



## Supply chains: Smart cars

*Behind the brand*

### **Commentary:**

Where the space permits the distinguishing feature of the Smart Centre is the tower, and if you think that this is simply a design feature, packed with non-functioning car bodies, think again. This is where you store an extra twenty-seven saleable cars. So there's an innovative brand energetically marketed, but it's not just that. Behind the brand is that radical rethink of the assembly process. It's time to go back to the factory. You'd expect the outbound transporters to be continually crossing with inbound supplies – the chasses and power frames, door panels and wheels, coming in to feed the 96 second appetite of the assembly line – but in a determined and aggressive bid to make every portion of the supply chain profitable, that's where Smartville is very different to traditional vehicle assembly lines. When the door panels, for instance, arrive at the assembly line they arrive through this tunnel. At the other end sending the panels in a steady stream is the door manufacturer, Magna Doors. They're on site with Smart.

### **Jean Savigne, Magna Doors, Smartville:**

We are one of the partners in Smartville. We manufacture doors and wings for the Smart, the Smart City Coupé, and the Smart Cabriolet, closely linked to our client MCC. We supply assembled doors to our customers so that they can be fitted very simply, requiring no adjustments. We do not just deliver doors, we provide a service: I mean a complete and sealed product ready to be fitted to the car with electrical systems already in place. When cars reach the end of the assembly line, it is then and not before that our till rings, it is at this moment that we are paid, and not before.

### **Commentary:**

It's clearly convenient for MCC to have a major component supplier, Magna Doors, on site. But Magna Doors are an assembly plant in their own right, so they have suppliers in turn, so where are those suppliers located? Right next door. This hole in the wall of Magna's plant links to Dynamil Nobel, the on site supplier of door panels. In fact, all of the major suppliers to Smart, twelve of them, are situated in Smartville with MCC.

### **Jean-Yves Schmitt, Smart:**

We have two types of partners in Smartville. The first type are those who have direct links with the production process. The Canadian-Austrian group, Magna Chassis, makes the chassis. The well known German group Surtema Heisemann sprays this chassis with powder paint, a new imaginative process. VDO Mannesman puts the cockpit together. Secondly, without naming them all there are four logistic partners, the most important being Mosolf who distribute the cars from the factory to European and world-wide Smart Centres.

### **Commentary:**

Some supplies still come to Hambach in a more traditional way, delivered in containers to be replenished by the off site suppliers, but the majority and all the significant suppliers have come here to be with Smart.

### **Prof. R. van Hoek, Supply Chain Management, Cranfield University:**

There is a clear lock-in risk for the supplier because what's going to happen if the manufacturer says well, thank you very much, we may come back to you at some point in time, but we're really going to have to ask you to hand over the keys to your facility, and maybe we'll pay you off. So there is investment risk, there is commitment risk, there is the opportunity on the other hand for them to really begin to get their hands on pieces of the supply chain, also that they previously were not really involved in, such as the collaborative

design, such as the ability to work together with the customer on getting to the next level of supply chain integration, so it's a double-edged sword.

**Commentary:**

So why aren't other manufacturers taking the same route?

**Prof. R. van Hoek, Supply Chain Management, Cranfield University:**

There is at least one plant in the VW network in South America where they're currently going beyond that by actually having the key suppliers do all that, plus actually assemble their part into the actual truck that they're assembling.

**Commentary:**

You've seen how the branch of the supply chain providing doors functions. How does it work for the rest of the car? The factory is laid out as a plus sign, giving suppliers easy access to the assembly line. The natural beginning of a Smart car is here in Magna Chassis, sister company to Magna Doors. Here the Tridion safety frame and chassis are welded together.

**Herbert Schnepfer, Magna Chassis, Smartville:**

On the technical side we've got 2400 weld spots, we apply 12 metres of adhesive, and we have on the front panel for the dash panel front we've got a one-and-a-half metre groove, and every weld spot is done automatically and about 80% efficiency totally we supply every 96 seconds one finished body to our build supplier.

**Commentary:**

When the frame leaves Magna Chassis it's through another overhead tunnel. At the other end is not the assembly line yet, but Sertima, the company that will coat the chassis, a process that begins with a thorough cleaning. While many industrial processes can be automated the pre-coating inspection and preparation is something still most efficiently done by people. Everything in Smartville is focused on the production of the completed car. The coating, like the manufacture of doors, generates no revenue for Sertima until a completed Smart rolls off the assembly line several hours later. When Sertima have done with the chassis, now painted and coated, yet another enclosed tunnel takes it to its last stop before assembly. VDO Mannesman build the cockpit module, installed as a unit including the electronics and instrumentation. Modularity is a feature not only of assembly but also of end of life disassembly. What's assembled as a module can be disassembled the same way. Now the car can join the assembly line proper. The only slack in the closely monitored just in time system lies in these linking tunnels. This one holds precisely twelve partly assembled bodies. The cockpit figures, like everybody else in the assembly process, can get no further behind or ahead before the rest of the factory grinds to a halt. That's the car's eye view of assembly. How do the on site partners see the process?

**Herbert Schnepfer, Magna Chassis, Smartville:**

In this case is different, you've got all the main suppliers with the customer together in one workplace. It is mainly I think really positive because all the suppliers sit together around the customer and this was in the early stage a big learning curve it is positive because every company like VDO, Magna, like Dynamil make plastic, bring their own experience for the product and take the responsibility, the knowledge get together, that's the first time that it happens, it's for sure and the other end totally at the moment we have 1800 employees, it is a big learning curve, the relationship between employer-employee relationship because everybody work for the same target but for their own companies.

**Jean Savigne, Magna Doors, Smartville:**

It's very different, this Smartville project, already, it is a great adventure. I would say to be close to the customer is an enormous technical advantage and we have improved rapidly because there are only 50 metres separating the two factories, to my mind an enormous advantage. If I had to do it again, I would change nothing.

**Herbert Schnepfer, Magna Chassis, Smartville:**

But a particular comment from my end is that also quite a good learning curve and quite successful, it could be done that you got in sources for the product, we got bi-weekly

meetings with our customer, with our co-partners to just exchange good things and other things to discuss, how we change things and the best thing for the product.