



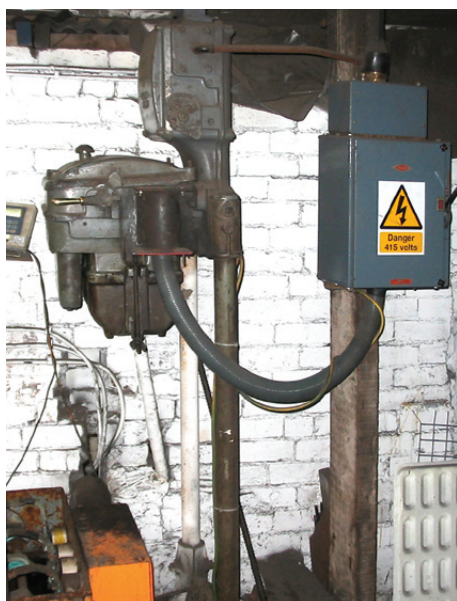
You drive 16 tons and what do you get? Smoother production!

Pro-Roll is a specialist finisher of high specification metals for high tech industries including aerospace and F1 and counts Rolls Royce, Ferrari and Corus among its many prestigious customers. Its speciality is the production of low volumes of high grade section in special alloys and materials such as titanium. Ironically, this 21st century company is based in an historic grade 2 listed mill near Sheffield that was formerly water powered and was only electrified in 1957. The grade 2 listing includes much of the company's equipment and this poses problems from time to time, when the viability of the equipment becomes questionable and spares are no longer available.



● Pro-Roll's 2 high roll stand.

● Old liquid starter unit



This was the case when their 2-high rolling mill became increasingly unreliable. The enormous torque required by the mill is supplied by a 16 ton flywheel driven originally by the waterwheel but since 1957 driven by a 142hp slip-ring motor. Starting the system required a lengthy run-up and to accommodate this, an Edison liquid resistance starter was installed when the mill was electrified. Recently the spares situation became critical with the contactor tips burning out regularly and replacements having to be hand fabricated in-house. The starter had to be filled regularly with distilled water and soda crystals added and the whole procedure was becoming time consuming and unwieldy.

● New compact soft starter panel





APPLICATION BENEFITS

- CONTROLLED RUN UP OF HIGH INERTIA FLYWHEEL
- ELIMINATION OF DRIVE BELT PROBLEMS
- RESTORATION OF HISTORICALLY IMPORTANT PLANT
- QUANTUM IMPROVEMENT IN SYSTEM RELIABILITY
- RETAINED ORIGINAL SLIP-RING MOTOR

Despite having the redundancy of a second mill, Symon Havenhand, the Managing Director decided the time had come to replace the starter, which itself wasn't subject to the grade 2 listing, and contacted Softstart UK to investigate the possibility of fitting a modern soft starter. "The service from Softstart was excellent right from the start" said Mr Havenhand. "They took careful note of my special requirements and promptly arranged a site survey to inspect the motor and the flywheel. They suggested, for simplicity, that they supply a turnkey solution for the complete installation using a local electrical subcontractor, Exell Engineering of Chesterfield. Exell were also superb and worked closely with us to meet our exact needs. Installation went very smoothly and Softstart attended site and commissioned the starter, which took little more than an hour. The system has run faultlessly since"

The electrical characteristics of the slip-ring motor meant that it wasn't simply a case of shorting out the slip-rings to turn the machine into a wound-rotor induction motor. High wattage resistors of low impedance had to be connected in circuit across the rings for starting to ensure sufficient starting torque. These are shorted out when the motor is up to speed and transferred to mains supply and this required a control panel additional to the soft starter itself.

SoftStart UK recommended a 350 amp LV-DS high duty digital soft starter specially suited to the arduous starting requirements and the mill environment, since the starter is sited right next to the rolling mill. The LV-DS units feature third generation control of starting and stopping characteristics and a highly sophisticated motor protection package.

The 142hp 20pole (280rpm) motor drives the flywheel via a 2 : 1 reduction via vee belts and now runs up in under 2 minutes without the need for manual control of the starter. "It's superb" said Mr Havenhand, "we just press the button first thing in the morning; the exceptionally noisy belt screech and associated belt wear have been eliminated and 2 minutes later we're ready to roll sections. We can roll round bar from ranging from 5mm to 57mm and by scheduling production intelligently we need make very few roll changes and production now proceeds smoothly without unwelcome interruptions."

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