

# Toll Sequencing Technology Helps Ford Australia Launch the New Falcon

➤ THE LONG-TERM STRATEGIC PARTNERSHIP BETWEEN TOLL AND FORD AUSTRALIA HAS BEEN FURTHER REINFORCED RECENTLY WITH THE COLLABORATIVE REVIEW OF FORD'S EVOLVING REQUIREMENTS TO MANAGE NEW COMPLEXITY IN THE BROADMEADOWS ASSEMBLY PLANT BY MINIMISING ON-LINE INVENTORY HOLDINGS OF COMPONENTS.

With the successful launch of Ford's new model Falcon in April 2008, increasing overseas component volumes and Ford's preparations for the proposed launch of the Ford Focus in 2011, Ford's strategy is to maximise the effectiveness of critical space in the core manufacturing areas. Sequencing material to the assembly line is one of the most effective ways to achieve this goal.

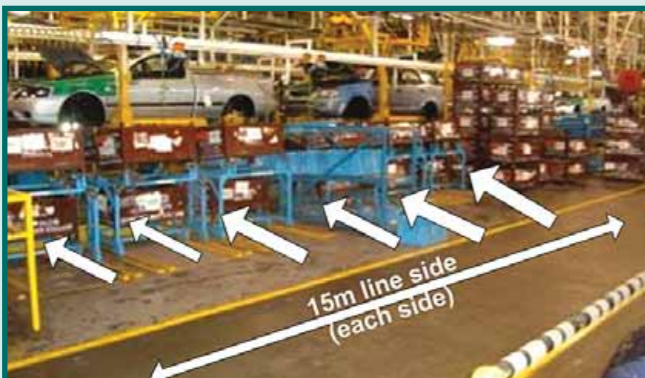
Over a period of six months Toll AutoLogistics Components has worked closely with Ford's Material Planning and Logistics (MP&L) operations and Purchasing department on analysing materials strategies for over 40 different commodities (groups of parts) that supply the Ford assembly line. The project objective was to determine the commodities that made the most operationally logical and economical sense to supply from the Toll Logistics Optimisation Centre (LOC) located on the Ford property line in Campbellfield, Melbourne.

Once the study was complete, Toll entered into a competitive process

and in February 2008 was awarded the sequencing contract for 22 commodities going to the Ford assembly line. These commodities include front and rear shock absorbers, front springs, speakers, muffler components, door trim parts and other exterior trim parts. The Toll LOC has currently launched 15 of the 22 commodities and plans to have all work in place before the end of June.

Time is of the essence, the lead time from when Ford orders the sequenced parts from Toll to the time the parts are installed onto the car can be as little as 70 minutes. Key to Toll's service offering to Ford for this project was the implementation of a new sequencing system, TASS (Toll Automotive Sequencing System). TASS provides the information and processes to allow the Toll operators to flawlessly manage the minute to minute actions in providing this service to Ford.

The Toll Sequencing service supports the lean manufacturing goals of Ford of Australia by eliminating waste and non value add activities at the most important part of the Ford process – the assembly line. In the pictures below it is clear how much space can be saved on the assembly line and this provides Ford with added flexibility lineside and reduces complexity for the line operator when selecting parts for installation. This work will allow Ford to retain the competitive edge and flexibility required to build a wide range of high quality vehicles now and in the future.



- 15m line side each side – 6 Delivery Points.
- Operator has to select the correct shocker from 15 different types spread over 15m of pick face (replicated on other side).
- Mixture of stock and pick locations.



- Rear shockers sequenced in build order.
- Reduction of 14m of pick face (per side).
- 30 pieces (cars) per pallet (approximately 30 minutes).
- Error proofed at supplier to ensure correct sequence.

## Sequencing

➤ IN ORDER FOR FORD TO MANAGE MUCH MORE COMPLEXITY AND HOLD LESS STOCK, THEY MUST RECEIVE PARTS IN THE EXACT SEQUENCE OF THE CARS BEING ASSEMBLED. THIS IS NO SMALL TASK AS CARS OF ALL STYLES PRODUCED (FALCON, UTE, STATION WAGON, TERRITORY) WITH ALL DIFFERENT OPTIONS AND COLOURS COME DOWN THE ASSEMBLY LINE IN A CONSTANTLY VARIABLE ORDER AND THIS MEANS THAT RARELY WILL TWO IDENTICAL CARS BE PRODUCED IN A ROW.

Ford in-plant inventories are replenished using a kanban 'pull' system from the local suppliers and from the overseas material stored at Toll's Logistics Optimisation Centre (LOC) located directly at the Ford main

receiving gate. The kanban system involves pick-ups of set quantities of parts from suppliers two, four or eight times per day. This means the car assembly plant must hold between two to eight hours of inventory per part at any given time. To further reduce the inventories in the assembly plant and have less material at the Ford assembly line led Ford to turn to Toll's solution for Externally Sequencing Parts (ESP) which allows for increased frequency of deliveries to the plant.

### THE WAY THE SEQUENCING PROCESS WORKS

- Toll manages the material stock holdings from both local and overseas suppliers to ensure that all materials are available as required but inventories are kept at a minimum.
- The sequence of cars going down the Ford assembly line is finalised after the car bodies are painted in the Ford paint shop.
- As the car bodies leave the paint shop they are given a particular list

# TASS Toll Automated Sequencing System

➤ WITH SUCH A TIME CRITICAL OPERATION, KEY TO TOLL'S SERVICE OFFERING TO FORD FOR THIS PROJECT WAS THE IMPLEMENTATION OF A NEW, WORLD CLASS, SEQUENCING SYSTEM, TASS. TASS PROVIDES THE HEARTBEAT INFORMATION REQUIRED TO ALLOW THE TOLL TEAM TO CORRECTLY AND EFFICIENTLY PICK THE CORRECT MATERIAL, CONFIRM THAT IT IS RIGHT AND THEN MANAGE THE MOVEMENT OF THE SEQUENCED PARTS TO THE INSTALL POINT IN THE ASSEMBLY PLANT.

### RESEARCH AND COLLABORATION PHASE

Key managers from Toll AutoLogistics travelled to Ford Plants in Mexico and the US to benchmark world's best practice sequencing operations. Mark Skalin (National Operations Manager) and Patrick Kashani (National IT Manager) visited Ford Dearborn Truck and Ford Hermosillo to review the system, process and design of existing outsourced operations.

TASS operating parameters were then benchmarked against the standard of other sequencing operations and the final specifications were set.

### IT DEVELOPMENT AND EXECUTION PHASE

Development and Customisation of the TASS software began in February this year and went live and operational in March 2008. Through the development stage the key process objectives were to ensure continuous and flawless operations. This meant that the system would need to be fully error proofed to ensure that the team members could not make a mistake and place parts in the wrong order. Diligent process design including barcode scanning of the components and proper material layouts has ensured the quality of service provided to Ford is of the highest level.

Commodity	Last Job Received	Jobs In System	Jobs To Pick	Last Job Picked	Production Rank	Jobs To Ship	Last Job Shipped	In Transit Rank	Last Job Installed
REARSH	044	102	6	038	96	15	023	81	286
REARSH	044	102	6	038	96	15	023	81	286
REARSH	044	123	4	040	119	23	017	96	265
REARSH	044	123	3	041	120	24	017	96	265
REARSH	044	123	5	039	118	22	017	96	265

Real Time Tracking via TASS web screen for visibility of part status includes colour alerts.

The other key objective is to ensure that the systems operations have 100 percent uptime. Failsafes and redundant process include separate systems test environments, completely duplicated hardware arrangements, completely redundant network connections to Ford, and emergency electrical generators with uninterruptible power supplies.

Above all, the key to the integrity and accuracy of the operation is the people who use the system each day. Great efforts were taken with this new team to ensure that the processes were intuitive and easy to use. Once the processes were set all team members were taught how to use the system and were given extensive hands on training and cross training on different parts of the operation. So far the team has excelled in the use of the system and will be able to support new members as the team grows.



Command and Control Centre managing the operations within the LOC.

### TASS – THE SYSTEM

- Provides production control and direction for sequencing / picking, container movement and shipping.
- Ford broadcasts real-time orders, in job number order (sequence) which include all the component requirements.
- TASS organises the parts information about the part sequence into outbound shipping stillages.
- Orders are sent by TASS to sequence operators via portable RF scanning to pick the parts and load into the stillages in the correct sequence.
- TASS prints pick list if applicable and also prints run sheets and stillage labels for material handlers.
- This system provides tracking of all transactions from RF scanners, including error messages generated.
- The goal of TASS is to provide an error proofing system which prevents customer defects and / or downtime.
- All transactions are posted in real-time.
- Ultimately TASS simplifies assembly activity within the plant by increasing ease of fitment for Ford.

of requirements for components and this identifies the exact list of options for each individual car order.

- Once the car body has had been assigned an order the information for that car and the sequence the car is in relative to all the other cars is scanned into the Ford IT system which then communicates to the Toll TASS System.
- TASS breaks down the order from Ford and communicates to the Toll sequencing operators the exact next parts to ship to Ford via hand held RF scanners.
- All parts are picked and TASS aids the Toll sequence operator to error proof the process by assisting to check the parts in each stillage and then ensure that each stillage is sent to Ford in the correct order.
- TASS continuously monitors the movements of the Ford assembly line to help Toll operations manage the exact amount of material at Ford – never too little nor too much.



A sequencing operator wears the latest arm worn Mobile Data Terminal with finger RF scanner to provide freedom of movement for picking and scanning larger parts.