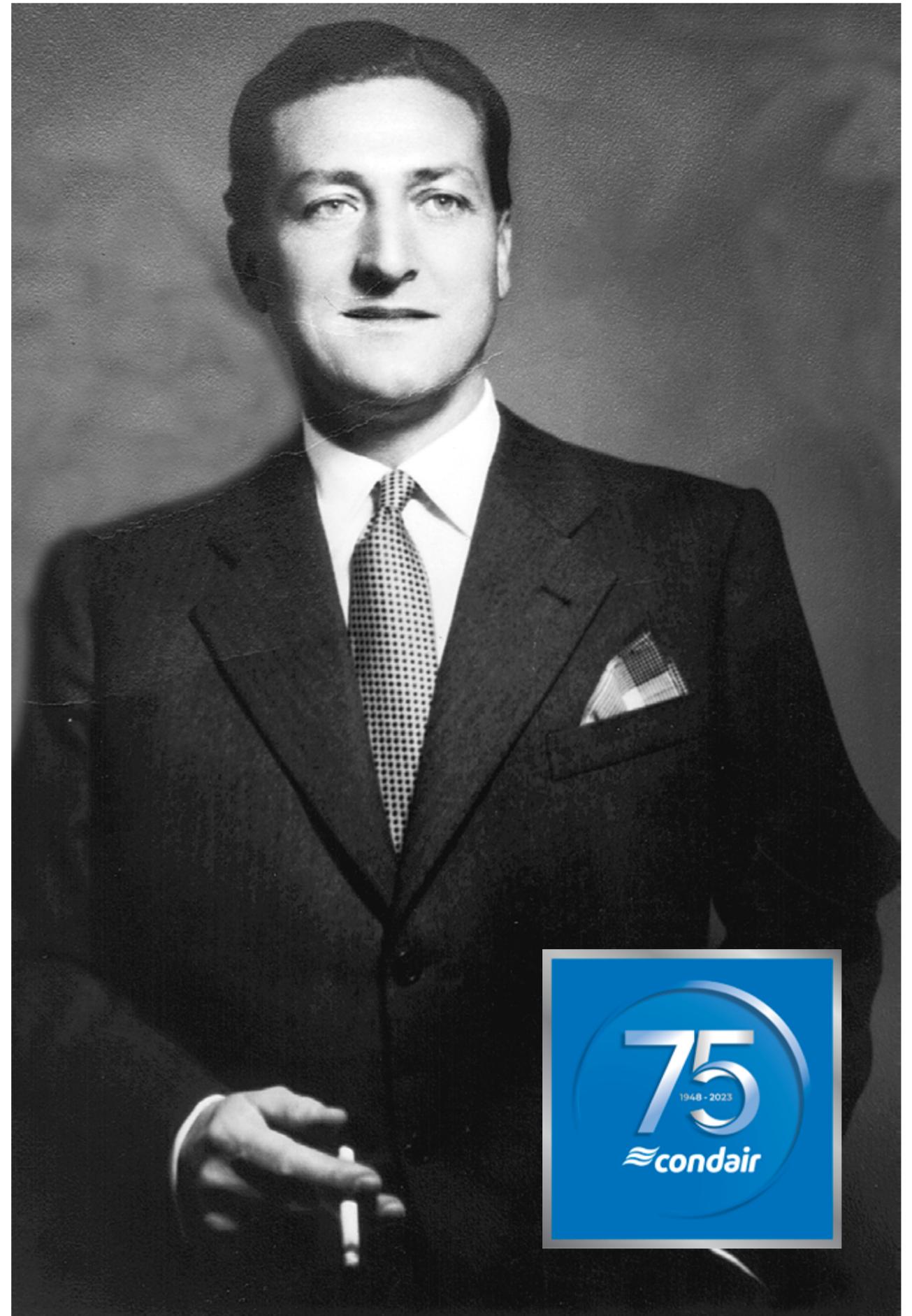


# Cheese Power!



## Condair Foundation Report

When Defensor AG was founded in Zurich on June 21, 1948, it had nothing more than a patent and a bold vision: A novel aerosol atomizer that produced chemically enriched 'mist' promised eradication of communicable infectious diseases. After five years the company was on its last breath. The rescue came unexpectedly.



**Dr. Bernhard Joos: 'Mr. Disinfect'**

Dr. Bernhard Joos, then 38 years old, was a long way distant from that misery and despair. Comfortably situated in a posh residence embedded in a park-like landscape on the Hochstrasse in Schaffhausen, Joos was busy with research in the laboratory of his father, the long-term public health officer for the Schaffhausen district. A PhD chemist, Joos began in 1933 to work on developing medications and within three years he was so successful that he was able to establish his own pharmaceutical company, Cilag AG. PYRIDACIL®, a preparation for the disinfection of the kidneys and urinary tract, quickly became the company's first big seller.

Bernhard Joos dedicated his life to disinfection. Back then, the world was full of many infectious diseases and epidemics caused by bacteria and viruses. Antibiotics were not yet available on the market; nor were there mass vaccinations. For this reason, disinfection was extremely important as a protective hygienic measure, in order to ward off or kill bacteria and virus, whether for livestock endangered by the foot-and-mouth disease, or for humans, like the thousands of Swiss soldiers in active service during the Second World War who fell ill with tuberculosis.

**The first patent**

To make disinfection comprehensively effective with full surface coverage, Joos developed, during the Second World War, a com-

pletely new means of applying chemical media: by aerosols. On September 12, 1946, he submitted to the Swiss patent office his application for patent as 'method and apparatus for the spray distribution of liquids' for the intended purpose of applying 'liquid disinfection media in a fine mist.' As application, Joos specified the large-scale coverage for the 'disinfection of spaces,' from stable, stalls, barns to surgery rooms, as well as pest management and air humidification for industrial use,



such as in textile and tobacco manufacturing plants. In addition, with the use of an adaptive part, an inhalation device can connect to a sprayer in order to deliver medication in aerosol form to treat afflictions, for instance, as local therapy of obstructive lung diseases.

**Establishment of Defensor AG**

Joos's patent constituted the technological basis for the establishment on June 21, 1948 of the company named 'Defensor AG,' a designation derived from the purpose of the aerosol atomizer,

namely, the defense against viruses and bacteria. A total of 350,000 Swiss francs, a decent initial capital stock investment, got things rolling. The primary stockholder and man with the idea was Bernhard Joos, who purchased the first 130 shares at a price of 1000 francs per share, thus obtaining a 37-percent stake in the company. To provide a perspective of the financial magnitude of this, workers in machine manufacturing at the time were earning about 750 francs<sup>1)</sup> monthly.

Among the other stockholders, there were important figures like Hans Sturzenegger, a private banker from Basel, the Swiss diplomat Maximilian Jäger, who during the Second World War served as a Swiss envoy in Budapest, where he helped save the lives of tens of thousands of Hungarian Jews with writs of protection.

After the war, great optimism prevailed in Switzerland, which had been spared from the War, especially in the most important sector of the economy, the industry. By this time, Bernhard Joos' Cilag AG had six pharmaceutical products on the market and in 1959, the American company Johnson & Johnson bought Cilag AG.

**At a loss**

Defensor AG, however, had little financial success at the beginning. Year after year, it lost tens of thousands of francs. But the stockholders' high investment kept the company afloat. The accounting

and auditing firm offers their analysis of the Defensor's problems in their annual financial statement from 1950, 'The company still needs to do much groundbreaking in Switzerland and in foreign markets. In particular, the ongoing efforts on the engineering of devices and chemicals has hampered sales activities.' Interpretation: Defensor AG still doesn't have a real product on the market and they don't have agile, effective marketing and sales operations. Perhaps the company's focus was misdirected or even absent.

The potential applications of an aerosol atomizer are many and diverse, but which market should they concentrate on? Medicine? Agriculture? The textile industry? In medicine, Defensor AG failed because the administration and metering of dosage by means of aerosol is much more complicated compared to pills or injection<sup>2)</sup>. At the same time, progress in medicine, such as the development of antibiotics, was removing the public's fear of disease. The first vaccinations were proving their effectiveness, too. Animal diseases were diminishing or the implementation of immediate slaughter of infected livestock made the need for disinfection a merely minor preventative measure.

In addition, there remained unresolved technical problems. The first Defensor 3001 prototype, for instance, worked with water for only an hour before ceasing to function. In 1951, telephone

switchboard facilities tried using atomizers for humidification but lime dust disrupted the function of the relay contacts, the softened water produced corrosion and copper components oxidized<sup>3)</sup>.

After five years, Defensor AG was in the red for 331,403 francs with 500,000 francs of additional capital stock, a very substantial debt amount at the time. This situation made a complete reorganization unavoidable, including loans and reissued stocks along with cuts to personnel.

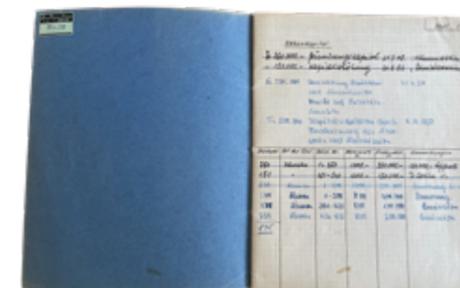
**Cheesemakers to the rescue**

Finally, the curse of application diversity proved to be a blessing for aerosol atomizers. The long-standing Defensor AG director, Hans-Heiri Hürlimann, said 'In all honesty, I can tell you the repurposing of our products has made us the number one manufacturer in the air humidification industry.' But how?

Resourceful Swiss cheesemakers discovered the merits of the Defensor 3001, which was in use at various farms for the disinfection of livestock barns or prevention of spoilage in fruit storage. They thought greater humidity in the cellars would prevent the wheels of cheese from drying out. And the more cheese weighs, the more it's worth. All of a sudden, there were so many orders for the Defensor that it was possible to begin large-scale manufacture of industrial atomizers: the Defensor 3001. Its output was greater, increased

from 0.5 liter to 3 liters an hour. And the new unit was so rugged that it was able to withstand the aggressive ammonia fumes present in cheese cellars, making it the first commercial success for Defensor AG.

In 1955, the Defensor Junior, the first atomizer for home use launched on the market. The company added new personnel, growing from originally three machinists, so that by 1956 the company moved to a new facility with offices and a plant on the Eichstrasse in Zurich. For the next successful product, the 1957-patented Defensor 505, the Defensor company built in 1960 an additional manufacturing facility in Waldstatt AR. Today, the slightly adapted Defensor 505, is still available in Condair's product range. What a story!



1) Cf. historical Swiss statistics, <https://hssso.ch/de/2012/g/12>  
2) <https://www.item.fraunhofer.de/de/angebot/medizintechnik/pulverinhalatoren.html>  
3) Manuscript 'Defensor-Firmengeschichte' September 1987, Firmenarchiv Condair.