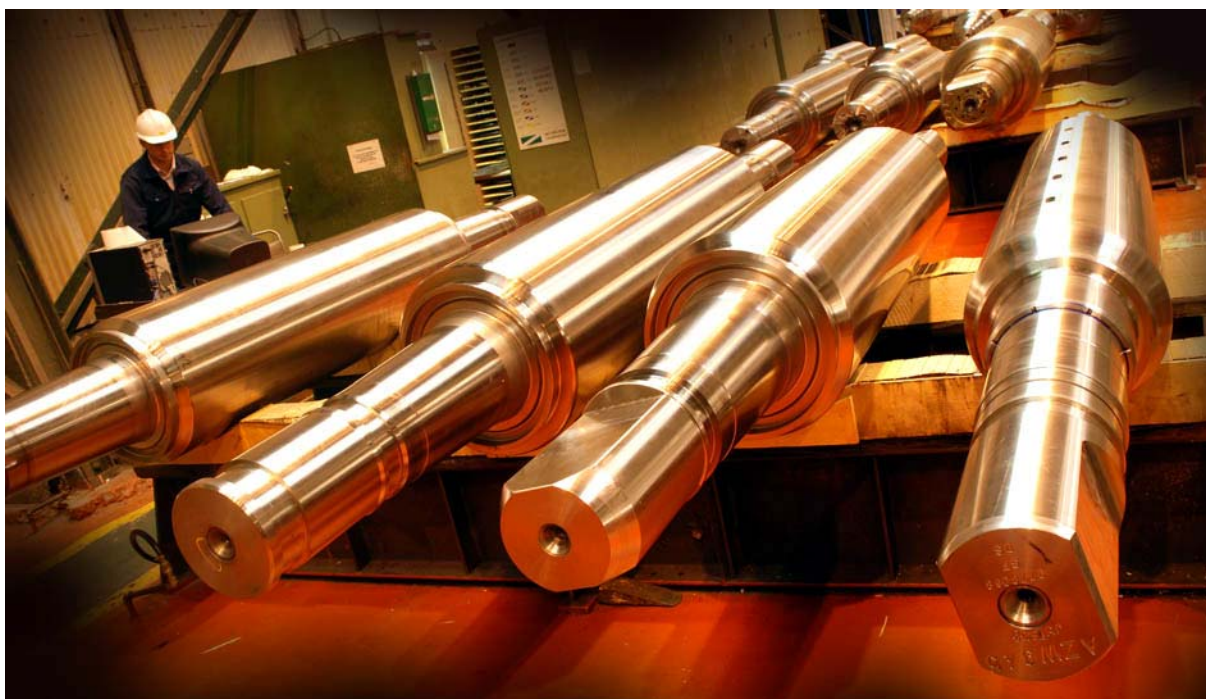


**SBS Grinding Wheel Balancers from Schmitt Europe Ltd significantly improves productivity and customer satisfaction for a major UK forged roll manufacturer**

Sheffield Forgemasters Engineering Ltd (SFEL), famous for production of the largest steel castings and forgings in the Western world, specialises in the manufacture of forged work rolls for a variety of heavy engineering applications. The Company has been at the fore-front of roll making technology since the 1860's and pioneered the development of many roll making processes still used to this day. Their current work roll facility, custom built in 1992, is one of the best dedicated roll-making plants in the world producing forged steel work rolls used mainly in steel strip plants and cold mills for strip metal production. Approximately 90% of the rolls produced by SFEL are for export, with many of their customers requiring very high tolerances, typically less than 0.5  $\mu\text{m}$  surface roughness on forged rolls used in the manufacture of strip metal products and less than 0.2  $\mu\text{m}$  for aluminium foil.



**Hardened steel forged work rolls at Sheffield Forgemasters Engineering Ltd**

Considering the tolerances required and the hardness of the forged rolls, the only way to achieve the desired surface finish is by grinding the rolls which can be up to 5.3 m long and 12,000 kg in weight.

However, any imperfections or “chatter” marks from the grinding process on the forged rolls can be transferred to the final strip mill products demonstrating the need for highly accurate and consistent grinding.



**Schmitt Balance Systems balance head installed on a Herkules grinder at Sheffield Forgemasters Engineering Ltd**

As part of a continuous programme at SFEL to further improve the surface roughness and finish of forged steel rolls, they have recently invested in six SBS (Schmitt Balance Systems) automatic grinding wheel balancers from Schmitt Europe Ltd, for their Herkules and Churchill roll grinding machines used in the hardened roll finishing process. A major cause of chatter marks appearing on the surface of a roll can be vibration on the grinding machine spindle induced by imbalance in the grinding wheel, bearing in mind that each wheel weighs 80 kg, is 73 cm in diameter, 10 cm thick and rotates at 700 rpm. The SBS grinding wheel balancer can be permanently installed on almost any model of grinding machine (roll, cylindrical, centreless and surface) and is capable of reducing machine spindle vibration down to 0.1 – 0.2  $\mu\text{m}$  by automatically moving tungsten weights to counteract grinding wheel imbalance. The system can be integrated into a machine CNC or offered as a standalone solution.



Schmitt Balance System showing the vibration sensor and computer controller installed on a Churchill grinder at Sheffield Forgemasters Engineering Ltd

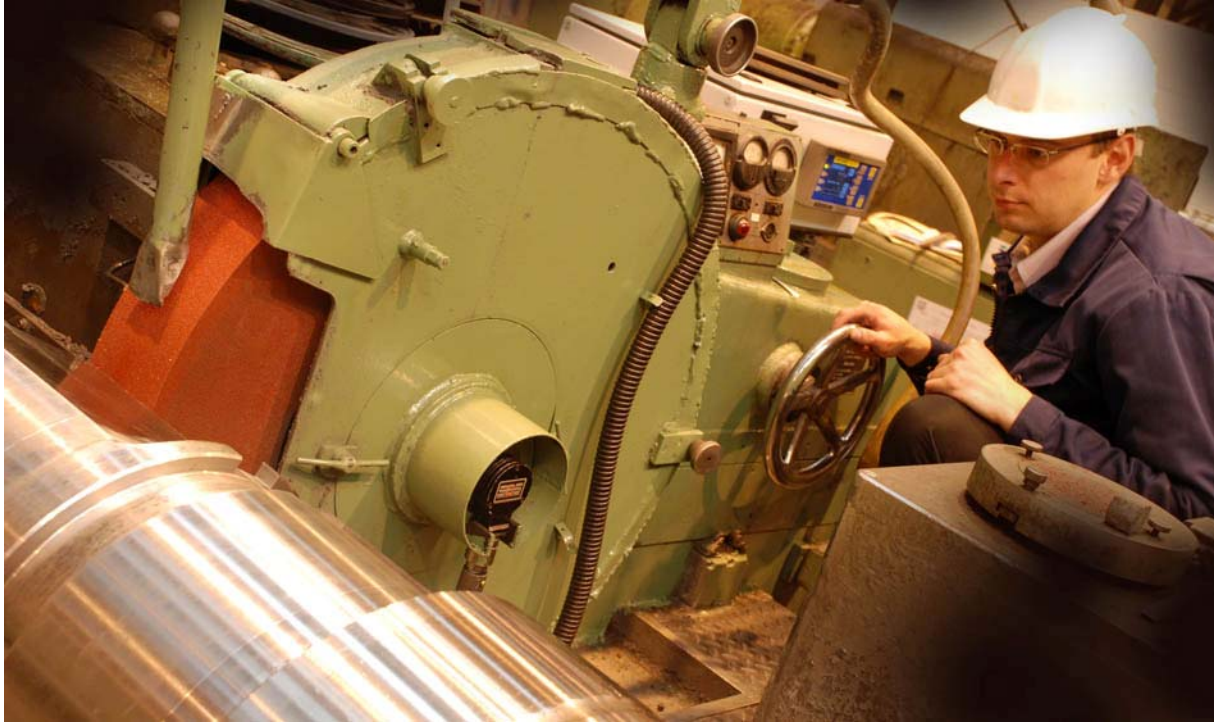
Immediately after installation SFEL saw a major reduction in light chatter marks seen on the surface of finished ground rolls, so-much-so, that they have been able to completely eliminate an anti-chatter process which could previously take up to one hour of production time per finished ground roll. For SFEL this means an increase in productivity and profitability. The immediate benefits reported by SFEL following installation of SBS balance systems to their grinding machines are best summarised as follows:

- **Lowered spindle vibration eliminating light chatter marks**
- **Eliminated anti-chatter process, saving production time**
- **Increased productivity and recovery**
- **Easier to achieve desired tolerance, surface finish and roughness**
- **Eliminated the need for manual wheel balancing**
- **Fewer grinding wheel changes**
- **Prolonged wheel life**
- **Less wheel dressing**



- **More accurate and efficient wheel dressing**
- **Much faster and more accurate wheel balancing**

These benefits translate into significant financial savings for SFEL with the company looking at 12 to 18 months payback on the six balancing systems purchased from Schmitt Europe Ltd.



**SBS Dynamic Balance System installed on a Herkules grinder at SFEL**

Robin Bown, Technical Manager Work Rolls at SFEL described installation of the SBS balance systems as ***“a very positive improvement and definitely worth doing, with grinding machine spindle vibration routinely less than 0.2  $\mu$ m on all machines”***. Furthermore, eliminating chatter marks on ground rolls with the SBS balance system has improved quality and brought SFEL much closer to achieving their goal of 100% customer satisfaction. SFEL say, ***“Chatter is a problem that follows you around and in this case, prevention is better than cure. Anything which reduces re-work and improves customer satisfaction is a good thing”***. For more information please go to [www.schmitteurope.com](http://www.schmitteurope.com) , or e-mail to: [enquiries@schmitt.co.uk](mailto:enquiries@schmitt.co.uk). or telephone Schmitt Europe on +44 (0) 2476 697 192