



## Where precision is the hallmark

Introduction of line production concept coupled with other innovative measures in the plant is paying rich dividends to HRS Process Systems Ltd. The new steps, besides enhancing productivity, also ensure the quality of products. Since heat exchangers are being used across various industries, their demand is rising, thus opening up new growth avenues for the company.



A view of the shop-floor



Technician on profile



Welding in progress

### ■ Prasenjit Chakraborty

A visit to the HRS Process Systems Ltd's plant located at Koregaon Bhima, 25 km from Pune city, underscores the significance of innovation and the returns it delivers. The plant, which manufactures all types of heat exchangers used across industries, is a one-stop shop for products, right from those that are traditional to highly-evolved ones. Two basic kinds of heat exchangers are used predominantly for industrial purposes – one being the shell and tube, and the other being plate type heat exchangers. In order to provide more efficient heat transfer solutions to sectors like chemical, petrochemical, pharmaceutical, fertilisers etc, HRS has come out with corrugated tube heat exchangers sold under the brand name *ECOFLUX*.

### Productivity enhancement

HRS has implemented a unique kind of system called Pilot Production Cell in its plant. The basic reason for implementing the process is to see how it enhances the productivity. By doing so, it is evaluating line production manufacturing of heat exchangers.

"The line manufacturing is a well-established concept in assembly shops,

typically for automotive or high volume production processes and for same kind of products. But for 'customised' equipment, fabrication is involved, and then it is imperative to carry out some modifications," says V Gokuldas, Managing Director, HRS Process Systems Ltd.

Fabrication requires a good study for implementation to be effective, because each stage has different input requirement. "So, we created the concept of production cell where heat exchanger manufacturing is defined in stages. After finishing one job, it goes to the next cell and so on till the final product is ready. Unlike in automotive industry, here welding is done, and sometimes cutting and grinding are also involved," points out Gokuldas.

In this pilot cell, all activities for manufacturing of heat exchangers are undertaken in one place, in a sequential manner, and space-wise layout is made. The important aspect to note here is people involved in manufacturing process are not moving, instead the materials are moving. The practice ultimately saves time and enhances the productivity. "In contrast, earlier everything was done in one area, and at one point of time, people involved in manufacturing needed to move for the next job. Now this is not required and the arrangement is like push-pull kind," he points out.

Segmentation also helps in quality because a team is only involved in one type of job. Daily production plan is prepared to enable the engineers & workmen carry out their respective work efficiently and with precision. "We implement '5S' & 'value stream mapping' for the processes on shop-floor. Due to these productivity enhancement processes (PEPs), the major functions on shop-floor have been streamlined for a smooth product and process flow. This has helped reduce the idle time and distances on the shop-floor for material movement, besides controlling and eliminating any need for rework and similar wastes in the manufacturing process," explains Gokuldas.

### Manufacturing excellence

The manufacturing facility, built to international standards, is spread over 4 acre with a 20,000 sq ft fabrication shop. The facility is designed for fabrication of heat exchangers – corrugated tube, shell and

tube, plate type and heat exchanger-based systems – for process industry/food/fruit/beverage processing. The capacity depends on size of units and can vary from about 80 to 250 heat exchangers per month. The facility is ISO 9001:2008 certified along with The American Society of Mechanical Engineers' (ASME) 'U' stamp and The National Board of Boiler & Pressure Vessel Inspectors (NBBI) registration.

*ECOFLUX* corrugated tube heat exchanger (CTHE) is an innovative product from HRS comprising corrugated tubes. These tubes enhance the efficiency of the heat exchangers, which not only helps to have a uniform thermal processing but also ensures that there is low fouling of heat exchanger surface. *ECOFLUX* CTHE is low maintenance heating equipment, with no spares requirement, and is thus ideally suited for the chemical and petrochemical industry. "Corrugated tube heat exchangers help user-industries reduce overall size of heat exchanger. Besides, it decreases fouling, which ultimately results in much higher performance. Even the technical advantages of the product are much better compared to shell and tube heat exchangers," claims Gokuldas. Interestingly, the cost of the product is lesser compared to shell and tube heat exchanger for similar duty conditions.

HRS also has patented *UNICUS* – an innovative scraped surface heat exchanger used for efficient heat transfer in viscous products/products with solids. This is a 'no fouling' heat exchanger, which can be used as an evaporator too.

### Training for quality and safety

All necessary safety aspects like shoes, helmets, eye masks, etc, as required for specific operations are in place. The ventilations (natural turbo fans) and lights are set up in a manner so as to make the working area more employee-friendly.

For all employees, HRS conducts training programmes based on the product and market scenario. It also provides in-house training on induction, design software, etc. Moreover, the employees attend training programmes organised by reputed institutes for soft skills and technical skills as and when required. At the shop-floor, the highest level



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**V Gokuldas**  
Managing Director

of skill is required in the field of welding and, hence welders have to go through successive phase of training. "After passing several tests, they are allowed to weld on shop-floor. It is because any minor defect in welding could lead to catastrophe," he says. The company has deployed automatic welding machines that help in improving quality and productivity.

HRS considers its employees as the biggest asset. There are many employees who have been serving the company since its inception. Says Vikas Chandgude, Fitter, HRS Process Systems Ltd, "I have been working here since the last six years. I have improved my manufacturing skills significantly by working in this factory. Day by day, manufacturing process is evolving in this factory and I am getting acquainted with the latest techniques."

### On a positive note

According to Gokuldas, heating equipment sector will witness a healthy growth in coming years, since such types of equipment find application across industrial segments. "Many new companies are being set up to address the growing demands of various intermediates that make up for a host of consumer durables. With buoyant growth in pharma and allied sectors, demand is going to build up for expansion in chemical process industry, and thereby all kinds of process equipment," he asserts. About 40 per cent of the company business is from repeat orders and the trend is growing. "We want to be a globally preferred innovative heat exchanger company providing sustainable heat transfer solutions," concludes Gokuldas. ■

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