The second half of the 19th century was an era of technical, economic, and social transformation. New nations were formed, the middle and working classes demanded their rights, and technical achievements permeated every aspect of daily life. Electric lighting came to cities, which were connected by railroads, and for the first time in history messages could be transported within minutes by telegraph across continents and oceans. One of the driving forces behind all these developments was a man who established a small factory in a courtyard in Berlin exactly 160 years ago, in October 1847: Werner von Siemens.

His recipes for success are still valid today. He came up with answers to the big questions of his time. For example, politicians and businessmen needed a way to communicate messages quickly. Werner von Siemens invented the pointer telegraph, which he described as “ridiculously simple and easy to use.” Today we would say it’s user-friendly. What’s more, he thought globally and mastered challenges that nobody else had dared to face in his day. For instance, his company used a specially designed ship to lay transatlantic cables from Europe to the U.S.A.

But the greatest revolution of all was triggered by his invention of the dynamo, which laid the foundation for electrical engineering. The dynamo made it possible to convert mechanical energy into electrical energy and thus make electricity widely available, whether for lighting or new types of motors. Siemens built the first electric railroad in 1879, the first electric elevator in 1880, and the first electric streetcar line in 1881. What’s more, he predicted the development of power stations. “Small machines that get their power from large ones will become possible and useful,” he wrote to his brother Wilhelm. “This field has a lot of potential.”

And it’s true. Electric power is the basis of our modern society — and technologies for the clean and efficient generation, transmission, and utilization of electricity are still one of the pillars of Siemens’ success. Today, as 160 years ago, research, development, and innovation at Siemens are still focused on answering the big questions, one of which is: “How can we power a planet hungry for electricity while minimizing our impact on climate and the environment?” You can find our answers in this issue of *Pictures of the Future* (pp. 44 – 77). They range from special coatings for huge gas turbines to new drive systems for trains, and from highly efficient light sources, solar-thermal and geothermal power stations, to processes for making one-piece, 52-meter blades that are so robust they can generate electricity from wind even when located far out at sea.

Equally important are questions resulting from the megatrends of urbanization and demographic change — questions such as, “How can we achieve sustainable development and the highest possible quality of life in cities?” and “How can we detect and treat diseases long before they strike?” Here too, Siemens can offer solutions, as shown in *Pictures of the Future*, Fall 2006 and Spring 2007.

Yet another question is posed by the global distribution of labor and by growing consumer demands — the question of how production methods can help us to make products faster, more flexibly, in higher quality, more cheaply, and in ways that more effectively conserve resources.

Our answer is the “intelligent factory” (pp. 10 – 41). We develop the solutions that make it possible to design products in the virtual world and to design and test their associated production processes there as well. Through international collaborative work, we examine new products in the virtual world along their entire life cycles and value chains before a single screw is tightened in the real world. This enables us to optimize products and production processes while reducing their environmental impact right from the very start.

And let’s not forget that as we answer all of these questions — whether they have to do with energy supplies, health, or industry — we’re also working on an important cross-sector technology: powerful information and communication systems (pp. 78 – 105). In 1847, Werner von Siemens laid the groundwork for this development as well.