

75 years of SACE history
1934-2009

Power and productivity
for a better world™





the beginnings in the '50s



GOOD WORK BUILDS THE FUTURE.

The history of SACE is like a tree, deeply rooted in fertile ground that continues to bear excellent fruit. Environment and context are the solid ground of the company's progress, and the professional and personal contributions of all who have worked for SACE over the years are the roots of its success. As a world leader in its sector, these strengths allow SACE to face the present and future with enthusiasm, confidence, optimism, and dedication to continuous improvement.

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"Those who go along round the old walls and the hairpin bends on their north-eastern stretch, turning their eyes towards Valtesse, closed in on one side by the hills of the Old Town and San Vigilio, can make out a very modern industrial building. This is where SACE is moved to in 1947." ("Panorama del lavoro Bergamasco" - Ing. Arnaldo Venegoni).

The world in a room

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This is the time of expansion. SACE opens its horizons to Italy. In 1984, the company has a workforce of 2,500 people in its three factories in Bergamo, Dalmine and Frosinone, with a turnover of 159 billion lire. Four years later, it enters the ABB orbit.

The planet in the palm of a hand

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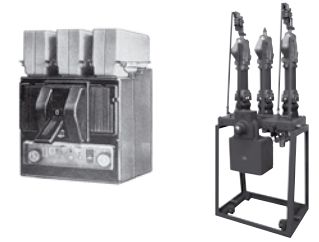


Encountering the great multinational company enhances SACE's business intelligence, product innovation and its Italian footprint. Within a few years, the company reaches the summit of the industrial system, incorporating other businesses and becoming the leader in the Low Voltage Product sector in Italy.

Birth and development

Opening up to the world: from the beginnings to the first successes

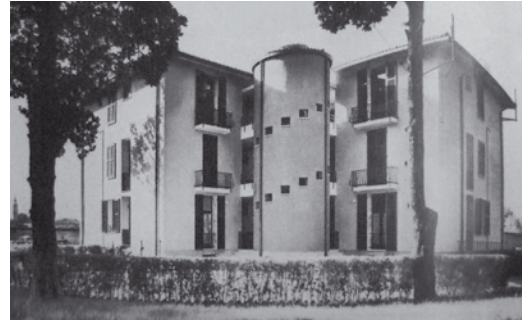
"1934 - 1960"



On July 7, 1934, Società Anonima Costruzioni Elettromeccaniche (SACE) comes into being. Four men from different social backgrounds and experiences sit around a table, mulling over the future of their startup company. A manufacturer, a captain, an engineer and an electrical engineer - these four personalities are about to make history. A "fil rouge", destined never to be broken will lead them from signing before the notary from Milan, Riccardo Todeschini, at the offices in Via dei Mille in Bergamo, and from discussions in the Board of Directors' meetings, to the Shareholders' Meeting, passing through re-capitalizations to the transition between the old and the new SACE. In 1947, Leopoldo Ferrè, Lino Salghetti Drioli, Federico Mazzola and Agostino Eschini mark the start of a new era; an unforgettable moment for the entire Italian electromechanical industry and for the Bergamo area. An era destined to last over time.

Ideas, drive, willpower and resourcefulness are characteristic traits of the company's rapid development, seen in the recapitalizations that follow at a rapid pace. Just two months after setting up, the four pioneers increase the initial company capital of 10,000 lire to 300,000 lire, and the following year it reaches 500,000 lire - exponential growth linked to the increase in production orders.

The drive to improve and the capacity to overcome difficulties characterize the progress of this unique entrepreneurial venture. The first signs are felt between 1935 and 1939, one of the first blooming periods of the company. The problems that caused the demise of the original SACE are solved, once and for all. Despite the difficulties of the historic period between two world wars and a deep economic slump, the company finds the strength to assert itself on the market, becoming a shining example for Italian industry.



At the top, products, the new series of apparatus for 150, 250 and 400 A rated currents and 500, 600 and 800 V rated voltages, with breaking capacities between 10 and 60 kA which SACE exhibits at the Milan Trade Fair (La Rivista di Bergamo, 1959, "Questa è una storia di fiere e mercati", pag. 17). MPR type oil-insulated medium voltage circuit-breaker installed at the Dalmine steelworks (now the Tenaris Group), in operation from 1958 to 1998 (SACE Archives, 1958);

to the side, at the top, the house for SACE employees in Via San Bernardino, 134 (Periodici, La Gazzetta di Bergamo, Atti dell'Ateneo di Scienze Lettere e Arti di Bergamo - volume 53, 1991-92);

to the side, below, the first SACE factories in Bergamo: inauguration of the new premises in Via Baioni, 1946 (from "Valtesse Ieri e Oggi", Gino Pecchi); aerial view, corner of Via Pescaria - Via Baioni (SACE Archives).



Birth and development

Opening up to the world: from the beginnings to the first successes

This entrepreneurial adventure is marked from the start by the desire to expand, the wish to personally write history and the will to change the industrial world. The expansions, complete reorganization, and setting up again on a new foundation are clear examples.

SACE aims at widening its horizons, from those of a provincial business to a company able to assert itself at a national and international level.

On December 9, 1942, plans for building a new factory and the definitive arrangement of departments, offices and services are analyzed and approved.

On December 22, 1943, almost ten years after its birth, shareholders give a new face to the company, changing it from a "joint stock" company to the "Società per Azioni Costruzione Elettromeccaniche" (Electromechanical Construction Limited).

The same sequence of events is repeated 45 years later, when a lightning agreement signed in the summer of 1987 leads to the merger between two European giants, Asea and Brown Boveri - creating ABB.

In 1947, after a long period of focus on domestic products, SACE moves into the foreign market with determination, taking part in a call for tenders in Uruguay.

In 1950, the company expands to Brazil: an arm stretching thousands of kilometers connects the Bergamo company with Sao Paolo, where a branch is opened to serve the South American market.

The transition between the old and new SACE takes place between 1947 and 1954. It is during these seven years, and precisely in 1952, that the technical office designs the first low voltage "moulded-case" circuit-breaker – a real innovation in the electrotechnical field, and the first in a series of products which will make SACE's reputation worldwide. The first of these circuit breakers is the Z2, followed in 1956 by the moulded-case Z150 circuit-breaker - the first prototype of the Otomax circuit-breaker, the RM and AP series of medium voltage minimum oil circuit-breakers and the C series of bulk-oil circuit-breakers. These products are proof that the integration of personnel experience, the ingenuity of new technicians and the avant-garde technology itself are a winning combination.

Between 1965 and 1966, the time is ripe for entering new markets, first in Europe, then in America. Development plans follow one another quickly. Between 1966 and 1988, the electrical apparatus for the Military Navy, the Siberian gas pipelines, the Montalto di Castro nuclear power station and the State Railways' unified electronic centre in Rome are produced in the Dalmine and Frosinone factories.

Birth and development

"1934 - 1960"

People making history

Leopoldo Ferrè, Lino Salghetti Drioli, Federico Mazzola and Agostino Eschini stand out in the SACE annals as its founding fathers. Continuity with the past is maintained by Eschini and Mazzola, the same men who were present during the previous company's arc between 1925 and 1933.



On the left, managing director comm. Agostino Eschini (SACE Archives, 1969); **at the side**, engineer Leopoldo Ferrè (SACE Archives, 1969); **below on the left**, engineer Roberto Moroni (SACE Archives, 1984).

Many other figures intertwine and influence the course of the company's life in major and minor ways, all contributing to significant moments in SACE's history: Antonio Gatti with his 50 shares worth five thousand lire, Renato Buelli with his five percent share, Guido Galli, going past Paolo Agnelli and Lino Salghetti Drioli, managing director Roberto Moroni, helming of the company in the 1980s.



Entry into ABB brings about an evolution in managerial style, that helps SACE adapt to changing times by focusing on widespread and shared responsibilities.

Birth and development

Boards of Directors



On the left, the festivities for forty years of work by Agostino Eschini, SACE director and general manager (La Rivista di Bergamo, 1963, "Cronache Bergamasche"); on the right, a group of Milanese teachers on a visit to SACE (La Rivista di Bergamo, 1961, "Cronache Bergamasche").

The frequency of board meetings, the growth or decline in the number of shareholders, taking part in the Milan Trade Fair, access to credit, building new warehouses and the increase in company capital are all strong indicators of SACE's extraordinary vitality. 1934, 1935, 1938 and 1942, and the decades of the '50s and the '80s are "fiery" years for SACE, marked by continuous meetings among top management that shape and guide it through constant and rapid development.

During these meetings a future strategy is laid out, leading SACE to become a worldwide presence in the space of just a few years. Increases in capital, transfers of legal head offices, calls for tenders in Italy, Europe and the world, and acquisitions: these are just a few of the countless matters discussed. The meetings of 1934 are the first steps of the company, those coming afterwards, during the '50s provide evidence of its full maturity. The history of SACE goes hand-in-hand with the choices made in the "control room", where prestigious and powerful figures challenged each other to make decisions of great responsibility and invested in commitment and passion.



Above and on the right, pages of the period in L'Eco di Bergamo (L'Eco di Bergamo Archives, May 27, 1950 and October 6, 1954); on the right, mayor, Tino Simoncini, with councillors Aldo Farina and Cesare Lazzaroni to the side, while he delivers the certificates of merit and the gold medals to the relatives of employees who died in service (La Rivista di Bergamo, 1963, "Le iniziative della SACE").

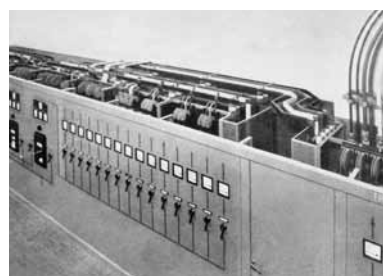




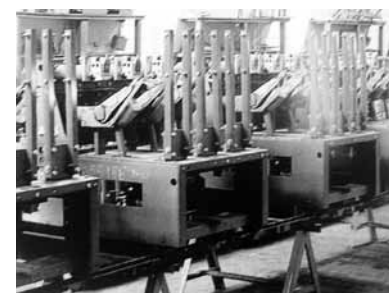
Above, SACE factory transformer substation. Fully metal-clad version with H.V. cast iron dust-proof enclosures with insulation in fuel mixture (original SACE constructions); **to the side**, the winning pictures at the SACE employee painting exhibition (La Rivista di Bergamo, 1965, "Cronache Bergamasche"): **at the top**, "Where I work" by Clario Bertuzzi (1st prize); **in the middle**, "Fruit" by Lorenzo Nembrini (2nd prize); **at the bottom**, "Portrait of Guido Pezzotta" (3rd prize).



The pictures are the expression of the social-recreational and sports activities the Bergamo company has supported since its beginnings. Apart from the painting exhibition, SACE occupies a particularly important position in the panorama, and not just of the Bergamo area, thanks to its sports tournaments, donations to charity associations and organizations and its commitment to social works.



At the top, inside a department (SACE Archives, 1960); **below**, medium voltage apparatus produced in 1940 (Bergamo Chamber of Commerce Archives, "Storia dell'Industria Bergamasca" by Francesco Barbieri and Renato Ravanelli, Publisher: Grafica e Arte, 1996); **below**, processing room (SACE Archives, 1964); **to the side**, RAI (Italian State Radio and Television) headquarters in Corso Sempione in Milan: distribution switchgear with luminous functional diagram (La Gazzetta di Bergamo, 1951).



Birth and development

Rebuilding

Created on July 7, 1934 by a group of shareholders intent on taking over a company that had folded just a few months earlier, SACE is a company of many lives.

In fact, SACE was born on January 1, 1918 on the ashes of Officina Fantini, in its turn set up on December 20, 1906 by 48 shareholders.

From the company that was already a supplier of the "Royal shipyards and of the State Railways", it acquires the factory in Via dei Mille in Bergamo, but undergoes the effects of the crisis at the end of the '20s. Despite attempts to modernize the plants and reduce processing costs, it is put in early liquidation on November 26, 1933.

On the right, at the top, the SACE factory in Bergamo built along the state road to San Pellegrino (Bergamo Chamber of Commerce Archives, "Il Tecnico" of: the Province, Municipality, Hospitals, Municipalized Companies, year IX, 1962); **on the right**, two processing departments (SACE Archives, 1969; Bergamo Chamber of Commerce Library Archives, 1969).



The production activities pass into the hands of the SACE of Mazzola, Eschini, Salghetti Drioli and Ferrè – those of the "fil rouge" which reaches the present day from its establishment in 1934.

On August 30, 1946, the "second" SACE is born. The shareholders decide on a transfer of competences that makes it possible to direct two companies on different paths in time.

In the space of a few years, the dead wood is cut away, leaving a revitalized operation that survives and thrives today.

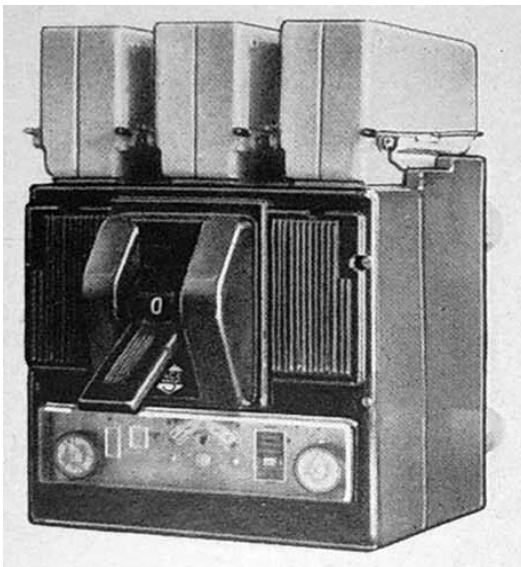
Birth and development

"1934 - 1960"

Products

The 1950s mark the introduction of the first successful SACE products. In 1952, the technical office designs the first low voltage "moulded-case" circuit-breaker, the Z2. An absolute novelty for the Italian market, the breaking part is partially closed-in by a plastic insulating enclosure, consisting of a box and a cover secured together mechanically.

1956 brings a renewed focus on low voltage products, with the design of new apparatus.

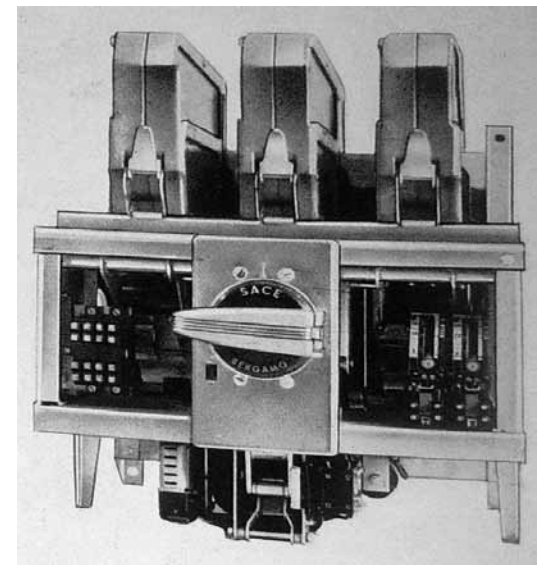


Above, from left to right: the new series of apparatus for rated currents of 150, 250, 400 A, rated voltage of 500, 600, 800 V and with breaking capacities between 10 and 60 kA which SACE presents at the Milan Trade Fair (La Rivista di Bergamo, 1959); RM type oil-insulated medium voltage circuit-breaker; low voltage air circuit-breaker, and first prototype of the Otomax series.

Up to this point, SACE had mainly made instruments under licence of the German company, Voigt und Haeffner. The turnaround comes with the Z150 moulded-case circuit-breaker, tested in the company's laboratory that is still a jewel in the crown of Bergamo industry. The company intensifies studies in the air circuit-breaker field as well, leading to construction of the first Otomax prototype (1956) that replaces the previous series of FRM circuit-breakers.



On the medium voltage side, apart from the isolators and minimum oil circuit-breakers of the RM and AP series, SACE produces (1956) the C series of bulk-oil circuit-breakers for rated voltages between 10 and 30 kV and the B series for rated voltages between 3 and 6 kV. In addition to research and projects, the company invests continuously in specialized production equipment.



Birth and development

Trade fairs and shows

SACE's history takes a crucial turn at the Milan Trade Fair in 1954. At Stand 33040, pavilion 33, of the XXXII edition, the company "arrives" in the electromechanical world, making itself known not only for the excellence of its products, but also for its work ethic, engineering expertise and spirit of enterprise.

At the 1956 edition of the Fair, SACE presents a series of absolutely innovative products: three-pole low voltage circuit-breakers for high direct currents for on-board ship installations and medium voltage minimum oil circuit-breakers. The Bergamo company shows its potential with a demonstration of its striking organizational, administrative and technical capacity.



To the side, exhibition of SACE products; at the top, overall view of the SACE stand at the XXXIV Milan Trade Fair (La Rivista di Bergamo, "Bergamo in Fiera", 1957); above, the press underlines the presence of industries from Bergamo at the Fair (L'Eco di Bergamo Archives, April 15, 1956).

Birth and development

Advertising posters



Since the 1930s, poster art used by SACE to promote itself and its products has been striking and truly innovative.

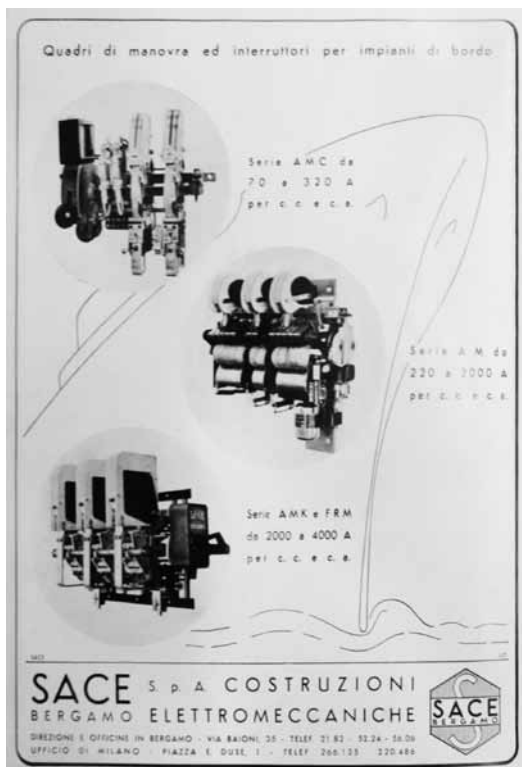
Advertising posters were considered a "gimmick" for those times, using visual impact to show off the many products destined for the electrotechnical sector.

Text appears beside the pictures, alternating with brief descriptions of the product and short notes on activities, company capital and other useful information.

Top left and on the right, SACE advertising posters (Bergamo Chamber of Commerce Archives, Economic and Social history of Bergamo between the nineteenth and twentieth century, "Il decollo industriale" (The Industrial Boom), Carte7, Foundation for the economic and social History of Bergamo – 'Istituto degli Studi and Ricerche', Volume V, 1861-1939).



Below, advertising poster: switchgear and circuit-breakers for on-board plants (Bergamo Chamber of Commerce Archives, Economic and Social history of Bergamo between the Nineteenth and Twentieth century, "Il decollo industriale" (The Industrial Boom), Carte3, Foundation for the economic and social History of Bergamo - 'Istituto degli Studi and Ricerche', Volume V, 1861-1939); **on the right**, cover of the Uniol b catalogue (medium voltage primary distribution switchgear).



Ahead of its time in many aspects of communications, SACE maintains a tradition of elegant, serious style.

From simple posters of the "heroic" period, to true advertising posters and then billposting, stands, exhibitions and various publications, SACE's artwork illustrates the activities of a continually changing company, always striving for excellence and innovation.



Birth and development

Logo

The evolution of a company's logo shows the evolution of its message and effectiveness, its intelligence and vision. SACE's logo is no exception. Its entrepreneurial spirit can be seen in a brief glimpse of its

business "cards", which reflect the taste of the times while continuing to honor the "fil rouge" of its history.

(1934) – The trademark designed in 1934 is used until the end of World War II. A circle with a large, stylized "S" encloses the word SACE. This logo expresses electromechanical precision.



(1950) – In the '50s, the trademark takes on the form of a hexagon and is enriched with the SACE Bergamo logotype. The hexagon with vertical lines combines solidity and elegance with stronger stylization.



(1960) – In the '70s, the SACE trademark has new changes: a capital "S" on a black background and the word SACE inside with the name of the city of Bergamo in greater evidence. The vertical lines become a filled-in background, giving an overall note of further strength.



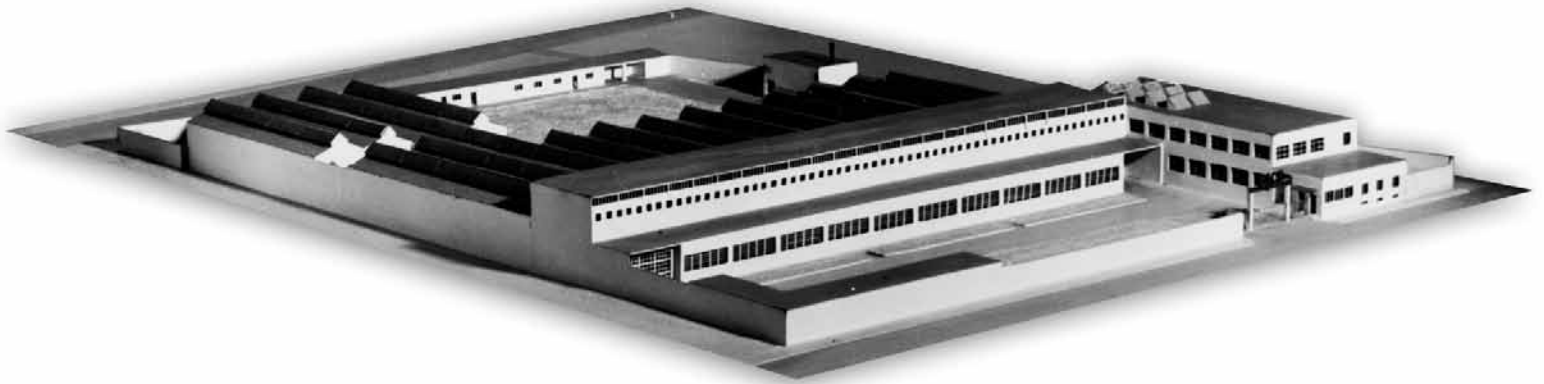
The world in a room

The American season

"1960 - 1989"



Above, on the left, the Otomax type of low voltage air circuit-breaker; **on the right**, the Diarc magnetic deionization series of medium voltage circuit-breakers ; **below**, model of the new SACE factory in Bergamo, (SACE Archives, 1959).



SACE is now well known and respected throughout the world. At the beginning of the '70s, the Americana Federal Pacific Electric Newark (FPE) enters its company capital, taking control between 1965 and 1966.

Commercial agreements are made during this period ensuring that FPE will use SACE medium voltage magnetic circuit-breakers in its switchgear destined for the United States.

Other licences are given in the following years both inside and outside Europe, showing further expansion of the Bergamo company. In 1961, construction licences for the Isol and Otomax series of circuit-breakers are issued to Hazemeyer in Hangelo, Holland and to Schreder in Liège, Belgium.

SACE products also reach Argentina, Brazil and South Africa, passing through Yugoslavia.

In 1962, the company capital amounts to 400 million lire (with the reserve).

In 1963, this figure reaches 600 million. Financial disruptions at the end of the '70s involving United Smelting and Mines, a company under FPE, bring about the sale of SACE to BBC (Aktiengesellschaft Brown Boveri & Cie.) in Baden, Switzerland.

The world in a room

Two new factories in Italy

1967 is another history-making year.

A development plan for the creation of new factories in Italy is announced: in Frosinone in 1969 (SACE Sud) and in Dalmine (Bergamo), which will finally be started up in 1979.

Success has now been reached: In 1969, ten percent of passenger and merchant ships in the world have SACE apparatus installed on board, starting with the Italian Michelangelo and Raffaello flagships.

At the end of the '70s, the first two departments of the production site in Dalmine are inaugurated. The crucial heart of mechanical processing and assembly of switchgear and substation production in Dalmine soon becomes a jewel in the crown: a production unit universally recognized for the excellence of its processing, resulting from the meticulous preparation of its workforce.



Above, the SACE SUD factory (SACE Archives, 1972); **below**, aerial view of the Dalmine factory (SACE Archives, 1977).

The world in a room

"1960 - 1989"

Dalmine today: a centre of excellence

Today, the "medium voltage switchgear" factory in Dalmine is part of the ABB Italy's Power Products Division. It is and will remain a centre of excellence of the Group: the 600 or so people who work there are involved in the research, development, production and marketing sectors and in the laboratories, as well as in the sales structure for the domestic and foreign markets.

Confirming the importance ABB puts on this centre are the investments made in the "power tests" laboratories; a sort of mini-power station enclosed in a cement framework. The laboratories, which work in constant contact with the Research and Development centre, are an increasingly important tool for developing new apparatus and checking correspondence of products with design specifications.



The capacity and competence of the men and women who work in the factory is an asset for the whole Group, and continually grows and develops. Turnover never jeopardizes the quality of products: newcomers fit in very naturally and collaborate and contribute toward excellent results, right from the start.

Above and on the left, images of the SACE factory in Dalmine (SACE Archives, 1979).



The world in a room

New development plan

The 1970s and '80s are a two-decade period of strong expansion. Under the guidance of managing director, Roberto Moroni, SACE undergoes tremendous development marked by prestigious orders. Notable contracts include those for the supply of circuit-breakers for the southern stretch of gas pipeline connecting Siberia to western Europe, the nuclear power station in Montalto di Castro and the State Railways' unified electronic centre in Rome.



At the top, north side of the factory in Bergamo, Via Pescaria (SACE Archives, 1962); **above**, one of the processing departments in the same building complex (SACE Archives, 1964); **on the left**, inside the departments with personnel at work (SACE Archives, 1962).



In 1971, company capital reaches one billion lire.

SACE is now controlled by the BBC group, which also owns other low voltage and equivalent device manufacturers.

In 1988, SACE acquires Nuova Esi, a company specializing in low and medium voltage switchgear and isolators, operating factories in San Martino in Strada (Lodi) and Loreto Aprutino (Pescara). A new strategic development plan conceived at the time of this acquisition takes shape. New markets open up for SACE. Exports take off and become central in the turnover; so much so that SACE receives the 1991 Marco Polo award for outstanding sales performance in foreign markets.



At the top on the left, the facade of the offices at the SACE factory in Bergamo, towards Via Baioni (SACE Archives, 1964); **at the top on the right**, inside the departments with personnel at work (SACE Archives, 1962); **above**, a cutaway view of the "Power Tests" room in Bergamo (SACE Archives, 1970).

The world in a room

New development plan



At the top, processing departments in Bergamo (SACE Archives, 1970); above on the left, personnel busy with an assembly stage in the same factory (SACE Archives, 1964); above on the right, automated warehouse (SACE Archives, 1970).

"1960 - 1989"



Above on the left, an interior shot of the SACE Sud factory (SACE Archives, 1974); **above on the right**, SACE Sud, inside a department (SACE Archives, 1970); **at the bottom on the left**, the SACE Bergamo assembly department (SACE Archives, 1969); **at the bottom on the right**, computer department of the management system (SACE Archives, 1969).

The world in a room

New development plan



At the top, material tests and insulation tests carried out by qualified personnel (SACE Archives, 1976); **above on the left**, SACE Bergamo, partial view of the "Test Room", one of the points of excellence which have made the company great in Italy and in the world (SACE Archives, 1970); **on the right**, some of the products engineered and created by SACE (SACE Archives, 1979).

The world in a room

Products

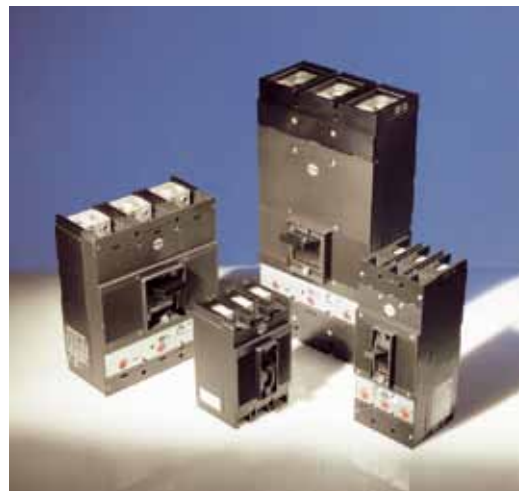
"1960 - 1989"

In 1970, while the integration of SACE into the BBC group is being perfected, the company wins a contract for a ten-year supply of magnetic deionization circuit-breakers for the United States.

This agreement alone accounts for 50 percent of the annual production of circuit-breakers.

During the '70s, new products are made both for low and medium voltage and expansion continues.

In 1979, production of the Novomax G2 series of so-called "air" low voltage circuit-breakers and the Isol and Otomax series of circuit-breakers begins, considered everywhere to be the low voltage circuit-breakers par excellence.



SACE products are a synonym of total quality and reliability. **On the left**, example of a Diarc magnetic deionization circuit-breaker (SACE Archives, 1968); **in the middle**, moulded-case circuit-breakers (SACE Archives, 1976); **above**, Otomax series of air circuit-breaker (SACE Archives, 1977).

The world in a room

Operating units

By 1984, SACE employs 2,500 workers in its Italian at factories in Bergamo, Dalmine and Frosinone, with a turnover of 159 billion lire. A far cry from the 250 workers of the "first" SACE in 1934 or of the 630 employed in 1956.

In 1986, the company capital, with the reserve, reaches 5 billion lire.



The world in a room

"1960 - 1989"

ABB is born

In 1988, SACE becomes part of ABB (Asea Brown Boveri). An agreement, reached in the summer of 1987, leads to the merger of two European giants in the sector: the Swedish Asea group and the Swiss Brown Boveri group. The new multinational consists of 200,000 employees and 800 companies worldwide.

ABB sets the goal of becoming the largest electromechanical group in the world. Along with SACE, several other Italian businesses are part of the new structure: ABB Tecnomasio, ABB Elettrocondutture, ABB Industria, ABB Trasformatori and ABB Asea, specialized in robotics.



On the page at the side, on the left, aerial view of the SACE factory: expansion of activities modifies the company and the territory which takes on a typical look and recognizable features (SACE Archives); **at the bottom on the left and on the right**, the factories in Frosinone and Dalmine, (SACE Archives).

On this page, on the left, view of a Russian delegation at the Bergamo factory. The meeting bears witness to the strong expansion of the company worldwide. Apart from Russia, SACE "conquers" America and Brazil (SACE Archives, 1970); **on the right**, a special award: the commemorative medal by the sculptor Elia Aiolfi, given to authorities and workers on the occasion of SACE's fiftieth anniversary. The outline of Bergamo – Città Alta (Old Town) is sculpted on the rear of the work (SACE Archives, 1984).



The world in a room

Logo

From 1960 to 1988, the SACE logo undergoes changes that reflect company trends. Until the end of the '70s, the trademark remains almost unchanged (a hexagon on a black background, where the stylized letter "S" still stands out with the word SACE inserted and with indication of Bergamo). Starting from 1969, the Sace Sud Frosinone trademark goes alongside that of the SACE Bergamo trademark. Both are "embraced and interlaced" in a large, stylized, geometrical black "S" that forms two large squares, one above the other. At the top, we still find the characteristic SACE Bergamo hexagon. At the bottom, there is a new one for SACE Sud.



New graphics are developed in the '70s. The decorative aspects disappear and the logo becomes more linear and decisive. The company identifies itself exclusively by its acronym, SACE, which stands out in block capitals.

SACE

This logo will be kept until 1988, the date of entry into ABB. The graphics undergo a further transformation: the ABB trademark is associated with the company name, according to the style dictated by the graphic standards of the Group, applied throughout the world, and so becomes a name which encloses and partly symbolizes the whole evolution of the Bergamo company.

ABB SACE

In the latest logo, dating back to 2000, the name SACE is replaced by the ABB acronym; three letters, in block capitals, filled in with red, with a well-defined outline and a very light stripe to form a white cross. The cross reaches the apexes inside the letters and hints at the Divisions. The overall effect is one of solidity, strength and precision combined with elegance, simplicity and refinement. Since 2000, the low voltage ABB SACE Division and the medium voltage Power Products Division represent two areas of excellence in the ABB Group.

ABB
ABB SACE

The planet in the palm of a hand

Acquisitions and reorganizations

"1990 - 2009"



Acquisitions and reorganizations are a standard feature in SACE's history, a leitmotiv that is interwoven with the essential features of the company. 1990 begins with the acquisition of ABB Installazioni (then made over in 1995), of the Florentine Tmt Cabine and of ABB Turati, which, in its turn, passes to the division guided by ABB SACE in 1995 together with ABB Elettrocondutture and the Vicenza ABB Lucasystem. In 1994, Cimel S.p.A. in Cesano Maderno is acquired, and then ceded the following year.

Also in 1990, construction of a new automatic warehouse begins in Dalmine. This 10,000 square-meter distribution center is inaugurated in 1992. In the same year, the expansion of the "Short-circuit Tests" laboratory in Via Baioni in Bergamo is completed. In 1993, the SACE Isomax S low voltage circuit-breakers, engineered in Bergamo and produced in Frosinone, are launched internationally.



Above, the CEDI automated warehouse (SACE Archives, 1992).

The planet in the palm of a hand

Bergamo-Dalmine: ABB centre for low and medium voltage



Transfer of medium voltage production from Bergamo to Dalmine is completed in the summer of 1996. Due to market and organization issues, ABB SACE divides the activities between low and medium voltage, keeping the former in Bergamo and Frosinone and the latter in the Dalmine and Loreto Aprutino factories. At the beginning of 1999, the split leads to a clear distinction between ABB SACE Low Voltage (Bergamo) and ABB SACE Tms (Dalmine).

ABB SACE Low Voltage, along with Turati, Lucasystem and Elettroconduttore, merge the following year into a single company, ABB SACE S.p.A., uniting the systems and low voltage product sectors.

The years between 2000 and 2009 are particularly full of important events. Dividing the low and medium voltage operations leads to a concentrated search for increasingly modern and cutting edge products and systems, bringing both businesses international recognition as technological leaders.

The Bergamo unit is part of the Low Voltage Products Division of ABB S.p.A and is a unit of primary importance in the production and sales of apparatus and systems for low voltage power distribution. Three hundred people are employed in the research and development, marketing and laboratory areas, and in the sales structure for foreign markets.



On this page: : control room and switchboards.

Before its acquisition by the multinational ABB, SACE had already been through strong expansion outside Italy. Nowadays, it stands at a global level as the undisputed leader in the low and medium voltage circuit-breaker and switchgear production sector (SACE Archives, 2006).

Meanwhile, the Frosinone factory continues as an ABB group centre of excellence for production of moulded-case and air circuit-breakers. ABB SACE Division keeps a leadership position in the domestic market while continuing to grow in the foreign market, with sales activities in more than 90 countries throughout the world.

Thanks to its extensive range of products and quality of service and support, ABB SACE can consider itself an ideal partner for distributors of electrical material, installers/switchboard engineers, industrial machinery designers and manufacturers, who operate in the tertiary and residential sectors.

The products, developed in compliance with the most stringent international standards and with high environmental compatibility characteristics, are made in highly automated plants with flexible assembly lines and computer-operated warehouses. This allows single components or complete systems to be designed according to advanced requirements while shortening time to market. Additionally, in the ambit of the Dalmine production site, an ABB SACE Division Service "factory" is put in place, ensuring the supply of "classic" and "limited" products to guarantee technical assistance and interventions in support of the customers' activities with analyses and checks on the state of the installed apparatus, to provide maintenance interventions at the customer's premises, as well as repairs and corrective maintenance with retrofitting activities. There is also an on-call service available 24/365 for urgent assistance.



On this page: examples of industrial applications.

The planet in the palm of a hand

Bergamo-Dalmine: ABB centre for low and medium voltage

Dalmine is now a confirmed centre of excellence for design and production of vacuum circuit-breakers and primary air-insulated distribution switchgear. More recently, it has also become the ABB Global Lead Center for the new UniSec series of secondary distribution switchgear. In order to compete, it is absolutely indispensable to continue rationalizing the production set-up of the primary distribution switchgear, while keeping Dalmine's very important role of defending the Mediterranean markets as well as design and production of some types of switchgear for specific markets.

The Service takes on strategic importance to business growth and development of new competences, such as: upgrading plants, diagnostics, consulting, extensions and overhauls, as well as its installation and maintenance activities, available worldwide, 24 hours a day, seven days a week.

A series of infrastructure expansions continue as well, helping development of the new structure. Most of the production lines, for both switchgear and apparatus are being re-designed and built. A wing of the offices is being enlarged and will become the head office of ABB Italy's centralized services for Information Systems and Human Resources.

Finally, a new department is being built where all low voltage and medium voltage Service activities will converge.

All of these activities make Dalmine one of the major medium voltage industrial centres in the ABB Italian and world panoramas.



On this page: examples of applications.

The planet in the palm of a hand

The birth of ABB S.p.A.

"1990 - 2009"

In 2008, the Italian companies in the Group are brought together under a single company name, ABB S.p.A., made up of five Divisions and employing 5,500 collaborators of whom 1,100 work in the Bergamo area.

The factories of Dalmine (about 650 employees working in the ABB centre of excellence for design and production of medium voltage systems, circuit-breakers and switchgear) and Loreto Apruntino (about 50 employees) come under the Power Products Division.

For ABB SACE Division, focused on low voltage systems and products, the Bergamo factory (which employs about 300 people, mainly in research/development and marketing) is still the Group's worldwide centre of excellence for low voltage moulded-case and air circuit-breakers. Frosinone is home to the factory for production of low voltage circuit-breakers with a workforce of about 750 people.

There is also the "Test Room", an advanced laboratory in both technology and know-how, in Via Baioni, in the area of the main Orobic city. Short-circuit tests, experimental material tests and electronic tests are carried out in the room, thanks to three large generators and transformers. Because of this technological centre, closely connected to the research and development department, SACE is assured of a continuing bond with the city where it began.



ABB electrical designs, plants and international premises (SACE Archives, 2006).

Thoroughness of the method, creative intelligence, advanced technology and high design level are criteria and methods which the company puts into effect today as it did in back at the beginning.

These are factors that allow product quality to be maintained and to compete over time thanks to continual innovation.

The planet in the palm of a hand

Certifications and attestations

Among the many certifications and attestations obtained by the ABB laboratories in Bergamo and Dalmine, ACCREDIA, ACAE, ETL SEM KO and SIT are the best known.

ACCREDIA

ACCREDIA is a non-profit association for test laboratory accreditation. It was formed to guarantee reliability and reproducibility of the checks on correspondence of products with national and international standards. Through annual inspections, ACCREDIA accredits a laboratory for each individual test, after having ascertained the existence of precise technical and organizational requirements, according to what is established in the prescriptions and standards (UNI CEI EN ISO/IEC 17025). ACCREDIA is a member of EA (European cooperation for Accreditation) and of ILAC (International Laboratory Accreditation Cooperation).

ACAE

The Association for Certification of Electrical Apparatus (ACAE) is an independent product certification body. It is accredited by Sincert for certification of low voltage electrical apparatus in accordance with the "general criteria for product certification bodies" (EN 45011 standard) and is a founding member of the Low Voltage Agreement Group (LOVAG) for mutual recognition of certifications within the European Union.

ETL SEMKO

A worldwide organization specialized in product tests, inspections and certifications, ETL SEMKO verifies and guarantees complete compliance of the products with the electromagnetic compatibility standards and performance tests. Underwriters Laboratories Inc. (UL) is an independent body, a leader since 1894 in safety tests and product certification. It is the best-known mark in the United States.

SIT

In 1979, the primary metrology Institutes (IMGC/CNR, IEN and INMRI/ENEA) set up SIT by means of their accreditation as a calibration centre of numerous secondary metrology laboratories. Availing itself of experts from the primary national and international institutes in the capacity of technical inspectors, to accredit a metrology laboratory as a calibration centre, SIT carries out initial observation, renewal, extension or modification procedures of the accreditation itself.



The planet in the palm of a hand

"1990 - 2009"

Power and experimental tests

The "Power Tests" laboratory is the jewel in the crown of the factory in Via Pescaria in Bergamo. It has the task of checking the performance of low and medium voltage apparatus in the presence of high current and voltage values. It is fitted with three alternators, on which it can produce powers up to 2,800 MVA.

The measurement systems use optic fibers for signal transmission and sophisticated digital recorders, with relative computers, to provide the test results. The laboratory is also equipped with various types of loads, such as transformers, asynchronous motors, capacitors, resistances and reactances.

The "Experimental Tests" laboratory is equipped to check mechanical and electrical and overload life. It also has feeders for checking over-temperatures and the characteristics of the thermomagnetic and electronic trip units with high currents.

The laboratory is fitted with thermostatted and climatic chambers for accelerated life tests with synergic stresses of environmental, mechanical and electrical origin, and with feeders to check dielectric properties.



To the side, images of interiors: apparatus and special instruments in the "Power Tests" room, Via Pescaria, Bergamo; "Experimental Tests" in Bergamo.

SACE has always paid particular attention to research and innovation (SACE Archives, 2006).



The planet in the palm of a hand

Material tests

The **"Material Tests"** laboratories satisfy the need for correct information and measurements coming from technological innovations in metal and plastic materials used in products.

The wide range of potential tests and measurements includes different types of determinations, from properties to traction to compression and bending of materials; from Charpy resilience to the Comparative Tracking Index (CTI); from fire risk tests to those of electrical resistances; from the temperature of vitreous transition of heat insulating materials to their melting and crystallization temperatures. The laboratory also has a metallographic microscope, FT-IR spectrometer, chambers for saline corrosion tests and all the means necessary for analyses on the small contact plates in the presence of electric arcs.



At the top, working moments and instruments in the "Material tests" laboratories, Via Pescaria, Bergamo. Technological research applied to development of new elements in order to make increasingly safe products, with low energy consumption and reduced environmental impact is a constant of ABB's action worldwide and particularly in Bergamo (SACE Archives, 2006).

Tests on electronic devices

Another qualifying laboratory is the one dedicated to **"Tests on electronic devices"**, specialized in electronic tests on-board the circuit-breakers and of all the accessories making up the "circuit-breaker system" (dialogue, signalling and control devices).

The laboratory is equipped with appropriate instruments for simulating the most varied plant and installation conditions: distorted currents and voltages, operating frequencies from 0 to 1000 Hz, particular combinations of temperature and humidity, conducted and coupled transients and voltage gaps.

Among the various laboratory activities are prototype tests of new apparatus or of new metering systems, carried out in close cooperation with the design offices.



Above, technicians at work busy on machinery and instruments in the room for "Tests on electronic devices" in Via Pescaria, Bergamo.

The planet in the palm of a hand

"1990 - 2009"

Tests for medium voltage products

In Dalmine, the laboratory system is organized into internal units that are responsible for the type and routine tests.

The system actively collaborates with external internationally recognized bodies to carry out special or specific tests at the customer's request.

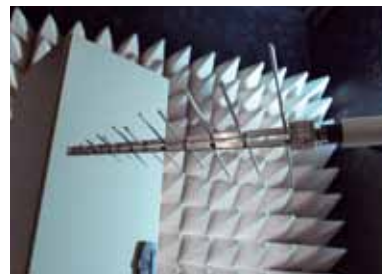
The main units are:

- The **"Prototype"** laboratory, working in close contact with the research and development offices, makes and assembles the medium voltage apparatus prototypes in accordance with design specifications.
- The **"Experimental Tests"** laboratory where the prototypes are tested and approved. Electrical, mechanical and functional research tests on prototypes, heating, insulation, functionality and mechanical life tests, functionality tests in climatic chambers, functionality tests on protection and electronic relay systems, and accelerated aging tests on the finished product are carried out.
- The **"Electromagnetic compatibility Test"** laboratory satisfies requests for particularly high test levels and can carry out more than twenty types of EMC tests according to the most recent standards.. Emission measurements with a frequency spectrum up to 1 GHz, simulations of network interferences, conducted susceptibility tests up to 250 MHz, irradiated susceptibility of magnetic and electric fields up to 3 GHz, as well as different types of calibrations are carried out here.



To the side, the Electromagnetic Compatibility test laboratory in Dalmine during a test for checking functionality (SACE Archives, 2008).

The company aim is to make increasingly powerful plants in respect of the environment and of available resources and at a lower cost.



On the left, insulation tests on a circuit-breaker prototype; **on the right**, tests in a climatic chamber on switchgear for nuclear power stations.

The planet in the palm of a hand

Products



On the left: range of moulded-case and air circuit-breakers of the '80s (SACE Archives, 1988);
on the right, panorama of products in 2000 (SACE Archives, 2008).

"1990 - 2009"



At the top, from left to right: VSC vacuum contactor for application in circuits which require frequent operations, VD4R vacuum circuit-breaker for secondary distribution substations, eVD4 vacuum circuit-breaker with sensors, protection relays and on-board communication system for substation plants.
At the bottom, from left to right: air-insulated UniMix switchgear for secondary distribution substations, air-insulated UniGear ZS1 switchgear for primary substations, substations and specific applications such as naval, nuclear plants etc., UniSec secondary distribution switchgear, the latest in the family of medium voltage switchgear.

The planet in the palm of a hand

Factories



On the left, above, Bergamo, yesterday;
on the left, below, Bergamo, today;
above, Frosinone, yesterday.

"1990 - 2009"



On the left, above, Frosinone, today;
on the left, below, Dalmine, yesterday;
below, Dalmine, today.











attention to detail
and being ahead

great collaboration
for continuous
improvement

research and
production with
cutting edge
technologies



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