

Special feature: Toyota poised to lead auto spares' market

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The Toyota Production System (TPS) has been the basis of Toyota's success. It has enabled Toyota to achieve a cost competitiveness that has propelled it to leadership in the world car markets. Toyota is remarkable in the degree to which its corporate strategy is focussed on operations management. Yet TPS is in great part a logistics concept, concerned with inventory, production asset utilisation and transport. And at its heart lies a recognition of the importance of information. However it is in assembly plants that we think of TPS being applied, rather than warehouses.

The Toyota Parts Centre Europe in Belgium gives a remarkable insight into the application of Toyota's operational culture to the question of warehousing and distribution.

Toyota market presence in Europe

Toyota now commands over 5% of the European car market. Whilst this makes it only a medium sized player, it also represents a steady increase in sales from the 2% market share it had ten years ago.

Toyota always aspires to steady predictable growth, whether in market share or production capacity. As sales have grown throughout Europe, it has expanded its European production capacity, with plants in the UK, France, the Czech Republic and now Russia. The next step has been to expand its aftersales to serve - and profit - from its growing stock of Toyotas driving on Europe's roads, and here it is advanced in its programme of constructing a European-wide network logistics structure.

Spare parts are a very important part of the automotive sector. Either parts provided for servicing or for crash repairs for cars, vehicle manufacturers can sell through their dealerships at high margins. Despite moves in both North America and Europe to try and introduce more competition in this sector, the VMs have increased their grip and spare parts continue to make a huge contribution to major vehicle manufacturers' profits. Yet many VMs' after-market logistics operations are in poor shape, neglected parts of the business which they have suddenly rushed to overhaul. Toyota has had the advantage in largely starting from scratch in its spares' network. However judging by its Diest facility it is poised to lead in the spares' market in the same way it leads in car assembly.

TPCE

Toyota established its 'Toyota Parts Centre Europe' (TPCE), in Diest, Belgium in 1993 complementing the opening of Toyota's first European assembly location at Burnaston in the UK. TPCE was originally designed to feed parts imported from Japan to national importers as well as local dealerships, through a 38,000 sqm warehouse. Since then the facility has expanded in three stages to its present size of 100,000 sqm. The function of the facility has also changed from being a consolidation and storage facility for the parts coming in from Japan, to a complete hub facility sitting at the centre of a network of 17 European depots

The latest transformation started in 2007 with the opening of the final 30,000 sqm of the facility, combined with a complete re-design of the facility.

Warehouse at the Tactical Level

Key to the functioning of the TPCE is the principal of 'just in time'. Today this might seem a common-place thing, but as ever with Toyota, it is the rigour of the execution that counts.

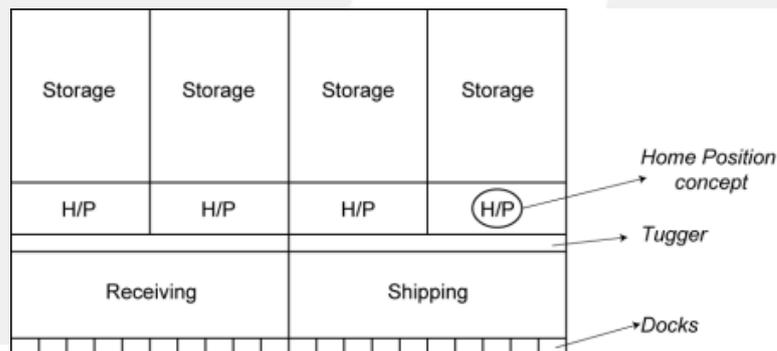


The entire spare parts network is run on a 'pull' system with what is called a 'kanban reflection system'. Parts deliveries, signalled by electronic despatch, are made continuously into TPCE, with a constant flow of fast moving items being despatch from suppliers every day. This is even the case with components originating from Japan. As Director of the Toyota's Supply Chain Group Pierre van San emphasises, this results not in the optimisation of transport but of inventory. Of course the volume of components flowing into TPCE is so huge that it is able to work with full truck loads and full container loads on a daily basis. Nonetheless, Toyota grasps perhaps more than any other the role that transport plays in optimising inventory.

However it should be remembered that around half of the stock keeping units (SKUs) in TPCE originate in Japan, whilst other parts either originate from, or are in some cases delivered to, destinations as distant as South Africa or the US. Therefore what the Toyota Parts Supply Chain Group has done is to take the high frequency delivery system designed to supply assembly plants from suppliers just a few miles away, and stretch it across the globe.

The result is that TPCE holds 9 days stock worth around €60million, whilst the whole spare system in Europe carries 18 days stock. This is despite a delivery cycle time from order to delivery of 1 day and a stock availability of 96.5%.

Van San stresses that key to this is the relationship that Toyota has with its suppliers, who are willing and able to work within the Toyota system. This is an illustration of how Toyota's tactical supply chain policies, that emphasise stability and long-term relationships with suppliers, pay-off at the operational level.



Warehouse Operations

The TPCE is designed on a U-shape layout, with inbound and outbound loading bays side-by-side. The ordering of the stock is not merely by its demand characteristics (i.e. fast or slow movers) rather there are four different storage areas, designated by size and weight of the

stock keeping unit, within which the SKU are organised by speed of demand in the normal way.

The reason for doing this is the breadth of parts held. The profile of each SKU varies from heavy and large body or suspension parts to a large number of small electronic, interior or mechanical sub-components. The handling and storage requirements are very different and so it makes sense to store them in different parts of the warehouse. Indeed the heaviest parts are stored in an automated high-bay facility at the front of the TPCE.

The different component types also vary in terms of the added value activity they require. A high proportion of the small components require packing or sorting into 'marketable batches'. Consequently each of the four storage locations has its own 'home-position' where this sort of work is done.

The division of the warehouse into four different segments is also driven by the need to reduce movement. Essentially the divided layout enables the movement of putting away to store and picking to be divided into two activities. Batches of components are moved from the unloading bay and deposited at the 'Home Position'. From there, the batched or pallet load is broken-up into individual SKUs and put away to store. For despatch the process is reversed.

But the need for movement around the warehouse is still substantial and here Toyota has evolved a system of 'tug-trucks' operated within a kanban system based on floor markings. This is an illustration of how characteristic TPS methods are adapted to a warehousing environment.

Another example is on the picking face for small parts. Here TPCE uses all the familiar TPS physical methods of operational control, adapting the kanban system into bar-coded labels that are attached to the components dispatched. However TPCE has adopted an interesting innovation by introducing voice-controlled picking technology. Normally Toyota is very resisted to adoption of IT Systems which it fears may make the TPS processes less transparent. Yet in Toyota's European operations there is a greater willingness to adopt such system, so long as they can be integrated into the TPS processes.



Outsourcing

As ever Toyota sticks to its guns when it comes to outsourcing. With a company so committed to its own processes there is no willingness to outsource such an important facility. Whilst TPCE's management suggest that Toyota wants to benefit wholly from the effectiveness of TPCE, it is undoubtedly the case that Toyota primarily feels that it can simply do warehousing better than any one else. In the words of Patrick Lathouwers, General Manager of TPCE, "we have the knowledge of our processes and that is very difficult for other to get to work as well as we can".

Of course what Toyota Parts Supply Chain Group does outsource is transport. However even here its requirements are tightly focussed. Its Logistics Service Provider base is broad, with a number of different, often quite small, road transport providers. Although Toyota does have a requirement for the larger LSPs this tends to be in areas such as shipping. However a notable development in the transport provision of TPCE is the beginnings of a mode towards modes of transport other than road freight. Containers shipped into the Port of Rotterdam for Toyota

are now being moved by barge to the Diest site, whilst the supply of parts to its new depot in Moscow will use rail services. Toyota Spares is even considering using trans-Siberian rail services.

Competitive Strength

TPCE Diest is a model both of warehousing operations, but also of the adaptation of the Toyota Production System. Many vehicle manufacturers are struggling to create 'aftermarket' logistics systems that will ensure that they retain their vital spares' business. Yet, too often even the strongest VMs are failing. Old warehouses and overly complex systems result in business with too high cost bases but low levels of customer service. TPCE is a warning to the competition, for just as Toyota has some of the most efficient assembly plants it also has now created what is surely one the most effective parts logistics systems. This must count as yet another competitive strength for Toyota as it continues to reinforce its position in the automotive sector.

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