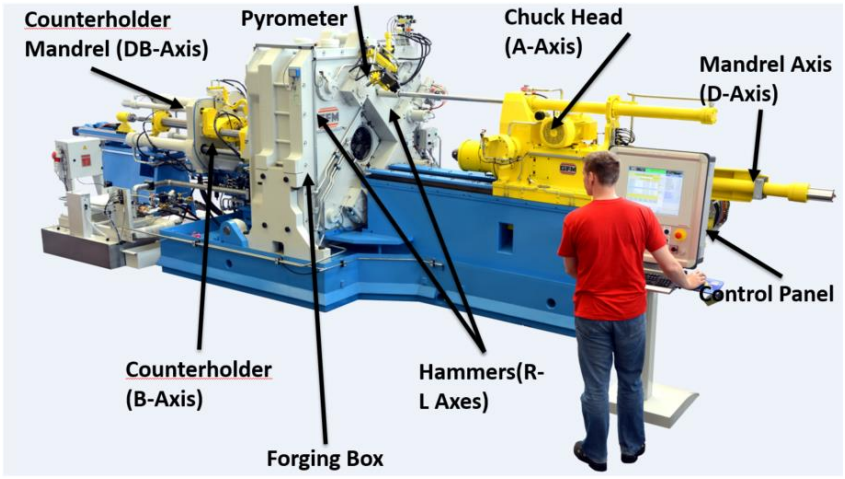
AFRC TESTBED

GFM Radial Forge SKK10/R

April 2019

THE AFRC TESTBED

The GFM SKK10/R radial forge will be used as the AFRC testbed. The machine is a reinforced version of the standard SKK10 and can forge parts with max starting diameter of 125mm down to 25mm on a wide range of different materials. Max forging force is 150tons. Parts can be forged from room temperature up to 1200 deg C.



Test Geometry

For demonstration and machine capability studies the AFRC uses a standard preform to produce a forged shaft typically used in the automotive sector.

Photo above shows the forged part produced from a machined preform. Preform length is 70mm and forged part length is 220mm.

Oscillosope Outputs

The machine is equipped with a 128-channel oscilloscope integrated into the 5-axis GFM machine NC-controller for simultaneous recording of machine outputs. Measurements include forging force, speed & position of axes and workpiece temperature. A summary of the some of the main measurements is given below:

1) Measurement of axes travel using SSI encoder or incremental encoder. Encoder signals processed with sub-prints TIP 114-10R or TIP 119-50R (on TVME 200-10R cards). TEMPOSONIC measuring system used for A, B, D & DB axes
2) For hammer axes (R&L), Multiturn encoders are used
3) Forging power motor – value measured using active power measuring transducer (0-20Ma WITH 1a/400vac current transducer 200/1A)
4) Forging force – actual value measurement strain sensor (4-20mA)
5) Forging box temperature – actual value measurement with PT100 temperature sensor
6) Workpiece rotation – actual value measurement using incremental encoder (2500 pulses/revolution)