In Brief

• With the acquisition of UGS, Siemens has become the first company to unite the previously separate worlds of virtual product development and production planning with production automation. As a result, the development of new products and their associated production processes will become faster, more flexible, less expensive and more transparent to the customer. Real-time collaborative development of virtual products and processes supports these trends. (pp. 13, 16)

• Siemens researchers and developers are moving toward full digital representation and optimization of the entire product lifecycle — from design and manufacture to sales, distribution, disposal and recycling. Products such as trains are already being planned virtually, down to the last detail. (pp. 20, 23, 30)

• Virtual simulation can also be applied to work sequences — not just in factories, but also in medicine, as is being demonstrated in a new particle therapy center in Heidelberg. Here, Siemens is simulating and optimizing patient throughput in order to make the center more efficient and give physicians more time for their patients. (p. 33)

• Workflows at Siemens’ Amberg location are exemplary. With quality indicators and capacity utilization at close to 100 percent, the plant is not only one of Siemens’ most efficient facilities, but also the best factory in Europe — and that’s official. Its secret is innovation and highly motivated employees. (p. 26)

• Working together with a South Korean company, Siemens has developed a production process that eliminates the need for cooking plants and sintering furnaces in pig iron production. Compared to other technologies, the new process is more efficient, cheaper, and easier on the environment. (p. 35)

• Reducing energy requirements at production locations, recycling used equipment, and developing and using power-saving equipment such as variable speed drives — these are all important steps when it comes to promoting sustainable manufacturing. (p. 37)

Let’s look ahead and talk about the year 2020. Many experts predict down-sized factories and highly flexible production systems with lot sizes of one — in short, truly personalized products. Given these innovations, do you expect customers to eventually become part of the production process? Voß: Many industrial sectors already have production planning and control systems. Although the early euphoria that surrounded the introduction of computer-integrated manufacturing — or CIM — has largely dissipated, research in this area is moving forward. Interestingly enough, there are increasing attempts these days to incorporate consumers into the production process through instruments like mass customization, whereby customers formulate individual product demands and can even intervene in production by entering these demands into Internet systems. The goal here is to develop technical and organizational procedures that enable products to be industrially manufactured at an affordable cost — and at the same time tailored to the needs of customers.

“Crowd sourcing,” which has been the subject of much discussion lately, goes even further by envisioning an interactive Web 2.0 that allows customers to be incorporated into business processes by contributing their wishes, ideas, and even suggestions for improvement and new designs. This is also known as Pro-Am cooperation, which means professionals and amateurs working together — and doing so even in the production of complex products such as automobiles and electronic equipment. We’re talking about much more here than selecting models, colors, seat coverings or optional equipment. In this approach the product is manufactured down to the last detail in accordance with the customer’s wishes. In some cases, this could have an impact on the entire production process as well.

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