The award-winning single-head machine from the KUKA Genius product family is a new development whose modular design presents a universal solution for a wide range of applications. Available as KUKA Genius eco®, KUKA Genius plus® and KUKA Genius power®, the Genius offers several drive and equipment variants.

**Industries & applications**
The KUKA Genius features the latest, industry-proven modules and, with a forge force of 1.2 – 30 tonnes, can be used for a wide range of components in diverse industries, e.g.:

- Automotive
  - Piston rods
  - Drive / prop shafts
  - Axles
- Construction industry
  - Piston rods
  - Hydraulic cylinders
- Metal industry
  - Shafts
  - Heat exchangers
  - Tools

**System architecture**
The radically redesigned system architecture enables a highly compact configuration (12 m²) and an ergonomic workspace. A machine bed free of bending moments and with high inherent stiffness makes floor anchoring unnecessary. Similarly, the ease of transportation (container dimensions), optimized cabling, reduced footprint and shorter commissioning time significantly enhance the cost efficiency of the Genius. The electronically controlled hydraulic system additionally saves up to 20 % energy.

**Features & functions**
- Active travel control (for minimizing length tolerances)
- VIPER drive (virtual inertia welding – without flywheel mass)
- Defined-angle positioning
- Data matrix code interface (for component tracking)
- Automatically adjustable backstop (ABS)
- Weld data export
- Ready for I4.0, based on OPC UA
- Automation interface
- KUKA RemoteService

**Control & operation**
The KUKA Genius has a clearly designed touch panel for simple and intuitive operation. Comprehensive reporting with data analysis of all process-relevant parameters for improved quality monitoring is possible for 12 weld parameters in real time (1 ms) thanks to the new PCD controller. A reject is reported if the parameter limits are violated.
Basic configuration – technical data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forge force</td>
<td>12 – 300 kN</td>
</tr>
<tr>
<td>Spindle speed*</td>
<td>max. 3,000 1/min</td>
</tr>
<tr>
<td>Spindle drive</td>
<td>eco 340 Nm</td>
</tr>
<tr>
<td>Slide advance</td>
<td>plus 490 Nm</td>
</tr>
<tr>
<td>Component length (spindle side)*,**</td>
<td>power 2400 Nm</td>
</tr>
<tr>
<td>Component length (slide side)*,**</td>
<td>max. 400 mm</td>
</tr>
<tr>
<td>Noise emission</td>
<td>max. 300 mm</td>
</tr>
<tr>
<td>Footprint</td>
<td>max. 1,200 mm</td>
</tr>
<tr>
<td>Dimensions (L × W × H, excl. swarf conveyor)</td>
<td>approx. 5,500 × 2,105 × 2,390 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 12,000 kg</td>
</tr>
</tbody>
</table>

* Depending on component, forge force and process sequence  
** Longer components on request

Wide range of options

Cycle time reduction package
- Automatic operator door (KUKA Genius eco)  
- Integrated light curtain

Production optimization package
- Automatic temperature control of the headstock  
- Monitoring of the cooling unit  
- Start button on pedestal

Turning unit package
- Turning unit for flash removal and facing  
- Tool holder or duplex tool changer  
- Conveyor for removal of swarf (integrated into the side or rear of the machine)  
- Steady rest for guiding long components

Premium interior lining
- Stainless steel interior lining  
- Robust stainless steel additionally protects the machine from swarf and dirt

Scope of supply
- Machine  
- Component-specific tooling  
- Process validation  
- Project management  
- Machine acceptance (CMK available)  
- CE certificate (Declaration of Conformity)  
- Version "based on UL standard" on request

For further information please contact us at frictionwelding.industries.de@kuka.com