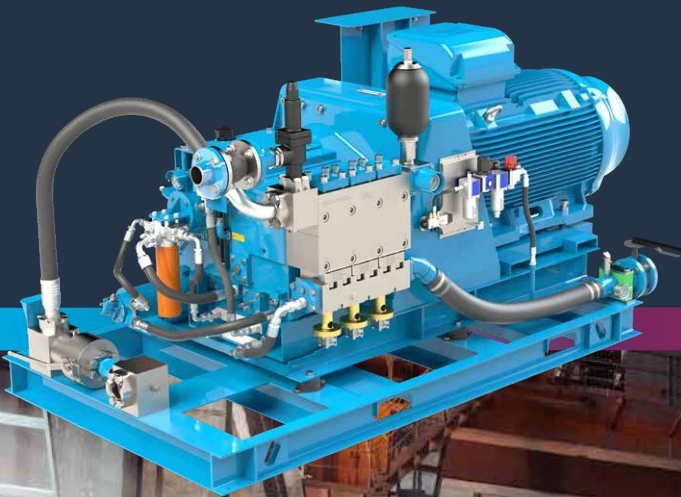


A Case Study for Heavy Industry Metso Minerals

Metso Minerals is the rock and mineral processing business area of the global Metso Corporation. Metso Minerals supplied a tube press system to a steel mill service contractor and subsequently approached Armstrong **Industrial** to provide a replacement and more efficient high-pressure system, to help improve productivity at a reduced energy consumption rate and lower environmental impact.



POWER USAGE
REDUCED BY

40%

Armstrong **Industrial**

“We have traditionally used rotary pumps for this application, but the Armstrong **Industrial** engineers convinced us of the reliability we could expect from their positive displacement pumps, we have not been disappointed!”

Background

Tube press systems remove waste iron from a furnace exhaust, along with other waste by-products, through a variable volume filter, using flexible membrane to apply high-pressure mechanical compression to the slurry that is dewaterised. By applying high pressure or “driving” force of up to 100 bar, to the filtration process, a drier filter cake with better handling characteristics can be produced, for immediate storage or for disposal.

The existing Metso tube press system was based on a high-pressure rotary pump with a 75kW motor, with low efficiency and a high risk of failure.

Challenges

The Armstrong **Industrial** replacement system needed to comply with the following requirements:

- The pump unit had to cycle on load - off load, every five seconds.
- The accumulators had to operate within 10% of the system's nominal pressure, with the option to adjust this to down 5%.
- The system had to be extremely reliable, operating seamlessly 24 hours a day, 7 days a week.

Solution

Working in collaboration, Metso and Armstrong **Industrial** developed a more effective system, which offered immediate improvements, including reduced energy savings and an improved carbon footprint. Our solution provided a highly efficient positive displacement pump – a bespoke system designed for reliability, comprised of S75 Trimax pumps, with a set of accumulators and nitrogen-charged back-up bottles. The system was fitted with adjustable flow mechanisms and safety devices to ensure that the tight hysteresis of the system is achieved.

Benefits

- We have a history of designing pumps to perform well in challenging environments. Our range of pumps are thus characterised by heavy duty design and construction (resistance to attack from heat, water, acidity and dirt etc), which prolongs equipment life and extends routine maintenance intervals.
- The enclosed construction of the pumps prevents the ingress from contaminants and integral water-cooling aids.
- Positive displacement pumps manage demand far more efficiently than rotary pumps with a smaller motor – just 45kW instead of 75kW – offering a 40% reduction in the power required and reducing operating costs significantly.
- In addition to being inherently more reliable, as a result of its design, the Armstrong **Industrial** system incorporates built-in health monitoring. System performance data is fed to a remote PLC enabling engineers to anticipate and remedy any potential system failures, before they may occur.
- The enclosed construction of the pump systems prevents the ingress from contaminants and integral water-cooling aids economical operation, even in confined or hot spaces.
- Variable speed drive technology provides an additional 5%-10% saving in power.

Energy Savings

Energy Cost Rotary Pump	£60,480
Energy Cost Armstrong Industrial Pump	£36,288
Cost saving per annum	£24,192

Service Savings

Maintenance time	£5,040
Spare parts	£2,350
Total cost savings	£7,390

Installation Costs

Pumps	£18,000
Controls	£1,200
Total additional costs	£19,200

Payback Period	7 months
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For more information, contact your local Armstrong representative or visit us at:
armstrongfluidtechnology.com/en/industrial/home

Armstrong **Industrial**