

## **The Future of the Plastics Industry**

As in any other sector, a company in the plastics industry regularly asks itself this question: In what direction should we move in order to achieve headway? Which products would generate profits?

The R&D department that is asked to come up with suitable proposals is hampered at the outset by the requirement that the product to be developed should not mean too big a departure from the company's existing technology. Should the company produce raw materials for polymerisation or should it go for polymerisation or condensation of monomers followed by spinning? In the Netherlands, DSM started off with the production of caprolactam. Another Dutch company, AKU, first made nylon 6 from it and then produced yarn by means of extrusion. This throws up differences in technology – which has obvious consequences.

If the proposals put forward by R&D meet all the financial investment requirements but deviate considerably from technology already known to the company, R&D is soon told: "We don't feel comfortable with this." At AKU, for instance, the development of the company's Akulon range of polyamides came much later than the nylon yarns. And it took DSM even longer to start developing its Dyneema fibre from ethylene and polyethylene.

Another obstacle is the market. R&D asks Sales an apparently simple question: "What do you need from us?" More often than not, the answer is: "A lower cost price for the existing product." And this is followed by silence. Only an open and intensive dialogue between the two disciplines will result in proposals that lead to success.

Then there is the societal side. For the past several decades, the public perception has been that plastics cause environmental pollution. According to media reports, this is giving rise to the accumulation of enormous islands of plastic waste in the oceans. All this isn't really contributing to a positive industry image when it comes to investments in bulk plastics such as polyethylene, polypropylene and PVC.

It is often forgotten that plastics are so popular because they cannot be broken down by fungi and bacteria. A somewhat more assertive stance on the part of the plastics industry would therefore not be out of place. This should go together with efforts towards recycling and recovery of the original components. This, however, demands a major research effort.

R&D in the plastics industry will need to focus on issues such as shape retention under sustained stress. There is also much to be done in respect of higher melting points. The same holds for the large volume expansion with temperature, which is a problem in the case of certain applications. Another field where requirements will become tougher and tougher is that of 3D technology. Which means that for a strong growth of plastics in the future, challenging research programmes will be needed.

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