

Rutten Long Life Blast Turbines by Rösler

To stay competitive in today's global markets, companies must continually optimize their manufacturing operations. Retrofitting Rösler shot blast machines with Rutten Long Life blast turbines will improve the cost efficiency of virtually any shot blast operation. Due to their unique design, these patented high performance turbines yield energy savings of over 25%. The 30,000 to 40,000 hours of service life of the throwing blades results in significantly higher equipment uptimes and drastically reduces maintenance and spare parts costs. Many companies like Swedish steel producer SSAB or the German foundry Heunisch GmbH have taken advantage of the Rösler RetroFit program to increase the productivity and efficiency of their shot blast operations.

Surface treatment machines are subject to wear rates. This is especially true for shot blast equipment that runs in multiple shifts, often resulting in long equipment downtimes with a loss of production and high maintenance and operating costs. Another cost factor is the high energy consumption of these machines. In many cases, a systematic equipment modernization will not only provide state-of-the-art technology, but will also greatly improve the overall cost efficiency. The "TuneUp" program, developed by Rösler Oberflächentechnik GmbH, deals exclusively with the optimization and the technical overhaul of existing shot blast machinery irrespective of make or model. This program also includes the retrofitting of blast machines with Rutten Long Life turbines for which Rösler is not only holding the respective patents, but is also the manufacturer and exclusive supplier of spare and wear parts. These highly unique high performance turbines are available with Curved-C and Gamma-Y throwing blades. The latter have two working surfaces arranged in a "Y" shape allowing shot blasting in both rotational directions of the turbine.

Downtime Reduced 90% and Spare Part Costs Reduced 50%

The Swedish SSAB AB, one of the world's leading suppliers of high-strength steel, decided to modernize the shot blast equipment at its SSAB EMEA plant in Oxelösund. The company has approximately 8,100 employees in 45 countries. It produced about 5,500 thousand metric tons of crude steel in 2012. The Oxelösund plant is considered one of the most important producers of tempered steel in the world.

One of SSAB AB's production lines manufactures wear-resistant Hardox steel plates and sheets. Prior to tempering, the raw material undergoes a blast cleaning process for which the line is equipped with two shot blast machines. Two additional shot blast machines are integrated into the painting line. Five maintenance and repair teams work seven days a week around the clock to ensure the line runs smoothly with a minimum of downtime. Kent Forslund is the maintenance manager for this production line and is responsible for the job scheduling and the cost efficiency of the equipment. "Our four blast machines are from three different suppliers and the original blast turbines were generally wearing very fast. This required a lot of maintenance work, which frequently resulted in long equipment downtimes and very high spare part costs. In addition, it was possible that a blast turbine could completely disintegrate, causing damage to the other blast turbines and the blast



The Rutten Long Life Blast Turbine



The Rutten's patented Curved-C turbine throwing blade produces a significantly higher operational efficiency



Gamma-Y® blades have a service life of 30,000 to 40,000 blast hours compared to an average of 2,000 hours for conventional turbines

chamber. For these reasons, we equipped all our shot blast machines with Rutten Long Life blast turbines,” he said.

The original 32 blast turbines on all four shot blast machines at SSAB EMEA were replaced with Rutten Long Life blast turbines, each with an installed power of 22 kW. The decision for this important RetroFit program with Gamma-Y high performance blast turbines was based on their operational characteristics. The throwing blades can easily reach 30,000 to 40,000 blast hours, before having to be replaced, compared to an expected life of 2,000 hours in conventional blast turbines. “The wear rate on the Rutten turbines is extremely low so that the overall maintenance work and the maintenance-related downtimes could be drastically reduced. In addition, our overall spare part costs were reduced by about 50%,” said Mr. Forslund. In addition, the patented throwing blades ensure a highly “fluid” movement of the blast media. This, in combination with an optimized blast media transfer onto the blades, produces a much higher media flow rate and throwing speed compared to conventional blast turbines operating at the same RPMs and with identical turbine diameters. The overall effect is a greatly improved finish of the blasted surfaces resulting in shorter processing times and lower media consumption. Mr. Forslund proudly summarizes his experience: “I think that by retrofitting our blast machines with Rutten Long Life turbines we have reduced the downtimes of our shot blast equipment by 90%.”

Reduction of Energy Consumption by 25%

Another important aspect of the Long Life turbines is that they require less energy. The specified shot blast results can be achieved with a lower horsepower motor, which helps reduce the overall energy consumption. This was one of the major reasons why the foundry Heunisch GmbH decided to go with the RetroFit program. Heunisch produces carbon steel and aluminum components with gravity die-casting technology in its four locations. Their range of services extends from engineering consultation to surface treatment. Efficient manufacturing operations ensure that the foundry remains highly competitive. At its Steinach plant where custom-engineered castings from GJL, GJS and NI-RESIST materials are made for drive trains, marine applications, general equipment and compressor manufacturing and fluid handling components, Heunisch has equipped three shot blast machines from different manufacturers with Long Life blast turbines. Jürgen Frank, the manager of the foundry maintenance department at Heunisch Guss, said, “To make our shot blast operations more efficient, we are utilizing the Long Life blast turbines in two spinner hanger machines and one tumblast machine.” These machines are equipped with a total of 17 blast turbines. The foundry also decided to utilize the Gamma-Y turbines. Jürgen Frank continued, “To

precisely quantify the benefits of this modernization program is very difficult, but we are absolutely certain that retrofitting our shot blast machines with Rutten turbines resulted in cost savings of at least 25%.”

Quick Amortization

The RetroFit program has significantly contributed to considerable cost savings and optimization of the overall production process for both SSAB EMEA and Heunisch. Based on the shot blast equipment configuration, the Rösler TuneUp team determines which Long Life blast turbines are most suitable for achieving the customers’ specified shot blast results, and what cost savings and amortization times can be achieved with the RetroFit program.

To emphasize Rösler’s commitment to this program and its expected cost savings, the company offers a special warranty by offering the customers the option to return the turbines within a set time period. If a customer is not satisfied with the results of the RetroFit program, Rösler will re-mount the original blast turbines free-of-charge within the specified time period and return the full purchase price for the Long Life blast turbines. The replacement of the original turbines with Rutten Long Life turbines requires an investment amounting to about 30 – 35% of the cost for a new shot blast machine. This investment is amortized in two to three years by drastically reduced costs for energy, maintenance and spare parts, much lower equipment downtimes, and by lower blast media consumption.

Additionally, when a customer needs to replace the old shot blast machine, the new machine can be equipped with the existing long Life turbines. Retrofitting an existing shot blast machine with Long Life turbines is in many cases a cost-effective alternative to purchasing a new blast machine. Customers are also asked to consider if the performance of an existing shot blast system could be improved with additional peripheral equipment, or if the equipment uptime could be greatly improved by the installation of optimized wear protection packages in the critical wear areas.

Rösler presented its RetroFit program at “EMO Hannover 2013” in September. ●

About Rösler GmbH

Rösler GmbH is an international market leader in the production of surface finishing, shot blasting machines, painting systems and preservation lines as well as process technology for the rational surface finishing (deburring, descaling, sand removal, polishing, grinding) of metals and other components. In addition to the German plants in Untermerzbach and Bad Staffelstein, the Rösler Group has branches in Great Britain, France, Italy, The Netherlands, Belgium, Austria, Switzerland, Spain, Romania, Russia, China, India, Brazil, South Africa and USA.