

HUMAN RESOURCES

# Investing in people for cost-effective production

**Continuous performance improvement in rolling mills can be implemented by maximising existing assets – particularly human assets – and minimising new capital. Great strides have been made at Co-Steel Sheerness in the area of employee empowerment resulting in a highly skilled and motivated team able to respond to a wide range of situations.**

BY STEPHEN KNOWLES

Co-Steel Sheerness installed a rod mill in 1975 to provide reinforcing and mesh grade products to supplement the product range of reinforcing rod produced at the bar mill. The marketplace for this type of steel in the south east of the UK during the late 70s and into the early 80s was very strong. However, in the recessionary times of the early 80s in Europe prices fell and the viability of the mill came into question. Despite attempts to diversify the product range to a higher quality product, only marginal improvements were achieved.

The whole question of the long term future of the mill revolved around the ability to produce high volumes of rod at very low conversion cost. Selling price margins were much lower with rod than bar, hence for investment to improve quality and productivity there was little or no payback.

Co-Steel Inc has a reputation for innovation and investment in the latest technology. One of the main successes of the company and particularly the Co-Steel Sheerness operation has been its ability to invest in leading edge technology. For example, one of the world's first scrap preheating shaft furnaces was installed at Sheerness resulting in high energy efficiency and high productivity. The spirit of innovation within the company is not lacking, however it was not appropriate to invest in capital plant in this instance.

It was considered that the only way to make the necessary changes in performance of the mill to cope with the new highly competitive environment was to maximise the performance of the existing plant and workforce. The mill was capable of improved performance. The method of achieving the necessary improved performance was by harnessing the potential of the existing workforce.

## INVESTMENT IN PEOPLE

From its original inception the mill has benefited from only a very limited amount of capital investment, £2M for the period 1975-95. Over the last 10 years the company has seen most gain from its policy of investment in people. Within the UK it has been given many awards as a result of this commitment and the success which has resulted.

Nobody is saying that capital investment is not necessary, but simply that returns can be blown off course by many unforeseen circumstances such as commissioning and design

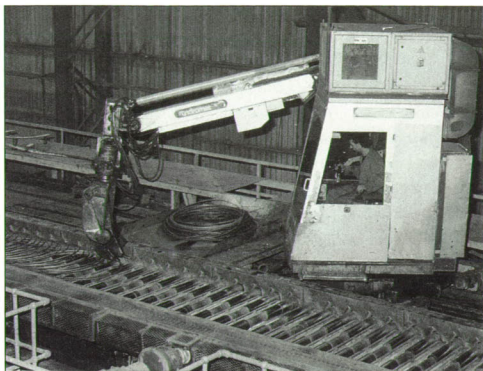
problems or changes in market conditions, all unforeseen and not able to be overcome in the short term. Investment in people requires relatively small amounts of money but with such a large resource much is potentially able to be achieved.

Manning and organisation at Sheerness was very traditional with fixed tasks and clear boundaries of work responsibility and discipline. Initially the manpower on each shift was formed into teams. Job titles were lost so boundaries become less clear. Then a continuous and multi-featured training strategy was formulated giving all personnel opportunities to learn a broader range of skills, and obtain knowledge hitherto held within the supervisor, manager, engineer level. The initial target was for operators to learn in detail their own process and additionally blend this with some basic theory. These programmes were linked with vocational standards to give nationally approved qualifications.

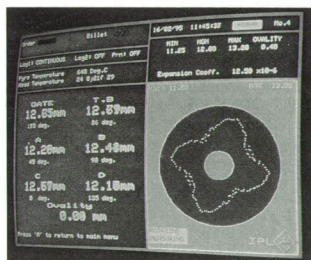
Naturally not every operator was keen to go back to school for various reasons such as lack of literacy, low commitment, and other priorities. Management persuaded union representatives to install a motivating reward scheme linked to education in addition to other forms of behaviour and attitude which would assist

in releasing more potential from employees. Each employee is appraised annually encompassing reward linked to effort.

In addition team working was developed by encouraging multi-skilling between areas of work and exchanging tasks. After initial resistance most people saw advantages not only to



1 Robotic on-line trimmer on the conveyor freed-up two men to work elsewhere.



2 Display from the bar gauge. Statistical Process Control was made the responsibility of mill operators.

## Steelmaking and rod mill facilities at Sheerness

The wire rod mill at Co-Steel Sheerness was one of the last main installations to be constructed at the works and was completed in 1975. The steelworks comprises two furnaces and two four strand casters now producing in excess of 800,000t/year of billets. This shop commenced operations in 1972 with one furnace and one caster feeding a continuous bar mill. Presently the melt shop produces billets to supply the modernised bar and merchant mill plus the wire rod mill.

The 75t/hr pusher furnace feeds 140mm billets into a 9 stand horizontal twist Ferroc design roughing mill. Six intermediate cantilever stands supplied by Ashlow feed the 72m/sec no twist Ashlow block to produce 5.5 - 18mm rod. Water box cooling provides rapid rod cooling to achieve high tensile properties for high yield strength steels. The loop layer and pinch roll feed a 23m Morgan conveyor with air cooling facilities for controlled cooling. Coil reforming and compaction are carried out on line with a rotating mandrel system. ■

the company but benefits to themselves in job satisfaction with people becoming more effectively utilised. Operators who had been hired in the first place for their physical strength were given skills in simple maintenance. Most achieved a good standard and felt rewarded by their achievement.

It was realised that operators had limitations on their ability placed upon them by management who had not realised their capability. More technical items such as some basic statistical process control techniques were successfully introduced. A traditional barrier was in quality and metallurgical skills held by technically qualified people. Much of this work is repetitive and detailed occupying highly skilled people in simple tasks. An exercise was started to teach mill operators to carry out these tasks, namely tensile tests, surface examination for defects and metallographic examination of samples. A small process laboratory was built and computer aided learning installed as part of the process. Mill quality operations are now an integral part of the operational responsibilities of the mill. Operators now control the results of their

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actions in the mill. The result has been that solutions to quality problems are found faster and resolved more easily than in the past.

This was a significant step in the evolution as it was realised that small discrete investments – linked to increasing the capability of people – pay highly and produces a result which enhances the capability of the mill.

**MINOR PLANT DEVELOPMENT**

It was felt possible to combine the roughing and main pulpit using closed circuit television to overcome sighting problems. Now one pulpit operator controls the whole mill. As all operators now know every job, each can rotate, enjoying job enrichment and challenge.

Removal of arduous and repetitive physical jobs was done to reduce manning levels. A robot (Fig 1) was installed on the conveyor to make trimming easier, increasing skill levels and removing two men per shift to work elsewhere. All cranes were made remote-controlled freeing under-utilised crane drivers.

A bar measuring gauge (Fig 2) speeded up mill set-up and settling time, reducing the need for repeated physical dimension checking during these times. Mill operators with their new skills, knowledge and flexibility were able to contribute more to overall performance of the mill through their fuller understanding and involvement.

Less management and supervision were required and regular forms of open communication in both directions evolved. Management was challenged to ensure all teams were able to perform to the best of their ability by presenting technical performance data to them. Fig 3 shows the current mill performance display which can be seen by all personnel working anywhere in the mill. The availability issue is kept in front of operators at all times using in-house designed PC-based delay programmes for current and historical assessment (Fig 4). Operators record and assess their own shift performance parameters and discuss them freely at their regular team meetings. TQM, Quality Circles or similar practices are not pursued. It is not necessary to disguise the needs and priorities of the business in these techniques to achieve the business and management aims as they are the same for all employees.

With the amount of flexibility, multi-skilling and empowerment given to employees it was considered that inconsistencies could arise by people covering too many areas. To avoid the risk of this occurring and to bring measured levels of competence to all people a new technique called 'Standards Based Training' was introduced into all departments within the works.

All team members must undergo this training which covers all aspects of each job

covered by the team. Learning and knowledge is tested in written, verbal and practical form. Hence there is standardisation in much of the work.

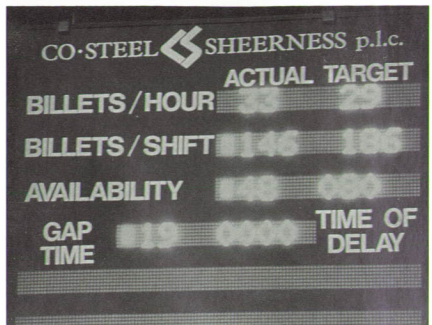
**ACHIEVEMENTS**

Achievement can be seen in many ways. With a very basic wire rod mill the product range has broadened from simple steels to where over one third of product is special rod for application in drawing, wire manufacture, fasteners, chain making and a range of other specific and demanding applications.

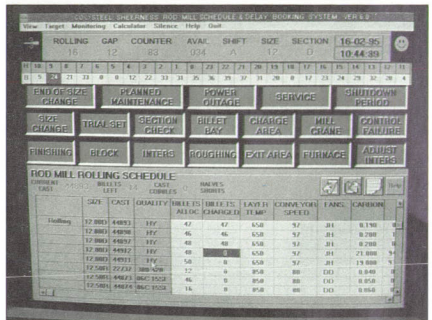
Mill output is growing (Fig 5) year on year with increasing productivity and mill speed in an environment where product range, quality requirement and product runs are more demanding all the time. Conversion costs are falling year on year at no capital cost to the company. Employees share in the financial success of this as a reward for their contribution. Over 80% of all employees have qualified for a National Vocational Qualification.

**CONCLUSIONS**

Success of the rod mill at Co-Steel Sheerness has much to do with the realisation that investment in capital equipment can be more successful if matched by the commitment of its employees. There is much confidence in the future to invest in more advanced equipment knowing that success is more certain due to the developed capability of the workforce. Small investment can make a significant impact when linked to developed skills of a workforce. Training can be continuous and bring improvements when capital

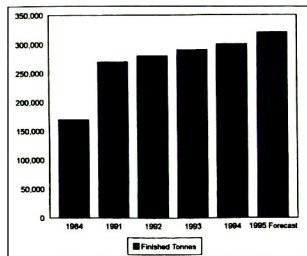


3 Operational performance display can be seen by all personnel working anywhere in the mill.



4 Availability is kept in front of operators at all times using in-house designed delay programmes for current and historical assessment.

5 Increasing rod mill output over ten years.



**It is possible. Just look!**

Confident decisions for investment and development plans are difficult to reach. There is a large range of opinions as to the options open to satisfy incremental increases in output. As an alternative to high capital programmes which can carry business risk, senior managers are increasingly recognising that enhanced performance of existing equipment is possible by enhancing the contribution of their own people.

Using programmes and initiatives specifically designed to suit the requirements of each company Co-Steel Sheerness's International Division is able to assist in achieving these objectives. Experience shows that mind sets need to be changed so as to accept new ideas, practices and concepts. Management at each level must form cohesive teams acting as initiators, champions and drivers of new concepts and ideas.

Introduction of new concepts can be achieved using programmes at a clients own site or at Sheerness where the 'Inside Track' approach allows participants to compare work practices and management culture in a

equipment can produce no more benefits. Training and skilling of people when a clear vision is given is accepted willingly by employees who harness the skills and knowledge given, with higher expectations than management may think. ■

benchmarking approach. A combination of both produces the best outcomes. This involves between 10 - 20% of a company's own employees. Preparation and follow up work by the consultants is necessary, who are involved in planning project work for participants and implementation follow up work.

A recent client has refined its team working by benchmarking and re-planning its manning to suit the plant resulting in very high productivity for a new installation. Another company is focusing attention on the performance criteria of energy, productivity and yield as drivers for performance increase in financial and efficiency terms.

Success is based upon the client's desire to become a different style of company and change from what has gone before. They are shown the vision of what is possible using Sheerness as a case study centre.

Where know-how and technical assistance is concerned the aim is to allow clients to resolve some of their problems by creating an environment to develop problem solving skills and a logical approach to issues. The 'magic wand' trick does not enhance capability but merely maintains dependence. ■