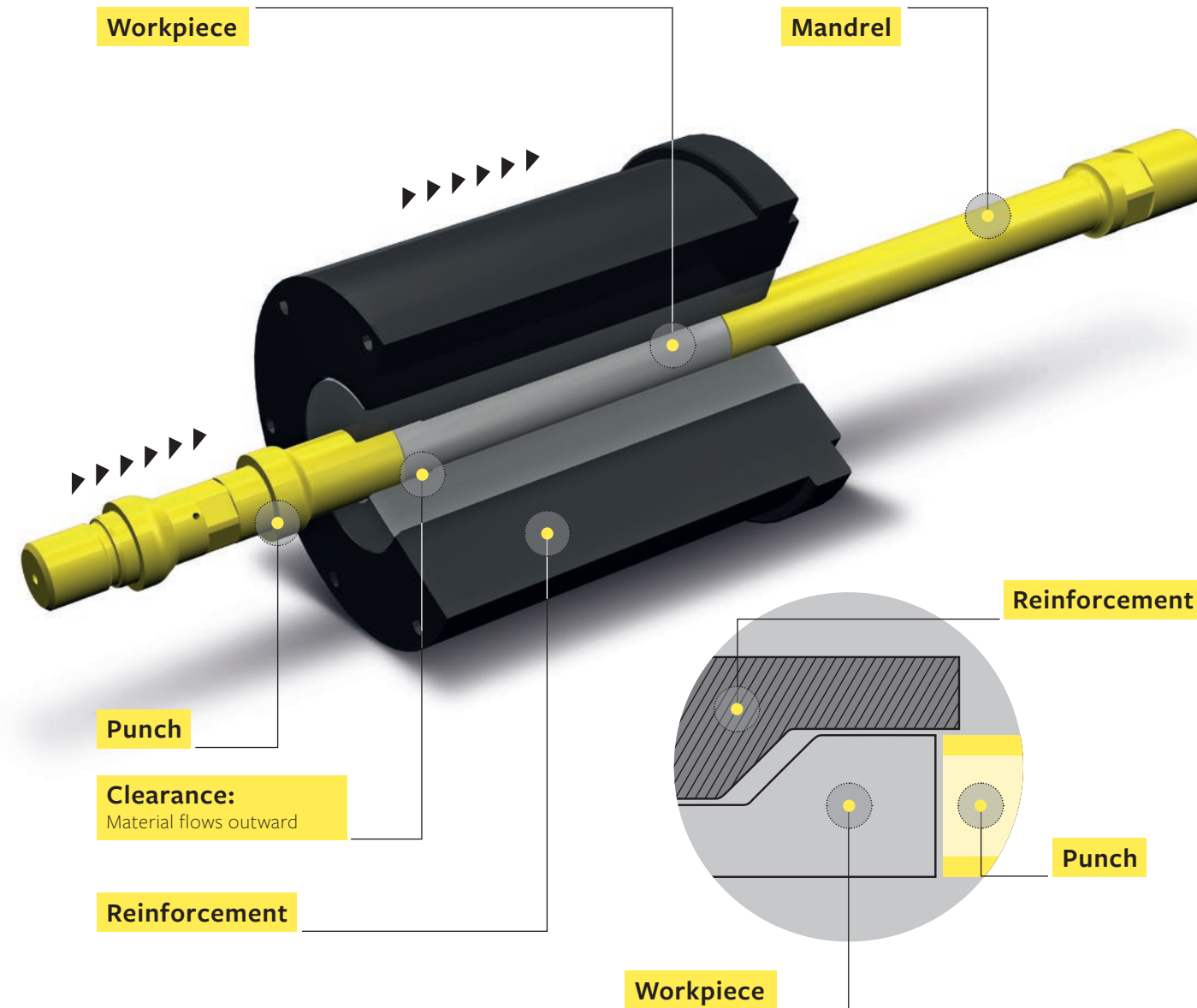
# Tube+ THE PROCESS FOR PARTIALLY THICKENING WALLS

Tube+ is an innovative cold forming process to strengthen the wall thickness of tubes. Thickening processes may have been predominantly warm before now, but with Tube+ the thickening area is continuously cold formed. The solution is the smart interaction between multiple axes and tools. With this innovation, Felss added an important cold forming process to its product portfolio – designed to be integrated into a multi-stage process or as an independent system.

With Tube+, you can partially thicken a thin-walled blank in those sections that need a greater wall thickness.



## PROCESS



## CUSTOMER BENEFITS

- + Adds wall thickening to your process
- + Lower material costs
- + Shorter cycle times
- + Resource-efficient
- + Energy-efficient
- + Lower component costs

## ENHANCED PROCESS

Adding to its existing processes, Tube+ introduces a tube wall thickening process to the Felss cold forming range. Designed as a stand-alone process or to integrate into a multi-stage system.

## EFFICIENT

Compared to conventional production, Tube+ can cut out several steps of the process. In the production of a steering spindle, instead of rotary swaging, you can use Tube+ to save multiple process steps. Fewer process steps means a more cost-effective production overall.

## RESOURCE-EFFICIENT

In the production of steering, drive and transmission shafts, for example, Tube+ offers shorter cycle times, with high potential savings on resources. For parts with a short thickening section, why not improve production by thickening a thin tube with Tube+ instead of thinning a large section of the tube with the rotary swaging process?

# Tube+