

AARENS ELECTRONIC

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Just outside Rotterdam in the Netherlands, Frank Jansen, the Chief Operating Officer of Aarens Electronic (AE) was justifiably proud of what he described as, ... *'the most advanced machine of its type in the world, which will enable us to achieve new standards of excellence for our products requiring absolute cleanliness and precision'* ... and ... *'a quantum leap in harnessing economies of scale, new technology to provide the most advanced operation for years to come'*. The Rotterdam operation was joining AE's two existing operations in the Netherlands. They offered precision custom coating and laminating services to a wide range of customers, amongst the most important being Phanchem to whom it supplied dry photoresist imaging films, a critical step in the manufacturing of microchips. Phanchem then processed the film further and sold it direct to microchip manufacturers.

The Rotterdam Operation

The decision to build the Rotterdam Operation had been taken because the company believed that a new low-cost operation using 'ultra-clean' controlled environment technology could secure a very large part of Phanchem's future business – perhaps even an exclusive agreement to supply 100 per cent of their needs. When planning the new operation three options were presented to AE's Executive Committee.

- 1 Expand an existing site by building a new machine within existing site boundaries. This would provide around 12 to 13 million square metres (MSM) per year of additional capacity and require around €19 million in capital expenditure.
- 2 Build a new facility alongside the existing plant. This new facility could accommodate additional capacity of around 15 MSM per year but, unlike option A, would also allow for future expansion. Initially, this would require around €22 million of capital.
- 3 Set up a totally new site with a much larger increment of capacity (probably around 25 MSM per year). This option would be more expensive; at least €30 million.

Frank Jansen and his team initially favoured option B but in discussion with the AE Executive Committee, opinion shifted towards the more radical option C. *'It may have been the highest risk option but it held considerable potential and it fitted with the AE Group philosophy of getting into high-tech specialised areas of business. So we went for it.'* (Frank Jansen). The option of a very large, ultra clean, state-of-the-art facility also had a further advantage – it could change the economics of the photoresist imaging industry. In fact, global demand and capacity did not immediately justify investing in such a large increase in capacity. There was probably some overcapacity in the industry. But a large-capacity, ultra-clean type operation could provide a level of quality at such low costs that, if there were overcapacity in the industry, it would not be AE's capacity that would be lying idle.

Designing the new operation

During discussions on the design of the new operation, it became clear that there was one issue that was underlying all the team's discussions – how flexible should the process be? Should the team assume that they were designing an operation that would be dedicated exclusively to the manufacture of photoresist imaging film, and ruthlessly cut out any technological options that would enable it to manufacture other products, or should they design a more general-purpose operation that was suitable for photoresist imaging film, but could also make other products? It proved a difficult decision. The advantages of the more flexible option were obvious. *'At least it would mean that there was no chance of me being stuck with an operation and no market for it to serve in a couple of years' time'* (Frank Jansen). But the advantages of a totally dedicated operation were less obvious, although there was a general agreement that both costs and quality could be superior in an operation dedicated to one product.

Eventually, the team decided to focus on a relatively non-flexible focused and dedicated large machine. *'You can't imagine the agonies we went through when we decided not to make this a flexible machine. Many of us were not comfortable with saying, "This is going to be a photoresist machine exclusively, and if the market goes away we're in real trouble". We had a lot of debate about that. Eventually, we more or less reached a consensus for focus, but it was certainly one of the toughest decisions we ever made'* (Frank Jansen). The capital cost savings of a focused facility and operating costs savings of up to 25 per cent were powerful arguments, as was the philosophy of total process dedication. *'The key word for us was focus. We wanted to be quite clear about what was needed to satisfy our customer in making this single type of product. As well as providing significant cost savings to us, it made it a lot easier to identify the root causes of any problems because we would not have to worry about how it might affect other products. It's all very clear. When the line was down we would not be generating revenue! It would also force us to understand our own performance. At our other operations, if a line goes down, the people can be shifted to other responsibilities. We don't have other responsibilities here – we're either making it or we're not'* (Frank Jansen).

When the Rotterdam operation started producing, the team had tweaked the design to bring the capacity at start-up to 32 MSM per year. And notwithstanding some initial teething troubles it was, from the start, a technical and commercial success. Within six months a contract was signed with Phanchem to supply 100 per cent of Phanchem's needs for the next ten years. Phanchem's decision was based on the combination of manufacturing and business focus that the Rotterdam team has achieved, a point stressed by Frank Janssen. *'Co-locating all necessary departments on the Rotterdam site was seen as particularly important. All the technical functions and the marketing and business functions are now on site.'*

Developing the supply relationship

At the time of the start-up, product produced in Rotterdam was shipped to Phanchem's facility near Frankfurt, Germany, almost 500 km away. This distance caused a number of problems, including some damage in transit and delays in delivery. However, the relationship between AE and Phanchem remained sound; helped by the two companies' co-operation during the Rotterdam start-up. *'We had worked closely with them during the design and construction of the new Rotterdam facility. More to the point, they saw that they would certainly achieve cost savings from the plant, with the promise of more savings to*

come as the plant moved down the learning curve' (Frank Janssen). The closeness of the relationship between the two companies was a result of their staff working together. AE engineers were impressed by their customer's willingness to help out while they worked on overcoming the start-up problems. Similarly, AE had helped Phanchem when they needed extra supplies at short notice. As Frank Janssen said, *'partly because we worked together on various problems the relationship has grown stronger and stronger'*.

In particular, the idea of a physically closer relationship between AE and Phanchem was explored. *'During the negotiations with Phanchem for our 100 per cent contract there had been some talk about co-location, but I don't think anyone took it particularly seriously. Nevertheless, there was general agreement that it would be a good thing to do. After all, our success as Phanchem's sole supplier of coated photoresist was tied in to their success as a player in the global market; what was good for Phanchem was good for AE'* (Frank Janssen). Several options were discussed within and between the two companies. Phanchem had, in effect, to choose between four options:

- Stay where they were near Frankfurt.
- Relocate to the Netherlands (which would give easier access to port facilities) but not too close to AE (an appropriate site was available 30 km from Rotterdam).
- Locate to a currently vacant adjacent site across the road from AE's Rotterdam plant.
- Co-locate within an extension that could be specially built onto the AE plant at Rotterdam.

Evaluating the co-location options

Relatively early in the discussions between the two companies, the option of 'doing nothing' by staying in Frankfurt was discounted. Phanchem wanted to sell their valuable site near Frankfurt. The advantages of some kind of move were significant. The option of Phanchem moving to a site 30 km from Rotterdam was considered but rejected because it had no advantages over locating even closer to the Rotterdam plant. Phanchem also strongly considered building and operating a facility across the road from the Rotterdam plant. But eventually the option of locating in a building attached to AE's Rotterdam operation became the preferred option. Co-location would have a significant impact on Phanchem's competitiveness by reducing their operating costs, enabling them to gain market share by offering quality film at attractive prices, thus increasing volume for AE. The managers at the Rotterdam plant also looked forward to an even closer operational relationship with the customer. *'Initially, there was some resistance in the team to having a customer on the same site as ourselves. No one in AE had ever done it before. The step from imagining our customer across the road to imagining them on the same site took some thinking about. It was a matter of getting use to the idea, taking one step at a time'* (Frank Janssen).

The customer becomes a paying guest

However, when Frank and the Rotterdam managers presented their proposal for extending the plant to the AE board the proposal was not well received. *'Leasing factory space to our customer seemed a long way from our core business. As one Executive Committee member*

said, we are manufacturers; we aren't in the real estate business. But we felt that it would be beneficial for both companies' (Frank Janssen). And even when the proposal was eventually accepted, there was still concern over sharing a facility. In fact, the Executive Committee insisted that the door between the two companies' areas should be capable of being locked from both sides. Yet the construction and commissioning of the new facility for Phanchem was also a model of co-operation. Now, all visitors to the plant are shown the door that had to be 'capable of being locked from both sides' and asked how many times they think it has been locked. The answer, of course, is 'never'.

Questions

- 1 What were the key structure and scope decisions taken by Aarens Electronic?
- 2 What were the risks involved in adopting a process design that was 'totally dedicated' to the one customer's needs?
- 3 What were the advantages and disadvantages of each location option open to Phanchem, and why do you think they eventually chose to co-locate with AE?