



# Philips Medical Systems

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# Company's History

Philips Medical Systems, better known as Philips Healthcare, is a part of the world-famous company Royal Philips, which was founded by Gerard Philips and his father Frederik in 1891 in Eindhoven, the Netherlands. At first, it was a small light bulb manufacturer. Nowadays, Philips is one of the world's largest electronics companies. It operates in four main segments: Lighting (the first place in the world), Consumer Electronics (the third place), Domestic Appliances & Personal Care (the first or the second place in the world), and Medical Systems (the second place).

Dutch industrialists Gerard and Frederik Philips founded Philips & Co. "to meet the growing demand for light bulbs following the commercialization of electricity" ("History of Philips Brand"). After several years of research, Gerard Philips decided to build a factory for manufacturing of lamps in the Netherlands where in 1869 there were laws recognizing foreign patents as invalid. The businessman established product sales among business acquaintances who bought lamps for industrial enterprises. Those days' residential buildings had no electrical wiring.

The company was fully focused on mass production of incandescent lamps. In 1895, Gerard's brother Anton Philips joined the family business. This event was a turning point in the company's history. After ten years of its existence, the small factory transformed into the largest Dutch manufacturer and employer. However, the company was pursued by a major competitor the AEG. It was necessary to reduce costs and Gerard Phillips decided to build another production building. Increased production gave rise to a need for the international market. The youngest son of the company's founder Anton Phillips took this responsibility. 24-year-old Anton Philips went on a train to Russia. He did not know Russian language and culture, but, nonetheless, managed to agree on a large supply (150,000 lamps; 50,000 of them were used for illumination of the Winter Palace). Russia was the largest customer

until the First World War started in 1914. Anton's commercial and diplomatic talent became fundamental to the success of the family company.

In 1914, Philips & Co. established a research laboratory. At this time, there is a significant increase in the number of research laboratories in the Netherlands. The emergence of research laboratories was due to “a transition from one situation in which innovations were a matter of individual inventors working in isolation and often on the basis of a brilliant spark of insight towards a new situation in which inventing was seen as an activity that takes place in groups of people and by systematic study” (De Vries and Boersma 21). Throughout its history, Philips' Natuurkundig Laboratorium (Nat. Lab.) made many scientific discoveries that joined the list of unique inventions, improving people's everyday lives. Over a hundred years of existence, research experts have become authors of many breakthrough developments of their time, including radio, electric razor with rotating heads, compact audio cassette, compact disc (developed in collaboration with Sony), DVD, etc. Nowadays, Philips Research is one of the largest research organizations in the world. The divisional headquarters are located in Eindhoven and there are also other labs in North America, Europe, and Asia. Its mission is to “Improve the quality of people's lives through technology-enabled meaningful innovations” (“Mission & Vision”).

Over time, Philips & Co. has become known not only in the Netherlands, but also in the world. In 1916, Queen Wilhelmina of the Netherlands granted the company the right to be called Royal Philips (with Dutch prefix “Koninklijke”). Philips brothers created powerful production and also showed an example of a new business relationship with their clients. They were confident that numbers are important, but people are more important.

Philips paid great importance to its brand name. It has undergone numerous changes to reflect changes in people's views over time. Trademark was first used on letterhead with the logo that combined initial letters of the name

Philips & Co. In addition, the first light bulbs were engraved with the brand name. First advertising campaign used traditional Holland postcards. On the front side, they had well-known national images and, on the back side, they had a word Philips framed with dozen glowing light bulbs. This idea was conceived by Anton Phillips. In his opinion, it reflected modernity and chic. These cards became very popular and served as a good promotion for the growing company.

During the global economic crisis of 1929, the company Philips had to reduce its staff drastically. For three years, Philips' income declined by almost six times. Due to economic depression, the company had to abandon celebration of the anniversary. However, keeping the course on innovation and profitability, it did not stop working on expansion and modernization of production. Successful exit from the crisis was caused by, as before, a high quality of products, as well as new inventions relating to television and radio broadcasting.

For Philips, the Second World War, which was followed by a rise of the global industry, was a moment of significant investment in research and development. In the end, this resulted into the emergence of new products in the company's range, as well as improvement of their quality. In 1948, scientists from the Philips' lab invented the LP, which was a breakthrough in audio. At that time, Japanese manufacturers were gradually embracing the European market, offering their appliances. In 1952, Philips entered into a partnership agreement with the Japanese manufacturer Matsushita Denki, which produced equipment under the brand name Panasonic. This partnership consolidated the position of the Dutch company in the market and very soon it became the greatest competitor of Japanese companies.

In 1997, the company altered its name to Koninklijke Philips Electronics N.V. and its head office moved to Amsterdam. In the 2000s, it made a number of significant acquisitions. Less profitable units, on the contrary, were sold. In



2013, it changed its name again. Now, it is Koninklijke Philips N.V.

Phillips Medical Systems developed as strongly as other activities of the company. Its history began in the early 20th century and was linked to the invention of X-rays. In 1917, at the end of World War I, representatives of the medical community offered Philips Research to do repairs of faulty X-ray tubes, which could no longer be supplied from Germany. Work on this project signaled a new stage in the development of the business, becoming the basis for the birth of a new sector – Philips Healthcare. Researchers were able to provide their own X-ray tubes with the help of the technology used for electric lamps production. The breakthrough invention of that time was the Rotalix X-ray tube created in 1918. It significantly improved image quality. This equipment has revolutionized diagnostics of tuberculosis.

Over the next decades, Philips' engineers and researchers have worked on the creation of new technologies and devices. Innovation has played a significant role in the reconstruction of Europe after World War II. The most outstanding medical inventions include among others:

- Up till 1955, X-ray systems were immobile. Philips developed the first C-arm, an X-ray machine in the shape of a crescent. It allowed medical workers to move X-rays in all directions, which speeded up the process of diagnostics and treatment, as well as made stay of patients in hospital more comfortable.
- In 1982, Philips developed a system, which allowed creating images of blood vessels and organs in real time. To do this, a patient was injected with a contrast agent – a substance that made body fluids visible on X-ray. Thanks to this, visualization of blood vessels reached a new level.
- In 1985, Philips introduced a system of digital images. With its help, doctors could get more high-definition images in a short time; moreover, it became easier to share research.
- In 2010, the company presented a system of home medicine Life Line, which marked a new stage in the care of patients at distance.

- In 2011, developments in the field of positron emission tomography (PET), imaging vital processes of organs and tissues at the molecular level, led to the release of a universal system for the diagnostics of the whole body; for the first time, it combined the technology of PET and magnetic resonance imaging (MRI).

- Angiographic Allura Clarity system is also one of the latest developments. It allows achieving high definition images in real time during a minimally invasive operation for reducing the radiation dose by 73% compared with previous expert model.

Nowadays, Philips is one of the world leaders in the development and implementation of a wide range of medical equipment and other clinical decision-making. Philips Medical Systems is aimed at making health care simpler and more accessible, so it focuses on key actors of this process: doctors, patients, and administrators of medical facilities. The company has deep expertise in clinical issues and necessary solutions for all phases of patient care, from screening and diagnostics, treatment and monitoring to status control and home care. Its portfolio includes more than 450 products and services offered in 100 countries.

### Company's Major Products and Services

One of the key areas of production is still X-ray. However, for almost 100 years, it has undergone major changes. Today, the company offers equipment for digital, computed, and mobile radiography. There are products for different tasks, complexity, and budget. In addition, Philips produces equipment for interventional cardiology, vascular and neurological procedures, as well as fluoroscopy systems. Modern equipment offers a high level of flexibility and control. Besides, Philips Medical Systems offers a hybrid system that is a combination of the operating table with a full range of X-ray investigations. This device is in high demand in modern medicine because it allows doctors to perform a wide range of treatments on the same table.

Philips Medical Systems manufactures a range of products for diagnostic ECG such as monitors, cardiographs, and ECG data management systems. This equipment helps to expedite processing of cardiac information, thereby rationally organizing the workflow, improving the cardiac care quality and staff productivity. They are intended for the diagnostics of adult patients, children, and newborns.

The company also provides equipment for ultrasound, which has a high image quality and possibility to combine several researches by using a single sensor. This equipment is widely used in the examination of heart, blood vessels, organs of the gastrointestinal tract, female genital mutilation, etc. In addition, ultrasound is an important tool for emergency assistance.

Philips Medical Systems offers high-quality CT scanners. They are used in neurology, diagnostics of musculoskeletal system, abdominal and pelvic organs, mammary glands, heart, blood vessels, pediatrics, and prostate. Philips' CT scanners have excellent visual quality. They meet visual requirements of both today and future. Doctors can connect to the machine from a hospital, home, or car, using an ordinary personal computer. CT scanners have high speed and accuracy. They are able to work in a multi-tasking environment. Systems provide reports on the work and suggest ways to optimize processes. In addition, the company is a leader in the area of magnetic resonance imaging. Its equipment is high-tech and easy to use. It is completely focused on the patient.

Nuclear medicine is also one of important directions of Philips Medical Systems. The company offers a revolutionary approach Imaging 2.0. It “focuses on the patient, with greater clinical integration and collaboration to naturally result in less cost and greater efficiency” (“Advanced Molecular Imaging”). It is innovative equipment capable of diagnosing pathologic

changes at early disease stages. Devices unite processing methods and analysis of SPECT, PET, and CT. They have extended workstations, which are powerful and convenient. They can be customized according to the doctor's needs. Scanners have maximum flexibility in imaging, improved programs, recording, and reporting.

Radiation oncology is highly essential for activities of Philips Medical Systems as ontological diseases belong to the severest health problems in the world today. Philips Pinnacle provides fast and accurate planning of radiation treatment. Virtual simulation and planning carried out on a single platform. It allows simultaneously seeing vessels, soft tissues, bones, and pathological structures. Thanks to this, a doctor can readily select the center and volume of the exposure. Planning can be modified during the treatment.

Philips Medical Systems offers a wide array of products for mother and baby. They are “fetal monitoring during pregnancy, neonatal positioning, calming and soothing solutions for the NICU, and feeding and monitoring for the transition home” (“Mother and Child Care”). The company offers products for healthcare facilities, as well as for home use. It promotes harmonious and healthy development of a child in accordance with international standards (including the UN standards). It is necessary to highlight the Philips AVENT line, which offers products for breastfeeding and weaning. The line's history started in 1984 when the Director of AVENT Company decided to create a new feeding bottle. Over time, the range of the company was growing and it merged with Phillips in 2006.

Philips Medical Systems produces IT equipment for medical institutions. It simplifies processing and analysis of data obtained by the diagnostic imaging system, cardiology equipment, and monitors. IT equipment improves quality of patient care and ensures more effective business management. The

company proposes a broad array of applications and workstations. An interesting product is the Philips Telehealth, which provides patient support round the clock. This program simplifies access to information, improves effectiveness of treatment, and reduces costs.

The company offers a broad range of convenient and reliable equipment for emergency care and resuscitation. There are defibrillators, monitors, cooling and warming systems, noninvasive and invasive ventilation solutions, data management solutions, consumable parts, and accessories. Philips' automated external defibrillators occupy leading positions in the market due to clinical confirmation. The producer pays special attention to data collection because faster and better data processing is an important criterion for making quick and correct decisions, which are a key to successful treatment.

Furthermore, Philips Medical Systems provides refurbished imaging systems. It provides second-hand equipment after restoration at the factory. Refurbished equipment, the same as the new one, has warranty. Restoration covers products for radiography, X-ray surgery, computed tomography, magnetic resonance imaging, and ultrasound. The company conducts its own rigorous selection of appropriate systems, dismantling and transportation, testing and restoration, installation, maintenance, and warranty services. This approach not only broadens the range of potential customers, but also is a major contribution to environmental safety. It must be emphasized that refurbished imaging systems would not be possible if Philips' equipment did not offer extraordinary quality and durability.

In addition, Philip Medical Systems offers training for medical personnel (a portfolio of services, which allows planning and organizing logistics of the clinic and establishing effective operation of equipment and the facility in general), repair and maintenance of equipment, and consultation (cost

reduction and increase in profits, efficient organization and management, etc.).

## Conclusion

Philips Medical System is a part of the internationally known company Philips, which was founded more than a hundred years ago in the Netherlands. At first, the company was a small family business of the Phillips brothers and their father. However, thanks to the extensive use of technical progress, it has become a powerful global company, which has survived periods of economic recession and crises and surpassed its strongest competitors. The history of healthcare division began in 1918 when Philips Research repaired faulty X-ray tubes. Philips' researchers and engineers made numerous medical inventions, enabling the company to occupy a leading position in the international market.

Currently, Philips Medical Systems is one of the world leaders providing a wide range of medical equipment and other clinical decision-making solutions. It offers more than 450 products and services in 100 countries. The company's portfolio includes:

- Imaging systems: computer tomography and magnetic resonance imaging, radiography, nuclear medicine equipment;
- Clinical systems: ultrasonic systems, monitoring vital signs of patients, anesthesia and respiratory equipment;
- Solutions for prenatal medicine and women's health;
- IT solutions in health care;
- Home medicine: medical alert systems, home respiratory systems;
- Consulting in the field of effective management of medical institutions;
- Education;
- Service.

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