

# SIRF SA Manufacturing Excellence Roundtable

2 June 2004

## Improving Supply Chain Performance

Supply Chain performance is a key driver of competitive advantage in manufacturing. In his book titled “Handbook of Supply Chain Management” James B Ayers suggests that supply chain management (SCM) is the design, maintenance and operation of supply chain processes for the satisfaction of end users.

The Roundtable discussion focused on developing supply chains for strategic advantage and the three speakers indicated how their companies have handled the following key issues that are important for competitiveness:

- Implementing collaborative relationships;
- Forging supply chain partnerships;
- Managing supply chain information; and
- Removing cost from the supply chain.

Three speakers gave presentations to lead discussions during the morning. The slides they used are available on the [www.sirfrt.com.au](http://www.sirfrt.com.au) web site.

The first speaker was Alex Kalenjuk, Business Manager Sales and Marketing from **Codan Ltd**, a company noted for the innovativeness of its products and its design capabilities. Codan works in a very volatile market and it realised that to be able to compete internationally it must be able to deliver products to its international customers within a week of receiving their order. Its international competitors have delivery times that are longer than this.

The assembly time for products is two weeks well below the delivery time expected by its customers. Codan recognised that there was a trade off between inventory and sales and decided to build up strategic inventory at the coupling point in the factory to reduce the time between receipt and delivery of order. Alex likened this approach to food preparation in a fast food shop prior to the arrival of a tourist bus. In the fast food shop all the critical ingredients are prepared prior to the arrival of the customers and all that is required once they arrive is to take the orders and mix together the appropriate ingredients. Codan’s critical ingredients are described as its HCF components.

Codan works very closely with its suppliers to ensure that it has sufficient work in progress to handle sales variations of up to plus or minus 20% in a month. It guarantees that it will take all of the components that it has ordered when sales are below budget and expects that the suppliers will be able to satisfy unanticipated demands. As a result of this approach its sales have increased significantly as has its ROFE while its stock and WIP have decreased.

Codan has also adopted a novel forward looking approach to projecting future sales rather than relying on traditional demand projections. Sales projections are entered on

a wagon wheel that also displays the probability of winning the order. This enables the company to predict future sales with a reasonable degree of confidence.

**Anne Clark**, the Plant Manager from Ingham's Enterprises discussed the enormous pressures created for the Inghams supply chain by very long production lead times, very short shelf life, variable daily demand across a wide product range and variations in bird size and mortality. Ingham's supply 428 fresh products that have very short shelf lives and it is necessary to hatch the grandparents 96 weeks ahead to satisfy the market requirements. Stringent efforts are made to deliver the anticipated sizes required for the market but this is complicated by seasonality that influences bird's growth – in winter birds are much bigger.

The company is advised at 10:00 AM, half way through the operating day what deliveries are required and where. In spite of this relatively late advice it must be able to deliver 99% of Woolworth's requirements in full and on time or it faces financial penalties.

Ingham's believes that there are four factors that influence the strength of its supply chain and enhances its competitive position. One factor is the strength of the communications and relationships that it has developed along the supply chain. With the long lead time that is required to breed chickens to satisfy the market there must be good communications and excellent relationships must be delivered between the company and its customers and its suppliers.

Another important factor that contributes to Ingham's excellent performance as supply chain managers is the culture and flexibility of its workforce. Its people are prepared to and under the EBA are obliged to work overtime at very short notice.

The company places great importance on planning and statistical analysis in its forecasting. Data come from a high level SCADA system that collects and collates data on bird size, yields and plant operating conditions.

The final factor that contributes to the company's performance is the amount of effort placed on product development. This ensures that Ingham's is able to sell nearly 80% of the live weight of the chickens for human consumption in spite of the varying market demand and size of the birds each day. There are commercial markets for the remainder of the birds.

**Ed Rosser**, the Value Chain Manager for Detmold Packaging made the final morning presentation. Detmold Packaging is a manufacturer and marketer of packaging for the fashion, fast food and industrial markets. The company is still family owned with its head office based in Adelaide. It has packaging plants in Brisbane and in Asia.

Detmold's supply chain issues are complex as it uses some 250 raw materials that have lead times of between of four to twelve weeks to produce approximately 5000 different products some of which have delivery times of less than two weeks. Twenty five percent of the monthly orders are for new products.

Ed's presentation was very much a work in progress report on what Detmold Packaging is doing and have achieved by looking strategically at the operation of their supply chain.

It is difficult for the company to recruit casuals to handle the variability in demand as the complexity of the machines means that it can take up to two years to train a competent bag machine operator. Fortunately, the loyalty of employees to the company is very strong and the annual turnover of staff is less than 4%.

In addition, the company found that its enterprise system lacked the flexibility to adequately handle the machinations of production scheduling.

The management Detmold Packaging realised that its competitive advantage was based on delivery time but believed that the simple concept of delivery in full and on time (DIFOT) was too simplistic a measure to use to monitor its performance. Management decided that they needed a better understanding of average lead times and the financial imperatives of satisfying all the customers' requirements in full and the trade off between:

- Running small batches with frequent changeovers and set ups to satisfy customers' requirements; and
- Running larger batches to maximise plant efficiencies.

This knowledge was achieved by getting the sales force to gain a better understanding of the customers' forward requirements and by determining how this could be satisfied with the existing equipment without the need to hold additional stock.

This extensive and strategic review of the supply chain from end to end has resulted in a much better understanding of the:

- dynamics and needs of its markets; and the
- capabilities and bottlenecks of its manufacturing system

and as a result Detmold Packaging has been able to enhance its competitive position by reducing lead times and achieving a significant improvement in its DIFOT performance.

## Breakout Discussions: Lessons Learned in Improving Supply Chains

### Lesson 1: Satisfy the Tourist Bus

*How Cafés satisfy the tourist bus.* A tourist bus delivers many customers all of whom will require service during the few minutes the bus will wait over. The rate of demand exceeds the capacity of the café to prepare items from scratch, and there is no way of knowing for sure what the tourists will order. A café reduces lead times and satisfies a tourist bus by preparing and placing in buffer storage prepared buns, fillings, uncooked patties, hot coffee etc., and making to order as the bus passengers arrive.

The volume of material placed in buffer stores depends on the forecast of peak demand (the numbers on the bus) and the average daily demand. Outside the peak the café can serve customers and unusual orders from unprepared supplies.

The forecast will never be 100% accurate. So why do manufacturers always get upset when forecasts are not accurate? Does it matter? What is more important to competitive manufacturing: meeting total weekly demand or meeting the highest number of items required during the peak hour?

Is there a plan or a kpi measure to improve forecast accuracy? Improving forecasts has a cost, as does failure to meet demand. To manage the cost to the business of forecast inaccuracy, the manufacturer may have to consider changed manufacturing systems. Can the manufacturer be like the café and change the system of production to lower the cost of meeting unexpected changes in the rate of demand?

Strategies to manage unexpected demand include:

- Expand safety stock
- Reduce lead time at every step of the supply chain
  - In distribution
  - In plant and store
  - Suppliers
  - Second tier suppliers
- Improve information flows to and from suppliers

Improve communications and relationships between customers, processors and suppliers by using

- National contracts for supply with customers
- Dedicated relationship managers for major customers
  - Sales
  - Procurement
  - Operations and warehousing
- Consultations on future directions covering all issues and particularly sales forecasting
- Strategies to grow business and sales

## **Lesson 2: Address the Whole Supply Chain**

Align goals with strategy all along the chain and provide positive, top-down, reinforcement of good behaviour and outcomes.

Remove the silo approach to the supply chain and address the whole system. [Do not imagine that you can get different results without changing the system. (to roughly paraphrase Deming).]

Sustain continuous improvement in the supply chain in order to meet and survive competition in the market that drives the decline in real prices

Model the supply chain in detail

- Map the process
- Define what is knowable
- Use information to substitute for inventory

Build ownership through positive reinforcement of desired behaviours

- Communication with the people
- Financial
- Recognition

Automation using ERP is valuable but may not solve the problem

- ERP's are very hungry for data. They can distribute and collect more information. However, ERP's do not change the supply chain system. If the supply chain system does not change there can be no improvement in supply chain performance. Applied in isolation, ERP's can improve transparency but may reduce ownership.

### **Lesson 3: Flexibility, Decoupling, Alignment, Customer Pull**

To improve supply chain performance, consistent level production volumes are helpful but life is not always easy. Long lead times challenge forecast accuracy. It will always be necessary to adjust to short term fluctuations from long term forecasts.

Use consistent production of common components to supply a work in progress store, thus decoupling component manufacture from demand driven assembly to order activities. Set the size of the work in progress store (tank) to meet known fluctuations in demand and use Kan-Ban cards from the store to pull components from manufacturing. Assemble to order and move some resources from component manufacture to final assembly in order to shorten lead times.

Align goals and systems within and along the supply chain. The next customer drives the supply chain. Big retail distribution chains usually will not accept delivery direct to store. Their Central warehousing distributes product to their stores. The customer controls delivery schedules, not the manufacturer.

During the afternoon the Roundtable visited BSTG Australia.

**David Evans, Production Planning and Control Manager, Bridgestone TG Australia Pty Ltd** presented a description of supply chain management at BSTG Australia.

BSTG services the domestic Australian market for safety and sealing systems sold to Original Equipment motor vehicle manufacturers in Australia. Toyoda Gosei owns 51% of BSTG and assist in continuous improvement efforts at BSTG.

Australian made motor vehicles account for 40% of the Australian motor vehicle market, and this share has been stable for four or five years.

### The BSTG Supply Chain

Almost 60% of the raw materials and components for BSTG come from overseas. Delivery lead times can be up to 3 to six months.

BSTG uses external logistics managers to handle Full Container Loads wherever possible. At any time, BSTG keeps about 2 to 4 weeks inventory of overseas materials, and there will be another 2 weeks inventory on the water.

The supply chain consists of 250 suppliers, 350 current part numbers, and 4 OEM customers. There are 600 part and service part numbers. Component suppliers must sustain supplies of parts for 10 years, increasing to 15 years for new models. This requires retaining and maintaining the tools and equipment used for OEM production for 10 to 15 years.

The 4 OEM manufacturers deliver 3 to 6 month demand forecasts to BSTG using EDI (Electronic Data Interchange). These forecasts provide 1 month firm orders to fabricate, and 2 month estimated orders to secure materials.

OEM customers require annual price reductions on all parts supplied. In addition, they set separate strategic targets e.g. (20% over 3 years) which they require suppliers to achieve to ensure continuance of business on forthcoming new models.

Introducing SAP and using the embedded MRP system has imposed changes across the manufacturing system. Initially, the MRP data were 85% accurate. BSTG will persist and get it working. Orders generated by the MRP flow to suppliers. The system tracks supplier performance and slippage.

Electronic Kan-Ban signals from the EDI forecasts of the OEM's trigger in house production.

Deliveries to OEM's are FOB according to the schedule determined by the customer.

- Holden require 3 deliveries per day (7am, 4pm and 11pm) according to order sheets picked up 24 hours in advance. [740 to 820 vehicles per day].
- Ford require 2 deliveries per day (9am and 3pm) and send KanBan cards 24 hours in advance. [480 vehicles per day]
- Toyota require one delivery per day to Laverton, and they make Kan Ban deliveries 12 times per day to Altona. [460 vehicles per day]
- Mitsubishi require one delivery per day to EDI schedule. There is no KanBan. [130 vehicles per day]

### Variations from Ideal in the Supply Chain

BSTG estimate that supply chain performance is about 60% of ideal and aims to achieve maybe 5 to 10% of target cost down from the supply chain. Issues in the supply chain include:

- Shipping delays including typhoons in the South China Sea, ship breakdowns and failures to transship goods from delayed vessels;
- Part labeling and identification
- Quality
- Shipping documents
- Quarantine delays

Improvement actions include

- Using accredited suppliers
- Relationship management, especially with
  - Shipping companies
  - Forwarders, and
- Strengthening communications

BSTG seeks to establish common goals all along the supply chain.

About one third of cost down targets pass on to suppliers and apply to ex-works prices. Price down strategies require negotiation.

Within the BSTG group, benchmarks are set for plants and processes, and about one third of cost down comes from labour and another one third from process improvements.

Production gains have come from

- layout improvements,
- visual workplace communications using notice boards,
- involving people throughout the plant in continuous improvement,
- integrating quality into the system,
- maintaining traceability on every component,

all supported by good digital systems.

Enterprise Bargaining Agreements include productivity improvement. Increases in productivity or demonstrated savings secure wage agreements. Trades and engineers rates are rising. BSTG is seeking to improve supply through immigration. Recent changes at Sola, Mobil and Mitsubishi have released trained staff to the market.

Some material costs are rising. Magnesium has risen \$400 per tonne in 3 months.

Following this presentation, members enjoyed a tour of the BSTG site and many commented favourably on the layout, the use of notice boards and visual procedures, the obvious involvement and interest of the shop floor workers, the quality of the integration of digital technology and the traceability.