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From a small laboratory to a world leader: 85 years of Swiss fire alarm technology

When two Swiss physicists founded Cerberus GmbH in Bad Ragaz in 1941, no one suspected that this would lay the foundation for one of the world's leading companies in fire detection technology. What began as an experimental laboratory, developed within just a few decades into an industrial gem whose inventions have had a lasting impact on fire protection. This Swiss success story continues to be written – since 1998 under the Siemens umbrella.

The beginnings: Walter Jaeger and the ionization principle

The success story really took off in 1940 with an article published by Walter Jaeger in a Swiss trade journal titled: "The Ionization Chamber as a Fire Alarm." The physicist originally wanted to develop ionization chambers capable of detecting poisonous gases. Jaeger had already been researching this topic since the mid-1930s in his parents' house in Maienfeld, setting up a private testing laboratory and developing initial prototypes. Initially, however, these efforts were unsuccessful, as the devices barely reacted to the gases. The story goes that it was cigarette smoke – Jaeger was a heavy smoker – that provided the crucial clue: the ionization principle reacted much more reliably to smoke particles than to toxic gases. His German patent applications of December 2, 1936, "Device for Indicating Changes in a Gas or Gas Mixture," and of June 9, 1937, "Fire and Smoke Detector," laid the technical foundation for modern automatic early fire detection. A chance encounter led to an idea, and that idea became a product that would change an entire industry.

Two physicists and the development of Cerberus

Alongside Walter Jaeger (1912 - 2005), Ernst Meili (1913 - 2006) played a formative role. He, too, was a physicist, a graduate of ETH Zurich, and a fellow student of Jaeger's. The close personal collaboration between the two formed the intellectual and technical basis for their later success.

Initially, the small company, which had established its headquarters in 1941 in the former Hotel Bristol in Bad Ragaz, struggled with financial difficulties: development was expensive, and the market was still unknown. The financial breakthrough came in 1944 with the investment of Elektrowatt AG, which provided the young start-up with sufficient capital and stability. When Walter Jaeger retired from Cerberus AG in 1946, Ernst Meili took over its management and led the company into a new era.

Elektrowatt and its role in the industrial environment

Elektrowatt AG was also a very important partner in the merger of Siemens AG, Zurich, and Albiswerk Zürich AG in 1971. Elektrowatt initially held a 20% stake in the newly founded Siemens-Albis AG, later increasing it to 22%. It wasn't until 1996 – when the company changed its name to Siemens Schweiz AG – that Elektrowatt withdrew from the shareholding. However, the business relationships remained, which proved crucial a short time later when Siemens acquired Elektrowatt AG's industrial divisions (including Cerberus, Landis & Gyr, Landis & Stäfa, etc.).

First collaboration with Siemens

On December 13, 1949, a distribution agreement was signed granting Siemens & Halske AG the exclusive right to sell Cerberus ionization fire detectors in Germany. This initial agreement led to a highly fruitful collaboration: Siemens contributed its international sales network and market strength, while Cerberus provided its innovative early fire detection technology.

The technological breakthrough: From laboratory product to mass production

In 1946, Cerberus launched its first generation of market-ready smoke detectors. However, it wasn't until the F3 series – first presented at the Basel Trade Fair (Muba) in 1951 – that the company achieved its commercial breakthrough. The ionization smoke detectors were robust, reliable, and, for the first time, industrially reproducible. Their success was so great that Cerberus soon had to expand. In 1958, the company relocated its headquarters to Männedorf on Lake Zurich and built a modern factory there. Together with new hires from the surrounding area, the company then employed 200 people.

Swiss precision meets electronics

The 1960s marked the transition from electromechanical to electronic technology. Cerberus invested heavily in research and utilized the emerging transistor technology to replace its existing vacuum tube smoke detectors. In 1967, the company launched its first transistorized smoke detectors, which were smaller, more energy-efficient, and more reliable than their predecessors. However, many customers continued to rely on the highly reliable glow-in-the-dark relay technology for several more years.

As the number of fire alarm systems increased and the technology proved its worth, its acceptance among fire protection authorities and insurance companies grew. Nevertheless, manufacturers and installers had little say in shaping fire protection regulations. To counteract this, Cerberus and Siemens initiated the founding of EURALARM, the European Association of Fire Alarm System Manufacturers, in 1970. Thanks to this initiative, awareness of early warning fire alarm systems was raised among authorities and insurers, and a comprehensive, harmonized European standards system was established.

Global expansion and professionalization

In the 1970s, Cerberus definitively established itself as a global player. Until his retirement as Delegate of the Board of Directors at the end of 1978, Ernst Meili was the linchpin of Cerberus. By the end of the 1970s, the company employed more than 3,000 people worldwide, 1,400 of them in Switzerland. During the 1980s, branches and sales companies were established or expanded in Europe, North America, and Asia. Parallel to this growth, Cerberus underwent a strategic transformation: it evolved from a device manufacturer to a systems provider. The portfolio no longer consisted solely of individual detectors, but rather of complete fire alarm systems, gas detection systems, and access and security technology. This step laid the foundation for modern, networked building security systems.

Digitalization and integration

In the 1990s, Cerberus reached a new technological level. With systems like AlgoRex, the company launched software-based, modular, and network-capable fire alarm systems – precursors to today's digitalized building technology.

In the mid-1990s, Cerberus' owner, the holding company Elektrowatt AG, restructured its industrial holdings. By 1996, it became clear that Cerberus AG, with its approximately 6,800 employees worldwide, would be acquired by a new owner. The merger plans were announced on December 23, 1996. Siemens AG, which aimed to strategically expand its building technology activities, was selected as the buyer. Following extensive integration efforts, the official transfer took place on October 1, 1998: Cerberus, along with other companies from the Elektrowatt portfolio, became an important part of the newly founded Siemens Building Technologies business unit. In 2002 and 2005, the Stäfa and Männedorf locations were integrated into the Zug site. In 2019, the business unit was renamed Siemens Smart Infrastructure (SI) and today employs 79,400 people worldwide.

Since Siemens integrated Cerberus' fire detection activities, this business has developed very successfully. The SI headquarters in Zug houses, among other things, the highly automated fire detector manufacturing facility, key research activities, and a state-of-the-art Fire Lab. A significant milestone was the introduction of the Sinteso fire detection portfolio in 2004, which combined key technological achievements from the Cerberus era with innovative Siemens solutions.

With the announcement of new fire portfolio "Sinteso Nova," which will be presented worldwide for the first time at the end of March 2026, Siemens is now launching a new chapter in fire detection technology.

Cerberus milestones from 1941 to 1992

F1

No complete unit of the first ionization detector, the F1 – introduced in 1941 and sold from 1943 onward – remains due to radiation protection regulations. As with all other ionization detectors, radioactive components were removed, recycled, and disposed of properly. Only the outer casing of the F1 detector survives. Only a few hundred detectors of this first type were manufactured because, as a completely new product, it had some teething problems. However, the F1 was the first device worldwide to enable automatic fire detection in the event of a fire starting.



Left image: The F1 detector with its black cover.

Right image: The core component of the F1, still visible in this photo, was a unit consisting of a cold cathode tube and a reference ionization chamber.

F2 and F3

The F2 detector, launched in 1946 with a significantly revised internal design, was the first practical detector. As a novel product in an underdeveloped market, production numbers were initially small; only about 10,000 F2 detectors were manufactured within five years. The F3, introduced in 1951, was a further development of the F2 detector. Approximately 100,000 F3 detectors were produced in total. This detector was the first to feature an alarm indicator, integrated into the base. This allowed for easy testing of the detector, as it was immediately apparent if a detector reacted to test smoke.



Left image: The cover of the F2 alarm, introduced in 1946, was white.

Center image: The F2 with its protective cover removed.

Right image: F3 alarm (1951) integrated into a base and with a response indicator.

F5

Launched in 1959, the F5 was the first ionization detector to be mass-produced in the millions. This refined version of Cerberus' world-first early warning fire alarm could be manufactured much more easily and in large quantities, and was also robust and reliable. It established the market for automatic early warning fire detection. At the heart of this product development, alongside the ionization measuring chamber, was a highly sensitive cold cathode tube that enabled evaluation and signaling to the control center.



F5 detector insert. This fit into the same base as the F1, F2, and F3 detectors. The cover of this particular unit was painted gold as a special feature. This detector was in use in the Élysée Palace in Paris.

F6 / F600

In 1967, Cerberus developed the F6, the first low-voltage detector using transistor technology with an operating voltage of 20V – a significant advancement over the earlier 200V technology used in vacuum tube detectors. Because they were now operating in the low-voltage category, the stringent installation regulations no longer applied, and the complex manufacturing of cold cathode tubes became obsolete – a technological quantum leap. This revolutionary transistor technology had a major impact on the design of fire detectors, leading to simpler systems with good performance at lower costs. However, transistor technology also made it possible for competitors to build ionization detectors.



The internal structure of a cutaway F600 ionization detector. The chamber construction and circuit board are clearly visible.

R5

In 1969, the R5 was arguably the world's first optical scattered-light fire detector, with sufficiently low power consumption to allow multiple units to be operated in parallel on a long two-wire line. Despite clear market leadership in ionization detectors, Cerberus also pursued other methods for the early detection of fires. Instead of a continuously illuminated lamp,

which other devices on the market at the time used based on the scattered-light principle, the scattered light in the R5 was generated by short, periodic flashes. Today, virtually all optical point detectors use pulsed light sources. Besides its low power consumption, the short-wavelength light from the flash tube offered advantages in detecting even the smallest smoke particles.



Image left: R5 optical smoke detector. The unit has been cut open to illustrate its internal components.

Image right: View into the optical smoke measuring chamber. The strobe light is visible in the background. The cut surfaces of the measuring labyrinth are colored white for illustration.

F716

In 1983, the production of the 10 millionth Cerberus detector was celebrated. The corresponding F716 anniversary detector was painted gold. To date, approximately 100 million detectors have been produced in Siemens' Swiss plants and the former Cerberus manufacturing facilities.

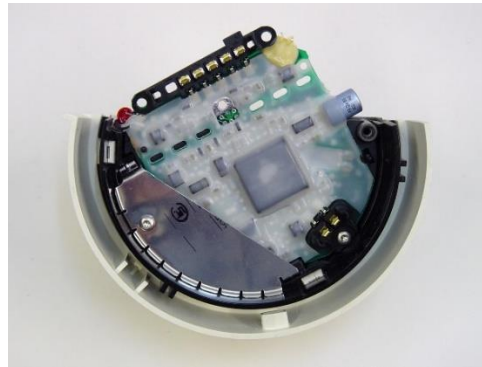


Cerberus' 10 millionth fire alarm, painted gold.

DOT1151

With the DOT1151 detector from 1992, Cerberus, which until then had manufactured half of all professional ionization detectors produced worldwide, bid farewell to this technology. It was a very bold move by Cerberus to switch to a more sustainable technology, as ionization detectors had been the company's primary revenue driver. A microprocessor, integrated into the detector for the first time, allowed for the evaluation of scattered light and temperature using specially developed algorithms. This generation of systems was marketed under the

brand name AlgoRex. The detectors were networked with the control panel via an addressable bus using purely digital communication. This system principle remains in use today.



Left image: Cutaway model of the DOT1151 optical-thermal combination detector from the AlgoRex product range.

Right image: The computer or microprocessor integrated into the detector is visible on the circuit board, which is protected from corrosion by a thermally melted wax layer. The easily understood internal name for the corrosion protection method developed in collaboration with 3M was Raclette.

Origin of the name Cerberus

The name Cerberus originates from Greek mythology. Kerberos (Latin: Cerberus) was the three-headed guard dog that protected the entrance to the underworld. This symbolism of the vigilant protector was deliberately chosen when the company was founded in 1941. The name perfectly embodies the core task of fire alarm technology: continuous, vigilant monitoring to protect life and property.



Cerberus company logo