

A portfolio par excellence

A mix of best practices, ranging from employee incentives to operational excellence programmes, provides the bulwark that sustains Emerson Network Power's market leadership in power protection and Precision Air-conditioning Systems

by Anoop Kochappan & Priya Rao



To the passer by there is nothing that particularly distinguishes the non-decrepit building at Plot C-20, Road No 19, Wagle Industrial Estate, Thane from its neighbours. Yet there is more to it than meets the eye, the cliché notwithstanding.

For one, that non-decrepit building is the head quarters of Emerson Network Power India Ltd (ENPI), a subsidiary of Emerson Electric USA, a \$13.8 billion Fortune 500 Company and a leader in India's rapidly growing power protection solutions and Precision Air Conditioning (PAC) systems market. Second, that very building also houses ENPI's only manufacturing facility in the country. Lastly, it's also the place where you can see some of the best global manufacturing and people practices in

action. These practices have yielded significant benefits, in terms of halving the company's inventory costs and giving it the capability to scale up production capacity by over 30 per cent without any additional capital, be it people, equipment, testing equipment or space.

Consider ENPI's implementation of Sales & Operations Planning (S&OP). In his book, *Lean Supply Chain Management*, Consultant R Michael Donovan says that S&OP, "is an absolute necessity without which world-class manufacturing is unattainable." S&OP is a decision-making process led by senior management to balance out supply and demand. The emphasis is not so much on how much product you make, as on how to make and sell the right mix of products to

maximise return. ENPI's successful tryst with S&OP is the outcome of an organisation-wide implementation of MRP II (Manufacturing Resource Planning—II), in accordance with the model laid down by American Production and Inventory Control Society (APICS).

A well-run S&OP process usually includes monthly meetings wherein senior executives turn a critical eye on expected demand and product mix, then reviews such factors as production rates, inventory levels, labour schedules, and cash flow—all of the elements that contribute to satisfying demand. The objective is to reach a consensus on a single operating plan that allocates the critical resources of people, capacity, materials, time and money to most effectively meet the marketplace in a profitable way. Says Royston Fernandes, Champion, Supply Chain Management, ENPI, "We started S&OP last year in accordance with the five steps delineated by traditional APICS model." These five steps were:

- Run Sales Forecast reports
- Demand Planning
- Supply Planning
- Pre-S&OP meeting
- Executive S&OP meeting

S&OP was done on a monthly basis to firm up the Master Production Schedules for the next three months. But it was found that a monthly approach slowed the response time to fast changing market conditions. The solution—switch to doing S&OP on a weekly basis. The same

has come into effect from April this year. The changes under the new dispensation are:

- Adoption of a six-weekly approach for Power, Air; Three-monthly rolling plan approach for DPG, DC Power
- Single person appointed to consolidate all sources of demand and interact with the master schedulers
- Monthly Pre-S&OP and Executive S&OP meetings continue

ENPI now works on a six weekly rolling plan for Air and Power (20 kVA and Above), which is more of a job-to-job business. For DPG (0-20 kVA), which is a more of made-to-stock business, it follows a three monthly rolling plan. An important change from the earlier set up is the appointment of a central planner on the sales side, to consolidate all sources of demand. Demand management is a key component of S&OP. Explains Royston, "Previously, we had different persons doing different things and

co-ordination became a problem for operations. So we appointed a single person ie. a demand manager to take care of co-ordination. His job is to co-ordinate with everyone in the field, prioritise continuously, review, sit with the planners once a week and ensure everything is in place." The monthly pre-S&OP and executive S&OP meetings have been retained for review purposes. The management meets on a monthly basis while actual planners meet on a weekly basis.

Mastering inventory

Inventory management is an area where ENPI has reaped significant benefits. Says Shashank Raodeo, Corporate Champion, Operations—Air, ENPI, "Between 2000-02, company-wide inventory has come down 50 per cent. This is a huge advantage."

Painting a before scenario, Raodeo continues, "In hindsight (FY'00), we had huge inventories and low inventory turns. Obsolete inventory was high due to improperly planned product phase-outs, purchase of materials that were not used later and other reasons. We weren't focusing on inventory carrying costs, freight costs." Other problems included frequent changes in production plan, little focus on on-time delivery, and high delivery lead times.

Shashank hastens to add. "Today, our inventory turns are close to 12. At that time, nobody believed we could do that." The solution was to tailor a different approach for each product line.

Explains Shashank, "We follow the small factory concept. Here, within one factory, smaller factories or lines operate." On the shop floor, Line 3 deals with air, Line 2 deals with power (20 kVA and Above) and Line 1 deals with DPG (0-20 kVA). Each line is working independently, with separate stores, planning, procurement, and inventory. Line 1 ie. DPG deals with made-to-stock products while Lines 2 and 3 deal with customised products. "So the entire approach will be different for



Royston Fernandes,
Champion, Supply Chain Management,
is a firm believer in S&OP



Shashank Raodeo,
Corporate Champion, Operations - Air,
has several inventory slashing aces
up his sleeve

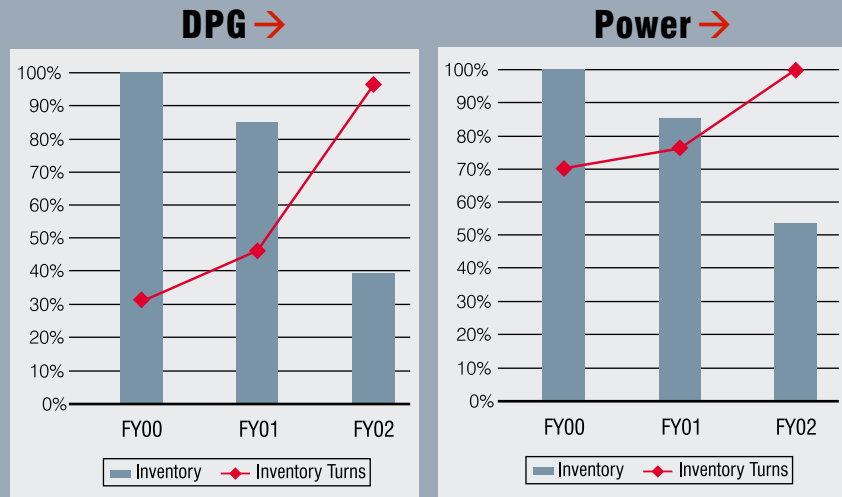
each line," Shashank indicated. It may be noted that ENPI currently has seven finished good product lines, distributed between its three divisions. Product lines are independent of brands. Thus, SBU I (Micro & DPG UPS division) has three product lines and four brands (UPStation, GXT AV, Powerbank, S400). SBU II (Medium & High Range UPS division) has one product line and three brands (7400, 7400 M, Hipulse). SBU III (Air division) has three product lines and three brands (Intellicool, Precision Air Handling Unit, Precision Environmental Control).

Centralised inventory

For DPG, a centralisation strategy was adopted. Earlier FG (both traded and manufactured) was stocked at the branches as well as the central warehouse. There were three stocking

Slaying the Inventory beast

Focused inventory management strategies for the three divisions coupled with employee incentives helped ENPI reduce company-wide inventories by 50 per cent, and trim inventory carrying costs.



In DPG as well as Power, average inventory levels have declined drastically.

levels viz. Central Warehouse, Branch and Business Partner (BP). The end result—high FG inventory. The first step was to centrally consolidate all FG inventory at a central warehouse. Then the BPs were educated on the benefits of stocking minimum FG inventory. Further, delivery lead times were brought down. Beams Shashank, "All these measures have resulted in a 65 per cent reduction in FG inventory." In the case of spare parts, inventory reduction achieved was a whopping 75 per cent. Says Shashank, "One could never believe that this division could work with this kind of inventory."

A similar reduction was achieved on the Raw Materials (RM) front too. (See *Busting RM & Spares inventory*). A major factor contributing to excess RM inventory was poor forecasting. Instituting a continuous feedback in cooperation with marketing solved this problem. Also, there is an incentive to be right with the forecasts. "Through an employee incentive scheme, all our monthly salaries are linked to our inventory turns," reveals Shashank. "Everyone has a stake in it, including the marketing. Poor forecasts will lead to FG inventory. We all will lose."

Air & Power: A fine balance

Both Air and Power (medium to high range UPS) are made-to-order lines, precluding any FG inventory. Explains Shashank, "There cannot be any FG inventory because the customer could ask for anything—for instance, he may ask for an Air Conditioner with a top discharge or a bottom discharge, or a humidifier, or a heater.

Furthermore, the import content of these products is high. Explains Shashank, "These products are used in telecom, data centres etc, where reliability is premium. Hence to ensure best quality, we source from the best across the world viz. compressors from Copeland of US, Fans from Nicotra of Italy, Controllers and Insulation from

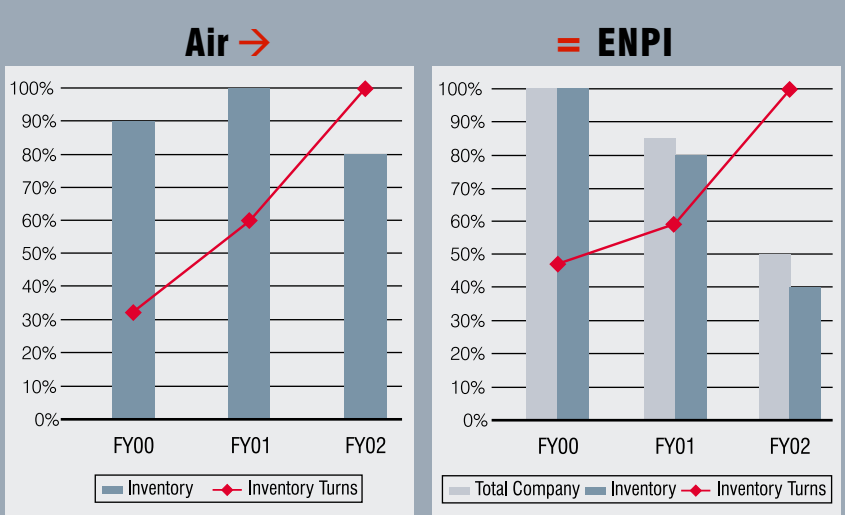
Australia." To avoid stock outs, high inventories of imported components were maintained.

Being make-to-order product lines, flexibility is essential and adhered to. "Here, the flexibility is such that in Air, for example, you will see a two tonne unit standing next to a 25 tonne unit," states Royston. Yet the same can be a hurdle too. Admits Shashank, "We were trying to be over flexible. We never thought of freezing our production plan for a fixed number of days." The offshoot was frequent changes in production plan. Further, there was no concept of production time fence. WIP stocks were based on sales forecast while FG stocks were based on historic trends. Consequently, the power line had some level of WIP and FG inventory. Air shipments were resorted to execute orders that were not forecasted.

So ENPI re-drew its demand and supply strategy for the Air and Power lines. Customer lead times were brought down. Another important element is the shift to a 'Kanban' system for standard models in the Power line. Explains Shashank, "There are



Line 2 (20kVA and Above)



In Air, average inventory is comparatively stagnant, yet inventory turns have increased due to business doubling every year. ENPI is able produce 4 times than before with the same inventory.

Busting RM & Spares inventory

Raw Material (RM)—Prior Situation

- Improper forecasting.
- High raw material inventory to meet market upswing and forecasting inaccuracies.

Actions taken

- ERP implementation provides complete data of Finished Goods and spares at various locations.
- Centralised 'FG' stocks replenished on KANBAN basis.
- Measurement of forecasting accuracy
- Reduction in inventory by 75%

Spare Parts—Prior Situation

- Spares stocked at the Zones and Branches as well as at the Central warehouse
- High spares inventory

Actions Taken

- Spares from zones and branches consolidated at the central warehouse
- Fast, Slow and Nonmoving (FSN) analysis to identify fast-moving spare parts
- Monthly indent introduced from BPs for parts.
- Replenishment of spares from central warehouse within 48 to 72 hours of request from BP.
- Spares inventory reduced by 70%

certain standard UPS models, particularly in the IT segment. Here, customers are not prepared to wait for four weeks. They want a more or

less immediate delivery."

The key to inventory management for both air and power lines was better forecasting through ERP system.

A make-to-order situation combined with high import content meant that procurement of both imported as well as local components had to be chalked out properly. According to Shashank, since the lead times are loaded against manufacturing, the key question was: How to decide whether one should or shouldn't order materials against a particular quotation?

The solution was to fix a probability percentage for both imported and local inputs, based on the perception of the sales people. When the probability levels were reached, the procurement process was triggered. As for the apparent subjectivity in this process, Shashank's counter-argument is thus: "We want to empower our sales guys. They have to realise that they are asking the company to invest money and procure materials." At the same time, the sales engineer's decision-making is tempered by the linking of incentives to his inventory turns.

Most important, the production plan is done only for units with customer purchase orders. This enables better inventory control at all stages viz. RM, WIP and FG. Another correction is the imposition of a production Time Fence. Says Shashank, "if you don't change too much, your ability to perform improves." The improvement in productivity has lowered customer lead times.

The Air and Power production lines work on a Just-In-Time (JIT) basis for local high value items. "The idea being, if we can't control our imports, let us control our local items at least," states Shashank. The key vendors are located within a four km radius of the factory. Says Royston, "We share our production plans with our ancillaries. We mail them our production plan along with the break up. That way they know when we require an item and accordingly, they push it in. We work in-sync with our suppliers on a daily need basis. Thus, if today I require 10

coils, only 10 coils will be supplied." The improved approach to production planning ensures that JIT is strictly enforced.

But getting vendors to agree to JIT is not easy since they have to shoulder inventory costs. So ENPI educated its vendors on the benefits of collaboration. Says Shashank, "At the vendor meets, we told them that collaboration has to be across the supply chain. By sharing the inventory burden, by participating in our best practices, they would share our prosperity and growth."

This collaborative approach has benefited ENPI's vendors. For instance, several vendors were encouraged to integrate backwards and become more efficient. Says Shashank, "Earlier, our sheet metal guy didn't have powder coating facility. Now he has that facility in-house, helping him to deliver faster." Suppliers have also benefited in terms of lower inventories. Says Shashank, "Earlier, my sheet metal

guy would hold huge stocks. Now his inventory will not be more than 2-3 days. He has also been able to bring his prices down by 30 per cent." An added benefit is participation global eprocurement events, courtesy automatic registration with Emerson's Material Information Network (MIN). (See *eProcurement through MIN*).

According to Shashank, ENPI doesn't want to fragment its supplier base because "the pie isn't so big. Supplier expansion is undertaken only to the extent that we cover our risks." As an afterthought he declares, "On the shop floor, we have these huge wooden racks to stock the materials. If you see these racks today, you will not find a single component. Our next objective is to take these racks off the floor altogether."

ENPI has also managed to reduce the lead time of certain high value imports like compressors, batteries, refrigeration controls etc. Says Royston, "With global manufacturers taking interest in the Indian market, they have started setting up their own warehouses in the country. We have asked them to stock these items for us." Furthermore, air shipments have been stopped.

Improving costs

The people at ENPI don't fancy the phrase 'cost cutting', for the term is inadequate, even misleading in their context. 'Cost improvement' is the preferred terminology, simply because it better captures a unique initiative started in October 1999. Termed Cost Improvement Programme (CIP), a purely voluntary initiative, employees across the board are encouraged to form cross-functional teams and highlight an area wherein they can assure the company of savings.

ENPI has way back realised the fact that an ideal performance management system is the one that energises people in an organisation to focus effort on improving things that really matter—one that gives people the

information and freedom needed to realise their potential within their own roles and that aligns their contribution with the success of the enterprise.

The CIP initiative is reaping very good results and the credit goes to the ENPI employees. A CIP core committee facilitates the formation of the cross functional-teams and officially implements the project. The team's task begins with identifying various projects—either related or not their work areas—and then achieving actual results. The core committee periodically reviews the project and helps in figuring out the hurdles in achieving actual savings.

It ensures that the cost improvement takes place without compromising on the product quality. The committee also verifies the viability of the project before taking it up. "The savings cannot happen without joint efforts," says Shailendra Pradhan, Corporate Champion, Accounts. "If some changes take place in the annual budget, that will definitely reduce the component cost which is not counted in CIP. The cost reduction accomplished with the conscious effort of the team is recognised under CIP," he adds.

Pointing out the bifurcated categories in CIP saving, he says, "ENPI does not recognise savings due to law or taxation changes and also cumulative savings of the earlier projects. One has to start fresh by mentioning the new project method and the savings that will be generated." Cost improvement programmes fall under the following sections:

Negotiated Savings: Negotiated savings are those savings that result in a lower price being paid to a vendor than was established in the standard setting process. In other terms, it is the saving generated by negotiating with the supplier. This looks at the purchase function of the company

Value Engineering Savings: Are those that result from reviewing design templates of the goods manufactured while looking at ways to cut costs of



Surendra Kerkar, Champion, Production, says that line modification has raised productivity and production without a concomitant jump in Over Time or work force



Shailendra Pradhan, Corporate Champion, Accounts states that negotiated savings and value engineering are major contributors to cost reduction

redundant parts/substitute materials without compromising on quality

Manufacturing Process Improvement:

Improvements to existing production/manufacturing processes resulting in direct savings.

Business Process Improvement:

These are typically associated with office (white collar) productivity improvements.

Miscellaneous Cost Reductions:

Savings that don't fall into the above categories. The CIP core team sets an assured target saving per year. "Major contributors to cost reduction are negotiated savings and value engineering savings," says Pradhan. "If the material we bought at reduced rate is not accepted in the market, it cannot be considered as a saving," he continues, adding, "savings should be realised in the pocket." ENPI so far has constantly been beating its internal targets. (See *Cost Improvement Programme*).

The CIP culture has grown from 39 CIP achievers during 2000, 129 during 2001 to 174 in 2002. The programme for last year (ended March '02) received 60 per cent employee participation. Efforts are on this year to take this percentage forward. "While helping the company to overcome competition, CIP also provides an opportunity to the employees to

contribute on their own to the company," says Pradhan. Though there is no percentage monetary benefit, the recognition itself is motivation for the employees to participate.

Speaking on the CIP recognition system, he said, "The employees are given non-monetary recognition through awards for maximum value saved, most innovative project and best value engineering project. The zone achieving maximum savings is given a rotating trophy." The CIP initiative has been such a success both for employee and company that ENPI now plans to link achievements made at this programme with the Performance Appraisal System.

Employee incentives

The Employee Incentive scheme is another important initiative concurrent with CIP. It is a formal saving programme, where the employees get incentives on profit generated. In other terms, whenever the company earns, the employee also shares the earnings. Says Pradhan, "There are four criteria for the scheme, which includes inventory turns, sales and collection, operating profits and sales tax related matters."

The scheme helps to focus employee attention on key areas of business performance, ie. sales and operating profits (budgeted v/s actual). According to Pradhan, the main objectives of this scheme are to control inventory and receivables, and to focus on receivables. Backing these objectives is the management's belief that to sustain and improve further, the company has to successfully manage the working capital with turnover and profit. ENPI has set targets for inventory and by the end of each month

the actual inventory and sales are calculated and compared with the budgeted inventory turns.

The scheme's success can be gauged from the fact that ENPI has achieved a whopping 200 per cent reduction in inventory since the scheme's introduction, which is a huge advantage. With the scheme acting as a real performance parameter, there is a clear awareness on inventory among all the employees.

Declares Shashank, "You can ask any employee and they are absolutely clear on what should be done to improve the inventory turns since it reflects in their salary. For example, purchase departments typically play safe by ordering higher quantities to avoid falling short. However, our purchase people discourage the suppliers from dumping material. Due to the incentive scheme they diligently order only what is required."

Total Quality Management

As the quality of life improves, demand for better quality services and products also increases. The emphasis on quality in product and services is forcing the industries to adopt internationally recognised and proven quality management systems in their operations to stay in the business. At ENPI functions like Human Resource Management and TQM are clubbed together to evolve common solutions ultimately benefiting the organisation.

Performance Management System for 360 degree performance takes into consideration the contribution towards customer satisfaction, technical competence, team performance, leadership and individual output in common programs as key business drivers.

Cost Improvement Programme		
Period	CIP Core Team Target(Rs)	Actual Savings(Rs)
Oct '99- September '00	100 lakh	168.77 lakh
Oct '00- March '01	95 lakh	159.74 lakh
April '01-March '02	200 lakh	288.71 lakh

The priority of any customer is performance, price, durability, service, appearance and brand name and most agree to pay a premium for what they perceive to be the higher quality. The factor that makes for higher quality is the attitude of the employees across the organisation. TQM is best defined as the understanding of customer perceptions in terms of product and service quality.

Sanjay Mandlik, Corporate Champion HR & TQM says that TQM is nothing but moulding people towards a better value, culture and thinking process for improved quality. "Here, the employees possess the required education, understanding and involvement. All that is needed is to pitch the basics of these," Mandlik adds. "A good organisation with many talented people but one that lacks the basic principles of quality and TQM may still fail a good product, notwithstanding design or excellent manufacturing set up"

"TQM initiative is the need of the



Sanjay Mandlik,
Corporate Champion, HR & TQM, believes that TQM's main purpose is to mould people towards better values

day. Lack of quality dimension is the a primary reason behind erosion of market share and depressing level of competitiveness," Mandlik points out. The ENPI management encourages involvement and teamwork for achieving broad company objectives through participation and contribution in the process of quality improvement.

The approach focuses on bringing clarity with regard to objectives of the role and the job. According to Mandlik, training and education are provided to ensure that the employees' general awareness of quality management concepts, skills and attitudes is appropriate and suited to the continuous improvement philosophy. In the end, the gains of the TQM activities should be shared by all through attractive incentive schemes. Once monetary benefits reach the employees' pocket, their commitment towards the programs develops and, hence, TQM will succeed.

Restructuring is important in TQM implementation. Thus, ENPI has shifted from a product selling approach to solution approach. To reflect this approach, the ENPI teams have been re-organised as per the business segments they cater to i.e. product, channels, infotech and telecom. Designations have also changed from Manager to Champion as the latter highlights the functional knowledge of the employees better. The company's quality improvement project and cost-reduction exercises have run concurrently, and each has helped the other.

An ISO 9001 certified company, ENPI crossed a major milestone in its quality journey when it was accorded Level II recognition by MAIT (Manufacturers Association for Information Technology) in 1998. This is the highest ever recognition accorded by MAIT in India for a company and the first in the manufacturing sector. In 1999, the Confederation of Indian Industries (CII) recognised the company for its strong commitment to quality through a certificate under the CII-Exim Business Excellence Award.

Eprocurement

ENPI has signed up with parent company Emerson Electric's Material Information Network (MIN) program, which co-ordinates purchase decisions across all Emerson Electric divisions. Says Royston, "For example, apart from India, we also have air plants in Australia, China, Italy and US. More or less, we buy the same material. There were cases where we would buy the same materials from the same supplier at different prices. We were never approaching our suppliers as Emerson, but as India, Australia or China."

MIN helps achieve savings in material procurement through supplier consolidation and increased leverage. Says Shashank, "When it comes to low low spends, a mechanism like MIN gives tremendous bargaining power."

MIN consists of a materials database into which all participating Emerson companies feed data on a periodic basis. Each item number whose data is submitted by a company has to be linked to a commodity code number previously defined by Emerson. Similarly, each supplier number has to be linked to a corporate supplier code.

All this data submitted to the MIN database is consolidated, sorted, and analysed using different criteria. Users of the participating companies can then access this data to make better-informed purchase decisions. Thus MIN is a non-intrusive system i.e. it only provides the data to support decision-making but leaves the decision-making to the companies themselves."

Says Royston, "ENPI has gone live on MIN from May 2002. Visibility of ENPI spend in MIN has driven its inclusion in FreeMarkets Reverse Auctions. A while ago, we participated in a global full source reverse auction for fans, which resulted in 20 per cent cost savings." ENPI is currently participating in global full source reverse auctions for fuses and relays and plans to participate in more such auctions for its imported inputs as and when these are conducted. **i2.0**