

Roll grinding

With a strategy linked to in-house technology development of high-end products, innovation and customer partnerships, Tenova Pomini has established itself as a major supplier of roll shop grinding systems.

Author: Tenova Pomini Roll Grinder Business

Tenova Pomini's strategy for the supply of roll shop grinding systems revolves around the development of in-house technology rather than buying it in. In doing this it takes complete responsibility for all activities connected to the design, engineering and development of the software managing machine automation. This approach is linked to the strategic decision to address our production towards the high-end of the market, developing complete automated roll shops as well as automated grinders.

Tenova Pomini's effective approach to innovation, allowing extremely rapid transfer of ideas and new solutions to industrial production is a key source of competitiveness. Its success lies in close cooperation between the three technical offices (mechanical, automation and software) and the interdisciplinary nature of the R&D operations coordinated by the roll shop plant design office, with its strong focus on innovation. *Figures 1 and 2* are illustrative of our innovative products.

Instead of applying the classic approach from function and structural design to the construction of a prototype, development of each new idea includes a parallel risk analysis (safety design) and an analysis of reliability and critical maintenance factors. In this way, new products rapidly reach production, with all the features to ensure a competitive market entry.

CUSTOMER PARTNERSHIPS

Such a result has been achieved, not only thanks to continuous commitment to research and development conducted in cooperation with universities at international level and specialised research centres, but also by concentrating on customer partnerships, like the one with ArcelorMittal Dofasco to develop the Roll Defect Management System.

This system, which builds on its patented Roll Defect Management Process, automatically classifies roll defects and, according to the result of the classification, communicates to the grinder how much to grind in order to remove the defects. The system can also decide to re-purpose the roll, for instance allocate it for a different stand, or inform the operator of a critical situation. The system makes the decisions that were previously left only

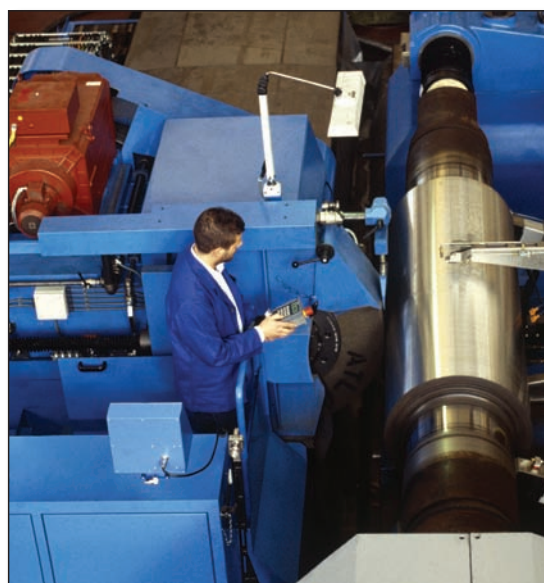


Fig 1 Automatic roll grinder during start up in Castellanza, Italy



Fig 2 Special tongs for rolls with chock tilter equipment

to operators and, in so doing, introduces further quality and consistency in the grinding process, while at the same time minimising the roll material removed and the risk of accidents in the mill.

The same approach to cooperation has proved a winning one in the development of a complex product such as a complete roll shop, where all phases of operation are

automated and supervised by a single operator thanks to an extremely sophisticated control system. The connection between grinders, loaders and roll handling systems allows production management to be optimised, reduces manoeuvring errors and increases safety for the operators, who remain outside the roll shop area.

Pomini automatic loaders, for instance, can receive the roll schedule from the mill system, decide what rolls to grind, how, and in what order, and also if rolls need to be cooled or de-chocked, load and unload the grinders, and place the ground rolls on the transfer car to be taken to the mill. A single operator can supervise the operation of the automatic loaders and the grinders from a single control room and, if the Roll Defect Management System is running little, if any, intervention will be necessary.

ROLL SHOP MANAGEMENT SYSTEM

A roll shop is an extremely complex plant where the critical aspects are linked to both designing and manufacturing of various components and personalisation of management software. Tenova Pomini's strategy is to develop hardware and software in parallel, as defined and implemented by the automation department specialists. This makes it possible to provide modern solutions that optimise plant performance, always designed with strong client participation.

One example of this is the Roll Shop Management System, a software system designed to help roll shop managers make good decisions based on clear data with regard to the performance of their operation. This system keeps track of rolls, chocks, bearing, grinding wheels and grinding machines, correlating process data coming from the grinders with production data coming from the mill, and providing reports and statistics that give clear performance indicators for the complete process.

Armed with this information, roll shop managers can make better decisions on issues such as which rolls should be purchased and when, when to do maintenance on chocks, or which rolls to send to the mill. This system has been installed at many customer sites in North America, Europe and Asia, and has grown considerably in its latest version based on customer feedback. Pomini's strategy is to gather all special requests and ideas for improvement coming from customers, evaluate them, and make and integrate them into the standard software, rather than managing a high number of customised solutions. This way, every customer receives all the improvements recommended by other customers, and Pomini can manage one configurable software solution instead of many different ones.

REMOTE TECHNICAL ASSISTANCE

In order to guarantee constant roll shop operating efficiency, Tenova Pomini offers its clients an effective

remote service connection, using a fast internet link from its Technical Assistance Centre to the roll shop's information system. This provides 24/7 remote assistance embracing the whole range of plant functions and greatly improves support effectiveness in case of breakdown or plant malfunction.

SALES

The market has appreciated and rewarded this approach as evidenced by more than 25 automated roll shops sold in the past few years in all the key markets. In many cases these were follow-up contracts with clients who had already bought our plants in the past.

China and Far East The most outstanding results have been in China, where we sold a large number of roll grinders in a country that experienced an economic boom. Recent success includes the supply of a complete roll shop of five grinding machines to WISCO, plus two other grinders for the Wuhan factory and one for the Ezhou rolling mill. Other significant contracts are three grinding machines for Tonghua, two for Masteel and one for Laiwu.

Marketing and service operations are managed by the Chinese subsidiary, TITBCO. This permanent team of people in China assures company visibility throughout the Far East, as the recent contract awarded by Korea's Posco and Dongbu and the orders placed by China Steel Corporation (CSC) and Yieh United for the Kaohsiung rolling mills in Taiwan, illustrate.

Rest of world Tenova Pomini's success is not limited to the Asian market. One of the most prestigious orders is with SMS Demag, for the Compass + New Star plant to be built in Alabama, USA, covering two complete automatic roll shops for hot and cold rolling mills. Europe continues to offer exciting potential, as all main manufacturers invest in plant upgrades, for instance, major contracts were recently awarded in Italy by Ilva (Riva Group), Arvedi and Marcegaglia, while Alcomet has ordered a grinding machine for its aluminum strip rolling mill in Shoumen, Bulgaria. Tenova Pomini is also to supply three grinding machines to Isdemir for its rolling mill in Iskenderun and a complete roll shop for the Çolakoglu hot strip mill in Gezbe, both in Turkey.

CONCLUSIONS

Using this innovative methodology, Tenova Pomini has conceived, built and launched approximately 15 new types of product since 2002. This achievement makes it the only supplier in the world able to design, build and commission a complete automatic roll shop entirely with its own resources and know-how. **MS**