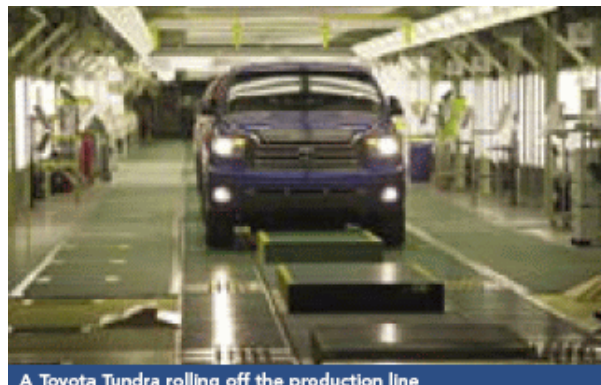




### TOYOTA SUPPLY AND COLLABORATION, TEXAS STYLE

In the first of three articles George Hodgson, winner of the 2006 Logistics Development Award, sponsored by CHEP Asia-Pacific, provides an insight into Toyota's supply chain and the use of collaboration in Toyota North America. This article is based on a presentation by Matt Greene, Steve Hagan and Kevin Thornberry from Toyota Engineering and manufacturing North America and an interview with Brent Buschur, Logistics manager at the San Antonio Toyota manufacturing plant.

As part of my trip to the US I was fortunate enough to visit Toyota's recently opened state of the art manufacturing plant located at San Antonio, Texas. The plant has been designed to manufacture the Tundra sports truck, with production of up to 100 trucks a day. The Tundra is a large ute the same size as a Ford F150 and will compete against the F150 which is the market leader.



Brent Bushur, Logistics manager for the plant was kind enough to provide a site tour of this impressive facility and detail some strengths of Toyota's supply chain from his perspective.

#### **Toyota North America Logistics overview**

Toyota has a number of manufacturing plants located in North America including a plant in Canada and Mexico. These plants are responsible for manufacturing vehicles such as the Camry, Avalon, Tundra, and Corolla with a combined capacity to produce 2 million vehicles a year by 2008.

To achieve this production capacity, Toyota has a logistics budget of \$600M USD with approximately 750 suppliers in the US, Canada and Mexico supplying components to the various plants. Local industry is

utilised as much as possible. To transport components around North America to each manufacturing plant, Toyota utilise five core transport logistic partners and two core consolidation (cross dock) logistic partners who work closely with Toyota.

### **Key supply initiatives**

Brent Buschur explained that Toyota's philosophy is to view their supply chain and production as a unified whole with the aim being integration and adding value. With that in mind, a new initiative at the San Antonio plant is to house and integrate 21 of their key suppliers on site. The obvious advantages include cost savings; no additional packing, storage, and freight. However the bigger savings are part fitment issues being resolved in-house. Usually if there is a defective part or fitment issue, the supplier is contacted and the issue explained over the phone or email, part removed, sent back, inspected etc which all takes time. By having an on site supplier, the supplier can come to the assembly line, assess the part and provide a new part within minutes. This method of operation has yielded substantial time and cost savings as well as smoother production.

The suppliers on site are regarded as part of Toyota and regularly share forecasting data through EDI to ensure Toyota has enough parts to meet production. The plant has a long range forecast for production which is refined as the production date gets closer. Once it reaches 5 days from production the forecast is firm and this is what the suppliers are required to provide. Efficiency of forecasting is improving and Toyota are hoping to get to a stage where a seat for example could be made and matched up to a particular vehicle, days or hours before being installed. It is large scale customisation with the future goal being that you order your dream vehicle from a dealer and have it delivered to you within a couple of weeks!

Brent Bushur stated that the plant assembly line is highly automated including parts delivery. When a vehicle is being assembled, it automatically triggers an order to the on site supplier when it reaches a certain point on the assembly line. The supplier then has a defined time window to deliver that component to a set delivery point. This way Toyota has little to no inventory. The delivery process is automated and delivered by driverless electric carts following hidden track wires to the workers on the assembly line.

On the issue of no inventory, Brent Bushur did state that Toyota do keep a small amount of buffer stock or as Toyota calls it sleeping stock. The inventory held is long lead time stock from Japan (20% of parts come from Japan, mainly small, common items such as rubber grommets), and usually only sits for 5 days before being used.

## Toyota Collaboration

To obtain this high level of automation and smooth production Toyota has invested heavily in their relationships and collaboration with suppliers to ensure an effective supply chain. Toyota has highlighted the following key points to achieving collaboration:

- Complete understanding of Toyota's needs
- Commitment by Toyota and suppliers to achieve excellence
- Shared values
- Shared ownership of processes
- Joint problem solving
- Effective and open communication
- Shared reward and recognition

All nice statements, but Toyota and their suppliers are examples of collaboration being more than words. A perfect example of collaboration between Toyota and their suppliers is the use of Logistic Kaizen (continuous improvement) workshops. These workshops focus on identifying logistic opportunities and are utilised on an understanding of Lean, arguably a philosophy that Toyota developed and continues to use to great affect.

The logistic workshops have been found to create a team environment between Toyota and suppliers as well as sharing of knowledge and creating ownership of problems and solutions. Some examples of the logistic workshops conducted last year have included:

- Trailer efficiency - optimising the load, route, order frequency and palletisation.
- Common rack for transportation of components such as engines and differentials.
- Cross docking - optimising internal routes and efficiency

By conducting and incorporating the results of these Logistic workshops, Toyota has saved \$48.6M USD this financial year. Almost a saving of 10% of their budget.

It was a valuable experience to visit the newly opened San Antonio plant and discuss logistics with Brent Bushur. It highlights the success that Toyota continues to achieve through the utilisation of collaboration and Lean to improve efficiency and reduce costs. Something that we are all keen to apply in our workplaces.