

Introduction of Siemens AG

Qing Chen

*Siemens AG, A&D DS R, P.O. Box 3269, D-91050 Erlangen
Email: qing.chen@erl.siemens.de*

Over the past 150 years, Siemens has grown to become one of the largest electrical engineering and electronics companies in the world with about 398,000 employees (until 31.03.1998) worldwide. With its extraordinarily broad-based range of services, Siemens is the leading company in system integration in the international market-place. Through its broad-based marketing and service network, Siemens is present in nearly all of the world's countries, thereby maintaining close proximity to customers.

The basis for the company's success is a comprehensive range of services, including products, plants, systems, consultation, engineering and integration services as well as maintenance, operation, training and financing. A company can only achieve long-term success if its employees identify with the company goals and values, and not only initiate change but also help shape it.

Siemens is involved in eight major fields, which corresponds to 8 business segments and 15 groups as shown in Fig. 1. Each group includes many divisions according to different business fields. Within a division there are several departments, which takes response for a product or a system from its development until its service after sale. The following introduction will be focused on the Group level, which try to give an glance at the broad-based range of services of Siemens AG.

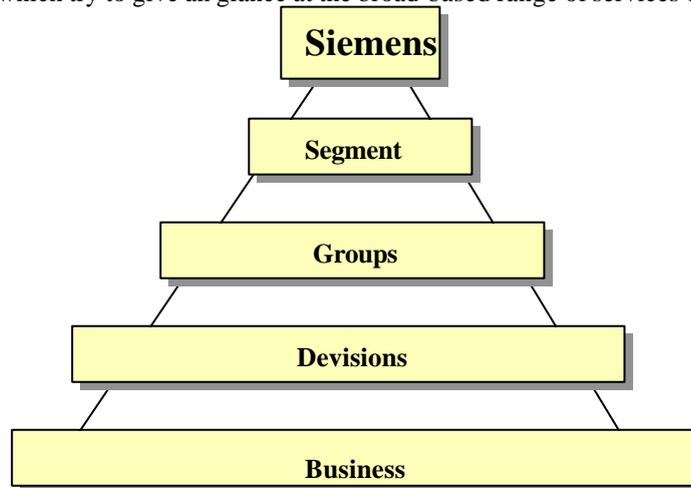


Figure 1 Structure of Siemens AG

● Energy segment

Faced with the challenge of, on the one hand, fulfilling the increasing power needs of a growing world population and, on the other, limiting emissions and the use of resources, today's society is being compelled to find new approaches to replenishing its energy supply.

With this as a starting point, experts from all branches of power generation, power transmission and distribution, from research and development and from industrial and building systems work together to find the best possible solution for the operator.

* Power Generation (KWU Group)

In the field of energy, the KWU group is active in designing, manufacturing and servicing power generation plants and components. The Groups conduct business in their respective fields independently and under the terms of the corporate policy adopted by Siemens. They are responsible for all aspects of development, manufacturing, engineering and marketing activities, and for their business results.

The range of products and services extends from large-capacity fossil-fueled, hydro and nuclear power plants to decentralized power supply systems using fossil and bio fuels, diesel power plants, photovoltaics and fuel cells.

* Power Transmission and Distribution (EV Group)

For a safe and resource-preserving energy supply, the Power Transmission and Distribution group works on developing forward-looking technologies, which include high-voltage and medium-voltage switchgear and the associated protection and control systems as well as transformers, energy meters, power cables, overhead power lines and system planning.

Siemens has been developing ways of transporting electrical energy to its destination with even fewer losses. This is also enabled by the 525-kV high-voltage arrester, which provides secure protection against excessively high voltages.

● Industry segment

Quality, costs, flexibility and time are decisive factors in global competition. As a partner to industry, Siemens helps companies master this challenge. This is being done with know-how specific to the various branches, with the latest technology, equipment and systems, with turnkey installations, with logistics and service, and with information technologies for networking and the global transfer of information.

* Industrial Projects and Technical Services (ATD Group)

The group with about 30,000 employees worldwide serves a wide range of industries, extending from mining and metals to paper, oil and gas supply, chemicals and petrochemicals, shipbuilding, airports and public authorities. Traffic control systems and technical services will complete the picture.

The activities associated with a provider of technical services, which will account for more than two thirds of ATD's business, include traditional services such as plant erection, engineering, commissioning, customer service and plant maintenance, as well as demolition and disposal, and also ultramodern information technology services in the industrial sector.

* Automation and Drives (A&D Group)

With a business volume of 10 billion DM and approximate 45,000 employees, A&D is active worldwide at more than 70 locations. The fact that the shortened name (A&D) is English reflects the international flair of the business.

The A&D group embraces the product and system business in the production and process industry and offers customers in industry a complete range of automation and drive solutions from the field level, i. e. sensors and actuators, through the automation level, including solutions such as automation of machine tools, woodworking and packaging machines right up to the factory host level with process computers, e.g. for the pharmaceutical or automobile industries.

All over the world, Siemens supplies innovative automation equipment, systems and solutions for cutting processing, conversion and turnaround times in production, improving quality and further reducing engineering and maintenance costs.

The fully integrated SIMATIC automation system and SIMADYN D control system perform functions with a software platform, thus enabling engineering costs to be reduced by up to 50 percent. The hardware costs involved in process engineering are also lowered.

* Production and Logistics Systems (PL Group)

Expenditures on logistics services per branch of industry is today between 5 and 25 percent of turnover. These logistics costs, however, can be cut in half with the help of intelligent solutions. The automation of logistics is thus becoming a crucial factor for success in global competition.

A second important area is production machinery, for example, SMD placement machines for the electronics industry as well as production automation for general and electrical industries.

● Communications segment

Today, communication is crucial for economic development and for the quality of life. The variety of information and range of services are continuously being expanded thanks to new breakthroughs in interactive communication. This extends to, for example, teleshopping, teleworking or telelearning. Communications technology is integrating information technology and entertainment electronics to create the multi-media world of tomorrow.

* Public Communication Networks (誼 Group)

Telecommunication is one of the most dynamic factors in the development of culture and society. On the "information highway," audio-visual communication is possible, regardless of the distance involved. As a trendsetter, we want to play a crucial role in this process of change and take full advantage of the power of telecommunications: for our customers and for everyone, both at leisure and at work.

Our strategic approach is to transfer the networks of today to the Information Highway of tomorrow. Solution O.N.E. (Optimized Network Evolution) is the Siemens concept for present and future networks. It covers our whole portfolio of products and services.

- Solutions & Services for Carriers and Providers: A modular service concept tailored to your needs
- Network Management: Network Management Systems

- Access: Access to success / Whatever your ideas in multimedia - we hatch them out
- Internet: All Internet Solutions
- Transport: Solutions from the No. 1 in SDH
- Intelligent Networks: Gain competitiveness with new services / Far away, but still in touch
- Cable: From cables to turnkey networks
- Mobile: Many attractive features to compete
- Switching: The best-selling switching system in the world keeps you steps ahead
- Broadband: Perfect broadband networking

*** Private Communication Systems (PN Group)**

The Private Communication Systems group is one of the leading suppliers of communications solutions for companies and private customers. With a market share of 12 percent, this group is the leader in communication systems worldwide. With regard to the terminals business, Siemens ranks third. With just over 34,000 employees, PN sales reached approximately DM11.1 billion in fiscal 1996/97 (30 September).

A range of communication options to suit every need: from mobile phones through to cordless and enhanced phones and ISDN products, and on to the (almost) incredible GSM engines - innovative, powerful and spirited. There is just the right solution for every need.

● Information segment

*** Siemens-Nixdorf Informationssysteme AG (SNI Group)**

Maintaining a competitive edge in the knowledge-based society of the future will require the ability to process and transmit information quickly and efficiently. Siemens Nixdorf has created a product line and corporate structure to successfully meet these challenges:

Technological expertise, Siemens Nixdorf offers both a wide range of products and the ability to integrate any and all necessary components into a company-wide IT architecture.

Experience. For years, Siemens Nixdorf has been dealing with our customers' business processes and their IT-specific needs. Throughout these dealings, our customers have benefited from the pool of expertise provided by Siemens as a whole.

● Health Care segment

*** Medical Engineering (Med Group)**

Since the establishment of our company almost 150 years ago, Siemens Medical Engineering Group has been a today's largest and most diversified manufacturer and supplier of medical electronics, familiar with the processes in health care. Customers range from private practice physicians and hospitals to leading university medical schools. They are professionally supported by expert advisors, a skilled service organization and a responsive delivery network for spare parts. We cover the entire spectrum of diagnostic imaging technologies, are a leader in clinical networking, provide systems for therapeutic procedures and for electromedicine and we have extended product lines for hearing instruments. Our global organization and progressive R&D programs provide the basis for a continuing commitment to:

- quality of medical care and patient care
- cost-effectiveness of equipment and processes
- progress in medicine through innovation

● Transportation segment

The transport sector develops comprehensive turnkey solutions which integrate public and private urban and main-line means of transport in a whole system. Intelligent transport control systems, for example, keep traffic flowing and make more effective use of existing road networks. High-performance public means of transport present an attractive incentive for changing over to public transport. Solutions for the automotive industry range from systems for slashing gasoline consumption and emissions to modules which reduce vehicle weight, to development tools. The goal of all these efforts is to satisfy the need for mobility and, at the same time, reduce environmental pollution.

*** Transportation Systems (VT Group)**

Transportation Systems for the automotive industry range from systems for slashing gasoline consumption and emissions to modules which reduce vehicle weight, to development tools. The goal of all these efforts is to satisfy the need for mobility and, at the same time, reduce environmental pollution.

Combining mobility with environmental compatibility represents both a challenge and great opportunity for rail-bound transportation. Urban and main-line railways provide an enormous transport capacity, combine safety with environmental compatibility and also offer great potential as regards capacity, speed and intelligent traffic control. As one of the largest companies for railway systems, Siemens provides the necessary technological conditions. With strategic partners

throughout the world, the company has become a system integrator and global player. In urban and main-line transportation, this group supplies a wide range of railway products ?from operations control systems to power lines and power-supply systems, and from vehicles to turnkey systems.

- **Automotive Systems (AT Group)**

The automobile industry is becoming more internationalized, with increased wealth and jobs in new markets. The Automotive Systems group, with development, engineering and manufacturing, has offices and factories in 20 different countries. Safety, comfort and protection of the environment are among the central criteria for modern automotive engineering. With engine management systems, Siemens is helping to reduce consumption and emissions to as low a level as possible. A high-performance computer, for example, issues commands to the engine to ensure low-pollution driving.

- **Components segment**

Semiconductors as well as passive and electromechanical components are essential for electronics and electrical engineering. They form the basis for many important innovations. Without these components, PCs, mobile telephones and video cameras, for example, would never have become the handy, easy-to-use and inexpensive devices they are today.

- * **Semiconductors (HL Group)**

State-of-the-art microelectronics is essential for advancing developments in the fields of communication and information technology. Multimedia systems require extremely high storage capacities, for instance, while mobile communication systems demand high-level integration, from the smartcard to the mobile phone. The Semiconductors group provides the basis for such developments with their products, which include storage modules, single and power semiconductors, and smartcards. The groups services range from the individual components to complete systems, depending on customer requirements.

- * **Passive Components and Electron Tubes (PR Group)**

Without passive components, nothing would be possible in electronics and electrical engineering. A functional circuit requires the interaction of active and passive components. Varistors protect semiconductors against overvoltage, while capacitors support the voltage supply of microchips. Without surface wave filters, mobile telephones would be considerably larger than they are today, and inexpensive satellite receivers would be inconceivable.

- * **Electromechanical Components (EC Group)**

The Electromechanical Components Group will no longer simply supply components, but will become a partner in research and development. The idea is to migrate from products to intelligent solutions. Take intelligent power-modules, for example. These products, which are normally found inside frequency converters, also perform a range of important duties in regulating electrical engines.

- **Lighting segment**

- * **OSRAM GmbH**

OSRAM is one of the three leading lamp manufacturers in the world and has its headquarters in Munich. It is a company with a strong international outlook, employing over 30.000 people throughout the world. In fiscal year 1996/97 88 percent of its turnover of DM 6.3 billion was earned outside Germany. OSRAM supplies customers in more than 140 countries and has 51 production facilities in 18 countries.

In addition to Europe and North America, two bases where OSRAM is particularly strong, Asia is one of the most important growth markets for OSRAM's innovative products. In 1997 joint ventures were established in Taiwan and Indonesia and a new factory started in Foshan (China). OSRAM also continually improves its market presence in Eastern Europe.

About 4 percent of turnover is spent every year on research and development. For proof that OSRAM is an innovative company we need look no further than the fact that around 30 percent of lamp sales achieved with products which are less than five years old.