

The history of an idea

*“Doing something that
nobody else has done before
is actually quite hard.”*

Ruben Rausing





From

idea to reality

Ruben Rausing was born in Raus, near Helsingborg in 1895. After his high school examination at Helsingborg's grammar school he studied at the Stockholm School of Economics and then continued at Columbia University in New York, where he took a financial "Master of Science" exam in 1920. He also used the stay in the USA to study American large-scale industry but he also gained an impression of the rapid urbanisation and its consequences for grocery distribution.

Back in Sweden Ruben Rausing started the packaging company Åkerlund & Rausing with Erik Åkerlund. The capital injection came mainly from Erik Åkerlund, while Ruben Rausing took responsibility for the ideas and the management of the

New companies often start up by marketing a technical invention. Tetra Pak founder Ruben Rausing started instead by studying the market to be able to map out what his future company should be able to do. Following which he researched the technical requirements.



company. The new company had to struggle for its survival. After several years Erik Åkerlund decided to leave the company and was bought out. In spring 1933 Ruben Rausing was sole owner of the company. Ruben Rausing started to build up a packaging industry, which considerably contributed to the restructuring of Swedish retailing, a modernisation, which led to self-service, convenience shopping and supermarkets. A primary objective was to replace bulk selling of unpacked goods with consumer adapted packaging for flour, sugar and salt. Another product, which was both perishable and demanded a lot of management, was milk. How could bulk milk and the unpractical glass bottle be replaced?

Ruben Rausing had a strong ambition to create

something new. His fundamental idea was to rationalise the distribution of groceries by means of practical consumer packaging and proper packaging for transportation. During the 1930s Åkerlund & Rausing grew so much that the operation moved into new premises to permit expansion. Ruben Rausing had a small group of capable staff at his side – most of all Holger Crafoord, who went on to play a leading role in the development of both Åkerlund & Rausing and Tetra Pak.

Hans Rausing was appointed Managing Director of Tetra Pak in 1954, and together with his brother Gad led the company for more than three decades during the company's important build-up period.



The idea takes shape

Attention continued to revolve around milk packaging, and several of the company's staff were engaged with the problem for some time. In February 1944 Ruben Rausing wanted a concrete proposal. Erik Wallenberg started to investigate the possibilities of creating a packaging of cylindrical form. Out of those attempts grew a geometrical figure – a tetrahedron.

Erik Wallenberg arrived at the brilliant idea of applying the tetrahedral form to packaging, and Ruben Rausing had the insight, courage and will to back the idea. Answers had to be found to the questions of how the packaging would be formed, filled and sealed, and what packaging material would be able to provide fluid-tight packaging. There was no prior experience to build upon.



Erik Wallenberg

The conceptual basis for machine design would become Harry Järund's great contribution to Tetra Pak's success. Harry Järund also developed a suitable distribution case. He solved the issue by designing a six-sided basket for 18 packs. That became his first patent, to be followed by many more. The packaging shape – the tetrahedron – was established, as was the transportation packaging.



The solution to the problem

The idea of forming, filling and sealing packaging from a paper tube has been attributed to Ruben Rausing. This means that the whole process could take place without interruption, if the paper web is continuously formed into a cylinder, which is then fed with fluid using a measuring device. The big problem was to obtain the correct amount in each packaging unit because milk foamed upon filling. Ruben Rausing has himself recounted how the ques-

tion found its solution: "One day at lunch at home I was talking with my wife about this. Suddenly she said 'Why don't you continuously fill milk into the tube (...) and then seal it through the milk?' (...) I said that that would be a brilliant idea, if it could be used. It would result in packages completely filled, without air, and oxygen has a damaging effect on milk. It seemed impossible however, as the hot clamps for hot sealing would give the milk a burnt taste.

She just said 'Have you tried to do it' – That was a typical, logical answer from this remarkable woman. I returned to my office after lunch and in the laboratory I made a cylinder, filled it with milk and separated away a number of tetrahedrons using hot sealing clamps. Some of us tasted the milk and couldn't detect the slightest burnt taste."



A model of the concept machine built in 1946.

Development of a concept machine

The idea of the continuous filling process was created, but there was not yet any filling machine. Together with Harry Järund, Nils Andersson was given the task of designing a machine. The result was a compromise proposal: a machine that certainly was designed to work from roller and tube, but still filling one packaging unit at a time. The concept was never realised, but Harry Järund didn't give up the idea that forming and filling should take place in a continuous process. Production and sealing should be possible by means of pairs of jaws angled against each other, and mounted on drive chains. At New Year 1945 he was able to propose a solution. The basic principle of



Harry Järund

chain operation seemed reasonable, but the proposal's design was rejected. Harry Järund led the development project. He continued to work with the idea of a chain driven machine and asserted that this way the design would be considerably simpler. To demonstrate the function he built a simple prototype model. The moving parts comprised cogwheels and bicycle chains on which wooden sealing jaws were affixed. Four months after the demonstration the first machine was ready in September 1946. In order to keep to the timeframe the machine components were manufactured at a number of smaller engineering companies during the summer months.

Materials development gathers speed

The main responsibility for materials development fell on Gad Rausing, who with a small group of staff members researched different possibilities.

One conceivable material was polythene, which had already been developed during the 1930s by the big British chemical group, ICI, Imperial Chemical Industries. In the USA a laminating technique had been developed that could be adapted to packaging material for fluid-filled packaging. At the same time the in-house development of materials was driven on, and the first tetrahedron machine could at last be installed in Lund's dairy in September 1952.

Gad Rausing's research group had arrived at a solution in Lund, the result of which was that a new ultra-modern extrusion laminator could be installed

when Tetra Pak's own factory was ready late autumn 1956. Thanks to their own efforts, Tetra Pak had a free license to the manufacturing process.

Materials development did not just include plastic coating. Paper also had to be rigid but formable at the same time. It had to have a uniform thickness, not give out smell or taste, withstand damp and moisture, provide the best possible protection against light, have a very flexible surface and be suitable for lamination. Years of cooperation with Swedish paper mills gradually produced results.

Correspondingly high efforts were essential when it came to fulfilling the special demands on printing presses and decorative colours on the packages. Large parts of this development took place within Tetra Pak.



A demonstration, representative of the time, of how the packaging is filled and sealed from a tube of packaging material.

After the first invention in 1944 it took nearly 10 years until a feasible material could be produced on a large scale. Ruben Rausing summarised the extent of the problem: "Doing something that nobody else has done before is actually quite hard."





In September 1952 the first Tetra Pak machine was delivered to Lundaortens Mejeriförening, (Lund Dairy Association). In November of the same year the dairy started to sell cream in one-decilitre tetrahedron formed packages.