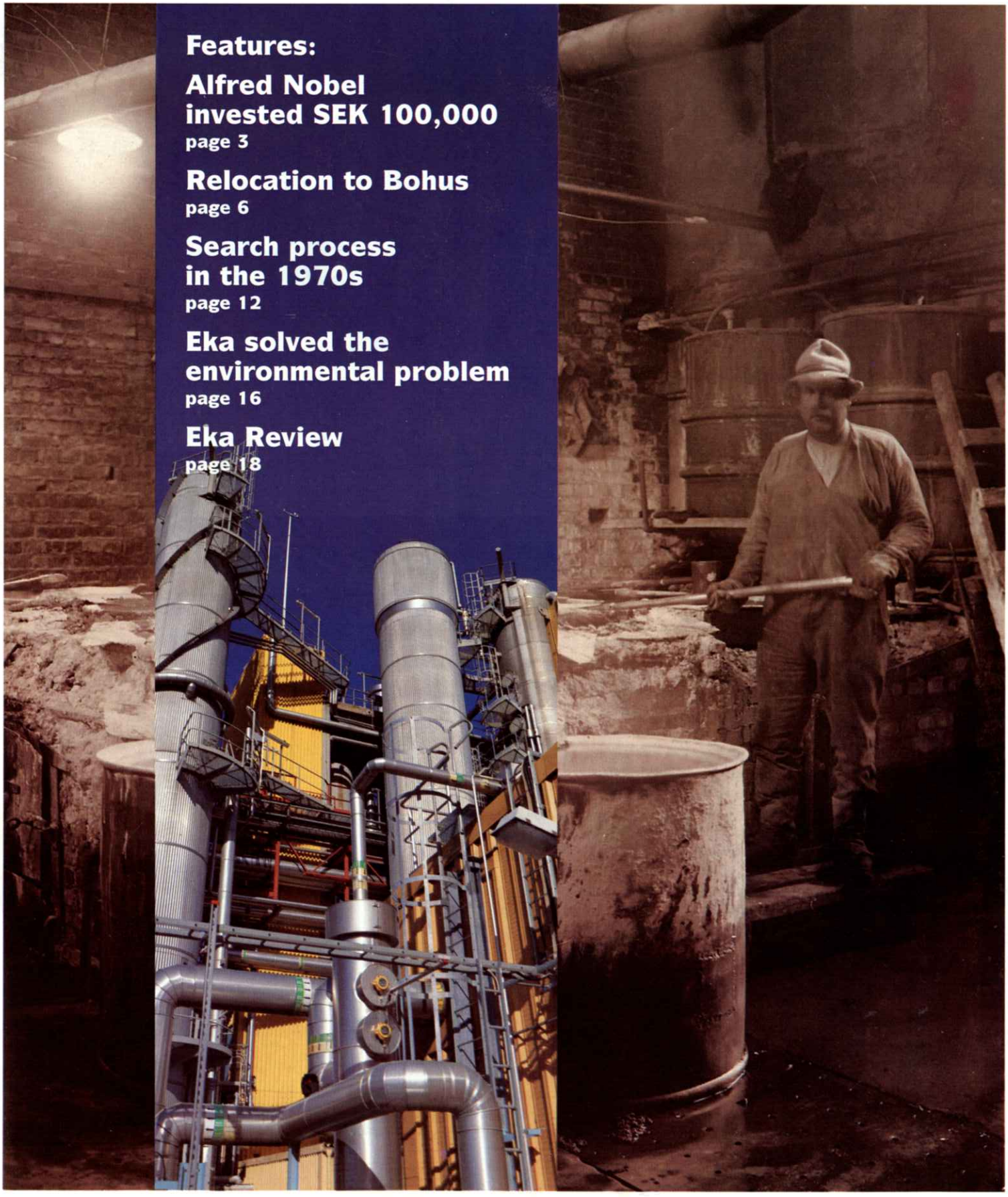
EKA NOBEL 100 YEARS

AKZO NOBEL

Jubilee issue
ekaECHO 1995



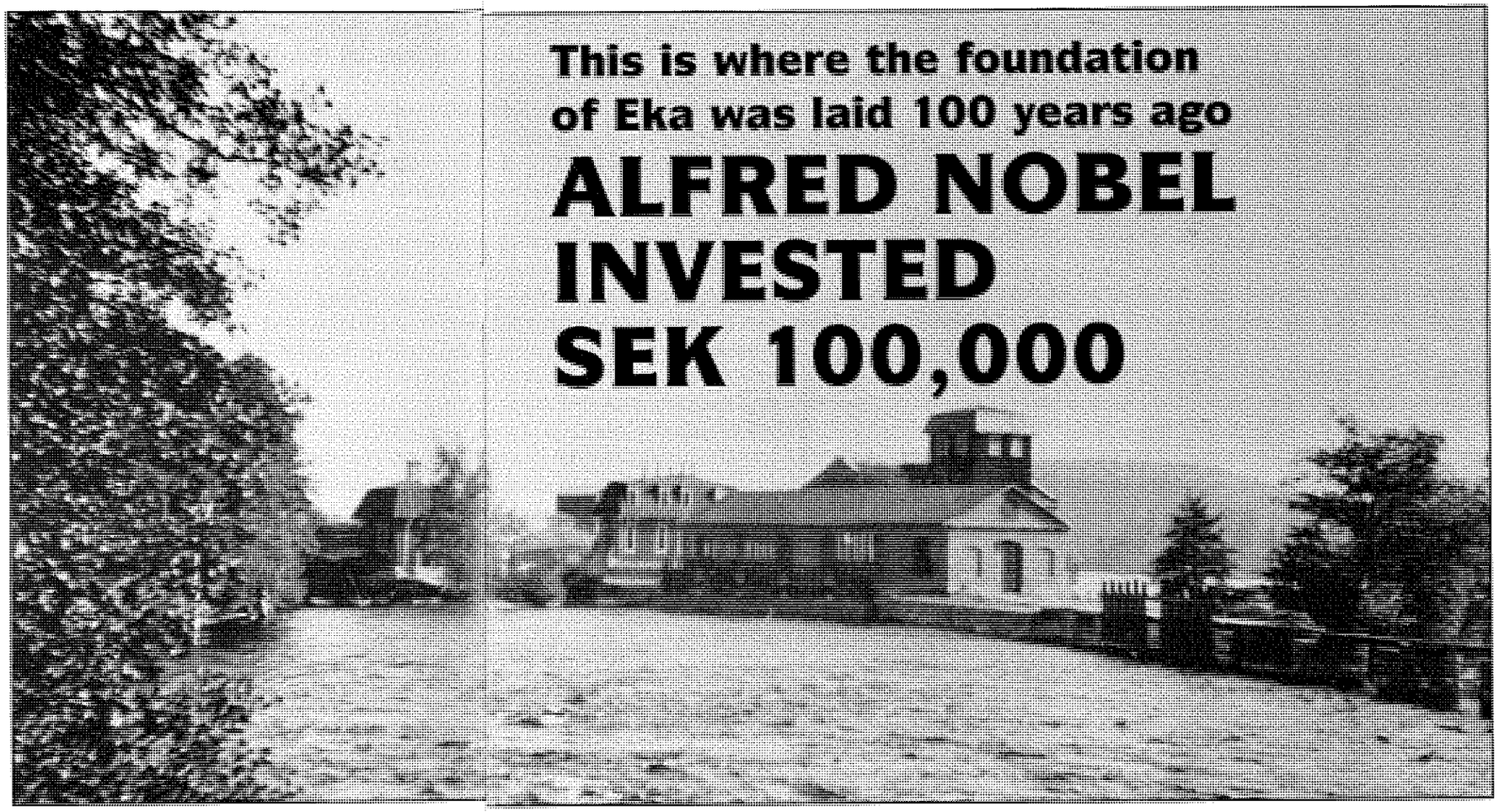
Features:

This year, Eka Nobel will be 100 years old. Its foundation was laid by three men: Alfred Nobel, Carl W Collander and the innovator and the Company's first President, Rudolf Lilljeqvist.

Alfred Nobel contributed SEK 100,000 in capital stock but it would take more than 90 years until Eka became linked with him in its company name.

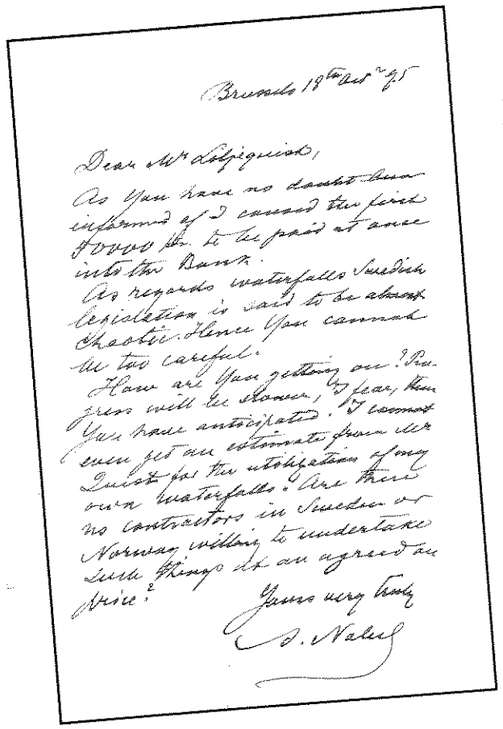
Eka Nobel is today the result of mergers with a large number of companies, each of which has a history of its own.

In this magazine are featured some historic glimpses from the development of primarily from the core of Eka Nobel, i.e. the former Elektrokemiska Aktiebolaget, over 100 years.



This is where the foundation of Eka was laid 100 years ago

ALFRED NOBEL INVESTED SEK 100,000



Brussels 19th Oct 95

Dear Mr Lidjeqvist,

As You have no doubt been informed of I caused the first Lovoo Kr. to be paid at once into the Bank.

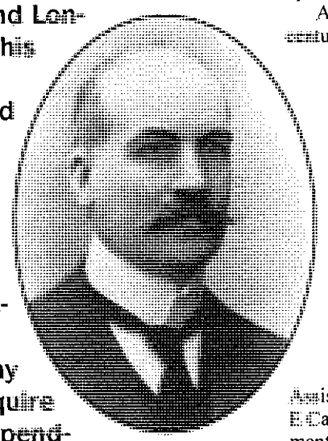
As regards waterfalls Swedish legislation is said to be almost chaotic. Hence You cannot be too careful.

How are You getting on? Profits will be known, I fear, less than You have anticipated. I cannot yet get an estimate from Mr Quist for the utilization of my own waterfalls. Are there no contractors in Sweden or Norway willing to undertake such things for an agreed on price?

Yours very truly
A. Nobel

Alfred Nobel had a fairly extensive correspondence with Rudolf Lilljeqvist. Sometimes the letters were written in English, sometimes in Swedish.

Eka's founder, Rudolf Lilljeqvist, had trained to be a civil engineer and worked as a bridge constructor in, among other locations, Paris and London. In his 40s, he returned to Sweden to try to establish a profitable company and acquire an independent position.



Eka's founder, Rudolf Lilljeqvist

Rudolf Lilljeqvist was a man of many ideas. One of the more far-reaching was his proposal to build an "under-water bridge" between Denmark and Sweden at a cost of SEK 12M. But no-one took him up on his proposal.

As Sweden at the end of the 19th century imported increasing quantities of chloride of lime every year, Lilljeqvist believed that production in Sweden could be profitable. As early as 1894, he had advertised to purchase a waterfall to meet the water requirement for a chlor-alkali plant. The first bid related to Bengtsforsen waterfall in the west of Sweden on which he also acquired an option.

Promising experiments

In Winter 1894/95, the foundation for Eka was laid in a basement in Stockholm. Together with Assistant Lecturer in electrochemistry, G E Cassel, Lilljeqvist initiated experiments - on, a semi factory scale. As a result, Cassel was able to issue a certificate to the effect that the outcome of the experiments had been very positive and promising right from the start.

With an option on the waterfall and the certificate from Cassel in his pocket, Lilljeqvist began looking for interested subscribers for shares. In his calculations, he had concluded that at least SEK 300,000 was required in capital stock. But it proved not to be easy. The planned company was of course something new and untested and in addition there were probably a great many people who wondered how the bridge builder would be able to get on in the chemical profession.

Lilljeqvist was recommended to get in touch with Alfred Nobel which he also did.

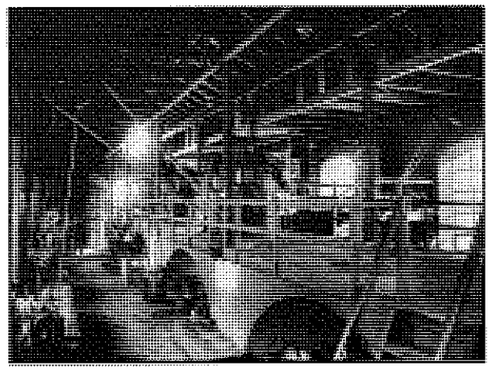
In a letter mailed from San Remo on March 7, 1895, Alfred Nobel indicated an interest in chlorate production but that was not included in Lilljeqvist's plans which were oriented towards production of chloride of lime and alkali.

Decisive telegram

Following further correspondence, the decisive telegram arrived in which Nobel proposed a personal meeting in Stock-

The melting of chemically pure alkali in Bengtsfors at the beginning of the 20th century.

The packing hall at the Bengtsfors plant.



Photograph of the interior of the power station which Rudolf Lilljeqvist had built to obtain electricity for his chemical industry.

holm. This resulted in Alfred Nobel promising to subscribe shares for SEK 100,000 subject to the remaining SEK 250,000 being subscribed elsewhere. Lilljeqvist succeeded in raising the necessary capital. Among other things, he invested all his savings, but the second largest subscribers were Alfred Nobel's relatives in Bern.

Great confidence

That Alfred Nobel had a great deal of confidence in Lilljeqvist is shown by the fact that he offered him the presidency of Bofors which he, however, rejected in order to devote his strength to the newly-established company. Lilljeqvist's ability is also shown by the fact that Alfred Nobel made him one of the two executors of his will.

On August 9, 1895, the Articles of Association for Elektrokemiska Aktiebolaget were sanctioned by the Government.

Fragile basis

Now it was important to get production started but it soon turned out that Lilljeqvist's and Cassel's experiments constituted a very fragile basis for an electro-chemical industry.

Lilljeqvist turned to the British engineer, William Glover, with both verbal and written negotiations. At the beginning of 1895, the two men met in Newcastle where it was agreed that Glover would assist him as a consulting engineer. In an extensive correspondence, Glover gives detailed accounts of construction, technology and also finance.

During fall 1897, all 24 electrolysis vessels were ready to start. The electrolysers were of a cradle type and equipped with an anode of platinum wire, wound on soap-stone, a type of electrolyse which was kept throughout the company's time at Bengtsfors.

Bangs and explosions

At 3.15 pm on November 4, 1897, the start-up began. At intervals, small explosions were heard, the origins of which could be traced. And between 1 am and 2 am and what should not happen, in fact did happen.

In their annual report, the Board of Directors wrote: "In an inexplicable and so far unfathomed way, ignition took place of the mixture of chlorine gas and hydrogen gas which existed in the cells and the pipes with the result that the lids covering the anode chambers as well as live metal loops and straps were more or less destroyed.

This damage is however not of any major importance. On the other hand, all the glazed clay pipes, which form the outer supply mains to the chlorine chambers, were shattered."

The failure led the Board to consider giving up and selling the plant.

Instead, Lilljeqvist was sent on a journey to study similar plants in other countries. 100 per cent safety had not been attained anywhere but in due course, the Eka pioneers - with the help of international experiences and their own experiments -managed to overcome the risks of explosion.

Greased palm solved problem

But there were also other problems including the water supply to the turbines, which was poor. That problem was solved through giving the lock attendant in Billingsfors a 50 kronor tip following which he immediately promised to lower the water level of lake Höljen by one ell.

In 1897, SEK 397,000 had been spent with a capital stock of SEK 300,000 and so far no production had started.

Not until 1898 was the company able to launch its products on the market and the Board of Directors stated in its annual report that the chemicals deservedly attracted attention because of their unusual degree of purity.

But all the difficulties had not been overcome. Among other things, there were problems with a dynamo (direct current machine from ASEA of 110 volts and 200 HP). It could only be used for a maximum of 14 days before the double bearings overheated and production had to be stopped with time-consuming and costly repairs as the consequence.

Profit of SEK 3,500

1899 was the first full year of operation and a total of 150 tonnes of lye and 110 tonnes of chloride of lime were produced. The manufacturing generated net earnings of SEK 3,500 but costly interest expenses, among other things, meant that the Board was nevertheless forced to report a loss of SEK 10,000.

After two years, each with profits of SEK 33,000, the Board of Directors in 1902 decided for the first time to pay a dividend of SEK 7,000 to the stockholders.

From the start, production only comprised lye of technical quality and ordinary chloride of lime.

In 1902, tests were initiated aimed at producing a caustic soda of technical quality. However, it turned out that transport of the alkaline solutions became too expensive and instead the concept was launched in 1905 of reducing not only the transport costs but also costs for packaging evaporating the alkali to melting and then deliver potassium hydroxide and caustic soda in solid form and then even of chemically pure quality.

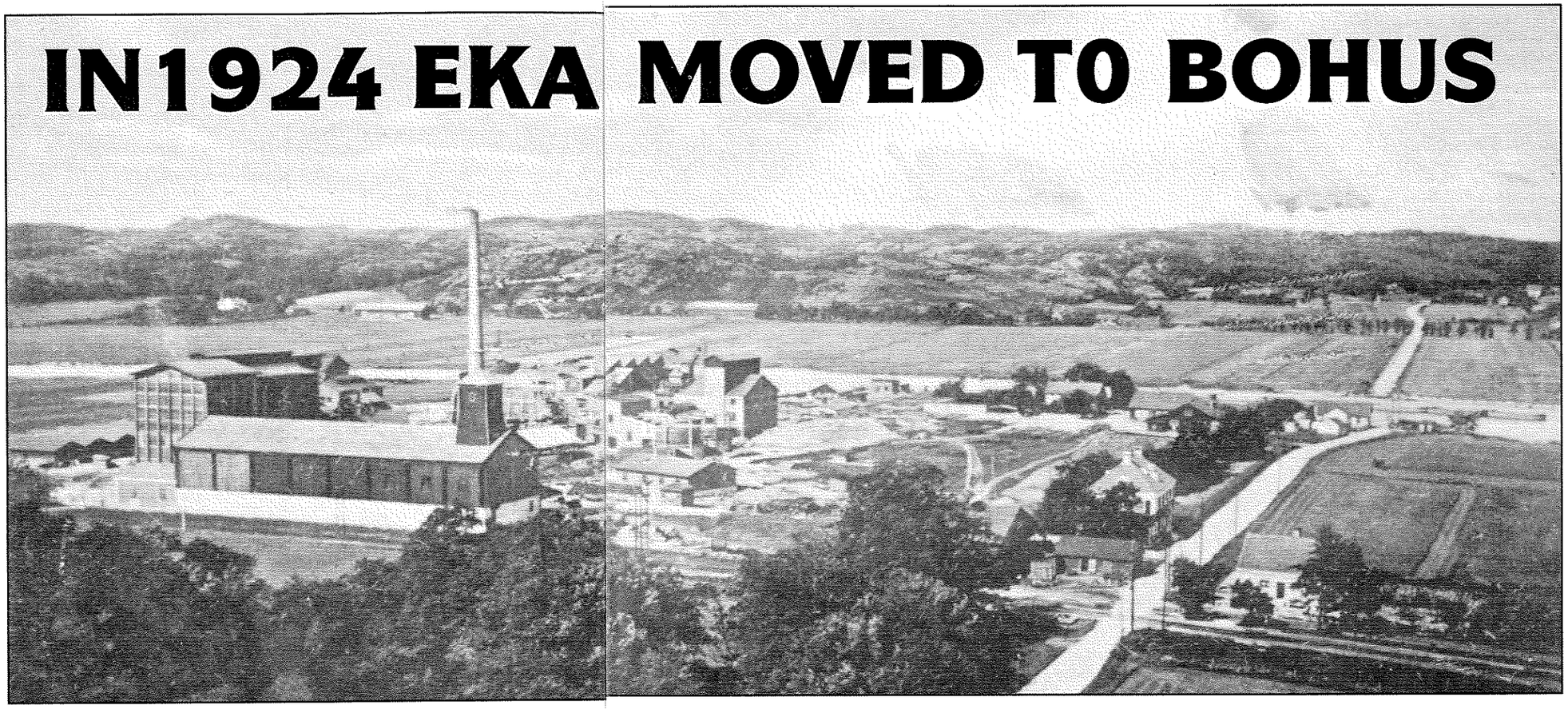
The quality was so high that Eka gained a firm position in world trade in this area.

Soft soap of high quality

In Eka, a successful attempt to manufacture soft soap was also made in 1910. According to professional opinion, the soft soap was of very high quality but the company was nevertheless forced to discontinue the production as the most important buyers of Eka's lye were precisely the soft soap manufacturers and they protested vociferously when Eka began to compete.

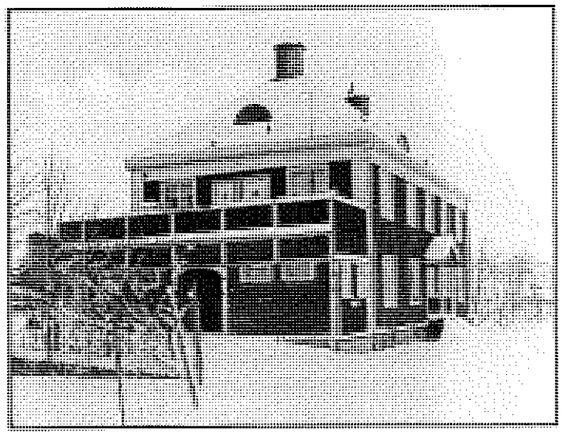
Instead, the company tried to refine sodium lye into soda. The method that was applied, however, did not generate any favorable results and the tests were therefore cancelled in 1918. This was also the last attempt in Bengtsfors to broaden the product range.

IN 1924 EKA MOVED TO BOHUS



This was the Kväveindustri plant in Bohus which Eka acquired in 1924.

The location of Eka to Bengtsfors soon proved to involve problems. The Board of Directors considered that particularly freight and reloading costs, both for incoming raw materials and the finished products, were unnecessarily high. And not least the latter factor became increasingly important the more exports increased.



Eka's head office during the first years of operation in Bohus.

The pioneers who laid the foundation for today's Eka. The photograph shows the workers employed at Eka in 1926. Some of the staff were taken over from Kväveindustri and some moved with the company from Bengtsfors.

For a number of years, Kvävebolaget had carried out manufacturing operations aimed at trying to utilize the nitrogen in the atmosphere. But the company went bankrupt and Eka's Board of Directors decided to move its operation there. The factory was situated 17 km north of Gothenburg on the east bank of the big river Göta Älv.

The decision was realized in such a way that the Bengtsfors company sold its entire electrochemical operations with appliances, equipment and inventories to a newly-formed company. At the same time, a new power company was formed in Bengtsfors to utilize the existing power station.

In addition to Kväveindustri's factory buildings and the company's staff quarters, called Solbacken, there was at this time a railway station in Bohus complete with steamer landing stage for connection with the nearly city Kungälv. Adjacent to the railway station was the Bohus shipyard, founded in 1907, and a welding workshop.

Otherwise the community consisted of a few private houses, a school and some shops and environs of undulating meadows and fields belonging to some 15 farms. Across the community a cable-way stretched from a gravel pit to the east of Bohus down to the landing stage by the river.

Relocation in stages

The relocation to Bohus took place in stages but as early as February 26, 1925, the company was registered to start operations with 25 electrolysis cells. At the year-end, the number of cells had increased to 85. In Bengtsfors, however, lye production continued with the old equipment until October 1925.

Eka's founder, Rudolf Lilljeqvist, never moved with the company to Bohus. During the build-up years, he had not allowed himself any extensive vacation time but from 1920 he lived abroad and returned for brief periods in the Summers of 1921 and 1922. The President's chair

was instead taken over by engineer Sven C:son Lindberg who remained in the company's service until 1925.

Drowned in the stream

From 1924 Rudolf Lilljeqvist was President of Bengtsfors Kraft- och Industri AB. When he visited the power station on February 8, 1930, he went - as far as one has been able to establish - onto the dam to make observations for the contemplated work activities. After that, there is no trace of him. It was assumed that he had fallen into the water and was carried away by the at that time very rapid stream. Dragging was carried out in Lake Höljen and in the stream but to no avail.

When Sven C:son Lindberg left his job as President, the presidency was temporarily taken over by chief engineer Christian Beck-Friis. On March 1, 1927, Ryno Thelander was appointed President.

Because of significant costs for investments, the early years in Bohus were no dazzling success. Until 1933, not less than SEK 856,000 had been written off and during these years of consolidation no dividend was paid to the stockholders. In 1934, the finances were considered sufficiently satisfactory to enable the company to pay its stockholders a dividend of 4 per cent. Over the next few years, the dividend then increased by up to 8 per cent.

Poor environment

In the mid-1920s, the work environment at Eka, as in other industries, was not very good. When Eka acquiredKväveindustri's factory buildings in Bohus, no action was taken to improve the situation. Especially for the workers, the environment was poor.

Washing facilities after working hours and during meal breaks consisted of a trough with cold water. In summertime there was also an opportunity for a wash in the river or in the brook which traversed the factory area.

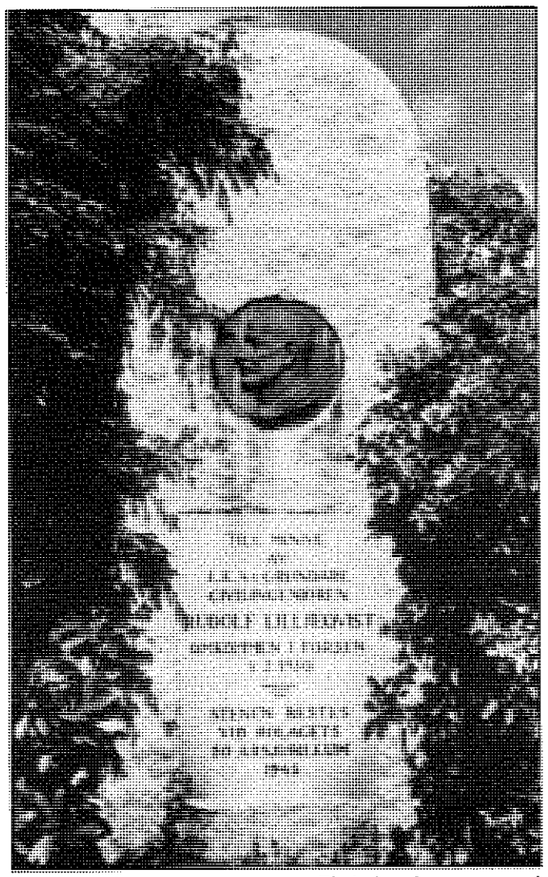
Otherwise sanitary conditions were very basic, for example, outside privies equipped with newspaper. There were canteens in several locations in the factory. The furniture generally consisted of long tables with wooden bunks and long wooden benches.

No drinking water

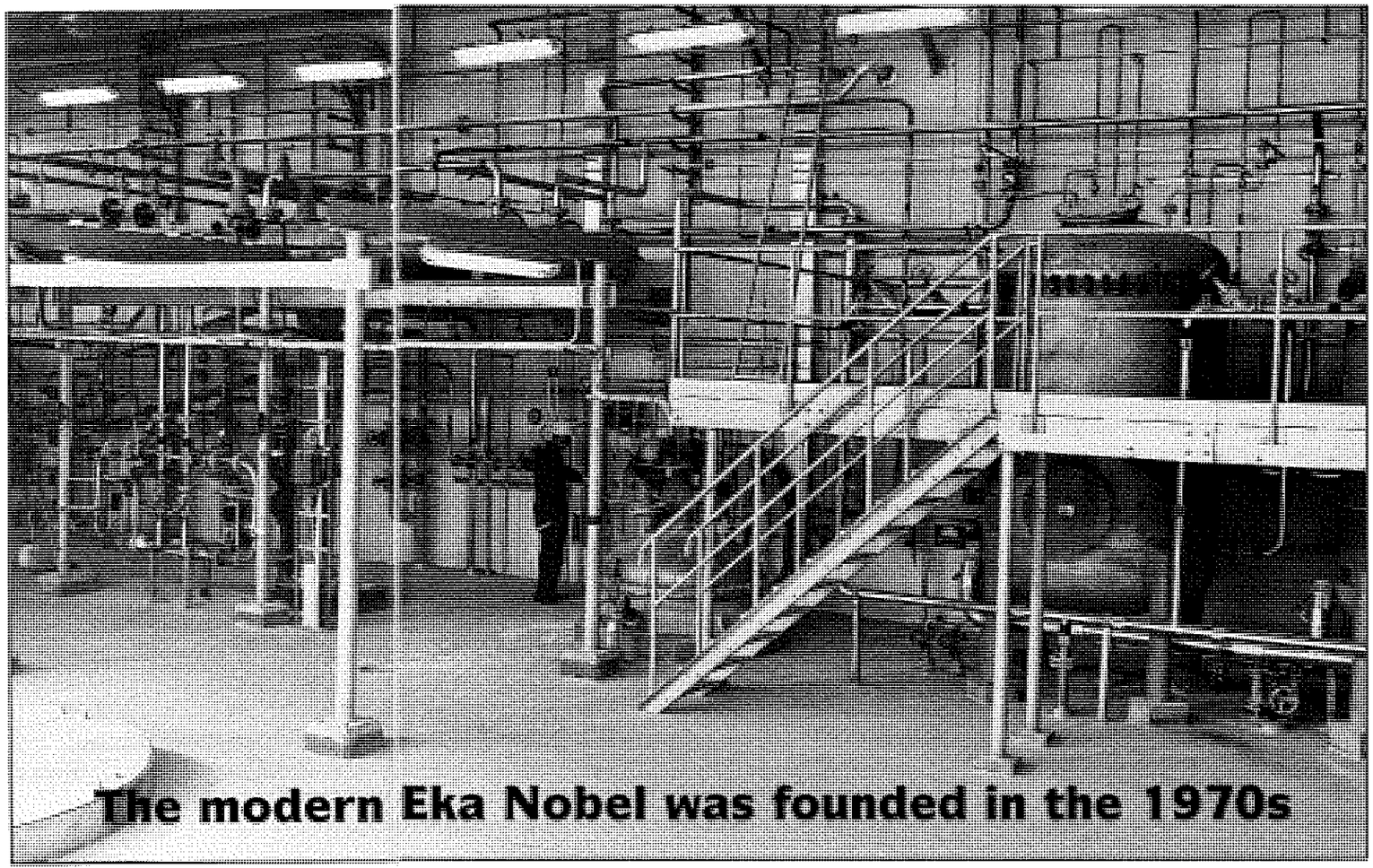
There was not even access to drinking water. The workers tried to solve that problem by collecting money for a drinking firkin. But the management did not view this kindly.

Minutes recorded in Union Department 12 on April 21, 1925, state: "As the management of Bohus Kemiska rejected the idea of the workers transporting drinking firkins within the factory area, Bernt Andersson and Karl Karlsson were elected to speak to the aforementioned men". Apparently it was difficult to come to an agreement regarding the drinking water as the issue was again raised some months later and at that time the Board was charged with making representations to the management.

As late as at the beginning of the 1940s, a boy was employed to transport demijohns with drinking water to the various departments.



A memorial stone to commemorate Eka's founder was erected in 1945. It was placed next to the power station in Bengtsfors.



An interior of the "Russian plant" which was inaugurated in 1968.

The modern Eka Nobel was founded in the 1970s

It was at the beginning of the 1970s that the foundation was laid for today's Eka Nobel. In 1972, the turnover was approximately SEK 80M (in 1994 more than SEK 5 billion) and nearly the whole result was generated by chlor-alkali. Paper chemicals were not included in the product range. All the operations were carried out in Bohus.

DRAMATIC PROCESS CREATED NEW OPPORTUNITIES

In the 1960s, Eka was a slowly but surely expanding company which grew with the traditional chemicals that the company had manufactured for several decades. The pulp and paper industry expanded and required more chlorine and lye, metasilicates grew in importance in line with an increased requirement for industrial cleaning. The good old export products - chemically pure alkali and chloride of iron - increased in volume in step with the expansion of the industrialized countries.

Expansion within Eka took place in stages. Chlor-alkali and other bulk chemicals accounted for 80 per cent of sales when, towards the end of the 1960s, Eka invested in a new chlorine plant. That proved a wise decision and very important when the environment later became an issue for survival.

The beginning of the 1970s meant a dramatic process for the company. Sweden was in a deep recession and efficiency studies were carried out within Eka which led to the most severe cuts in personnel in the history of the company. At the same time, the company was exposed to strong outside pressure because of pollution.

Cultural revolution

In that atmosphere, the company's management carried out a complete cultural revolution. New objectives were set, new evaluations launched and a new organization-philosophy implemented which, among other things, meant that the previous production structure was broken up into sectors. One of the sectors was - as its main task - charged with working out new systems and technologies - not products.

From having been expressly product-oriented, Eka instead became market-oriented. Delegation and the placing of

strict demands became new lead concepts.

The new President, J G Montgomery, launched a new management style:"I do not see it as my task to control Eka in detail but to lead by gathering and inspiring a joint effort in accordance with agreed lines for a secure future", he wrote in the house magazine.

The changes did not take place over night but the new direction of effort was absolutely clear. And such major restructuring could obviously not be made without causing anxiety in the organization, not least among older executives.

Schizofrenic message

The message from the management was actually rather schizofrenic: on the one side, order and method; and on the other, creativity and slightly wild entrepreneurship for growth.

There was also tension between the old Eka with the considerable cuts in personnel and the new Eka in which one young engineer after another was hired."Initially, it was difficult to create acceptance of what was new in the organization," says J G Montgomery. "Especially the new engineers in white coats caused irritation and we involved ourselves with an information campaign aimed at explaining and informing the staff that the engineers were needed in order for us to have an opportunity to develop. But the campaign went into the waste paper basket as the engineers became accepted before the information material was ready."

At a very early stage, the corporate management had a clear aspiration to develop Eka. But the Board of Directors in Iggesund, Sweden, indicated plainly that this would not be through acquisition.

Expansion through learning

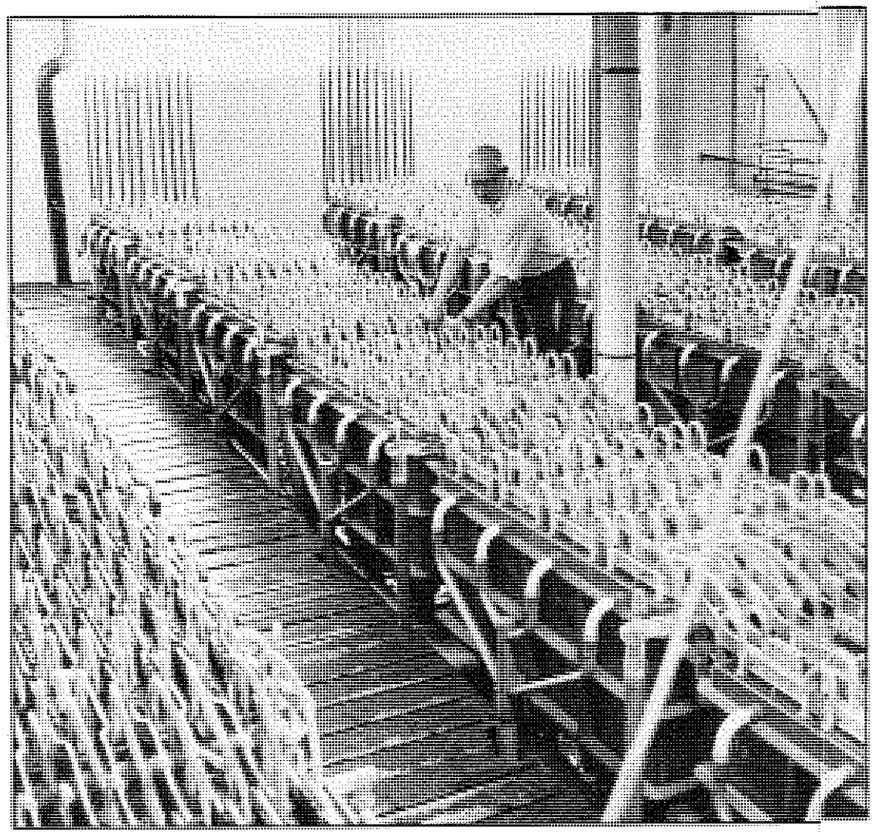
"What we did instead was to begin to expand by learning about the customers' problems in order to sell our products, but particularly in order to develop new ones," says J G Montgomery. And in order to broaden Eka's know-how, specialists from the paper industry were also recruited to provide the necessary expertise in-house.

Over a fairly long period, Eka was involved in a search process. During the past decades, development of new products had virtually stood still. On the other hand, resources had continuously been invested in improving and renewing the processes".

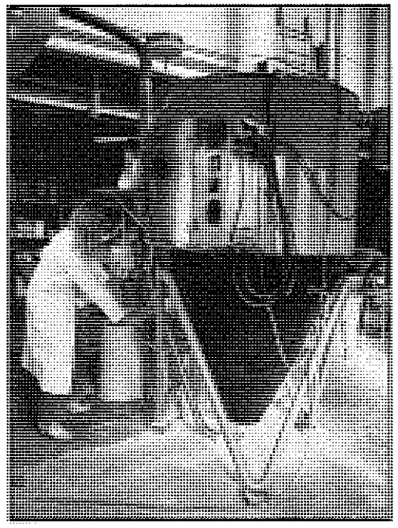
"In addition to hydrogen peroxide and chlorine, we didn't really know which direction we should take. But there were many ideas and in due course we got involved with the customer groups: paper pulp and the detergent, oil and pharmaceuticals industries."

The marketing of chlorine was a vital issue. During the whole of the 1970s, the corporate management feverishly looked

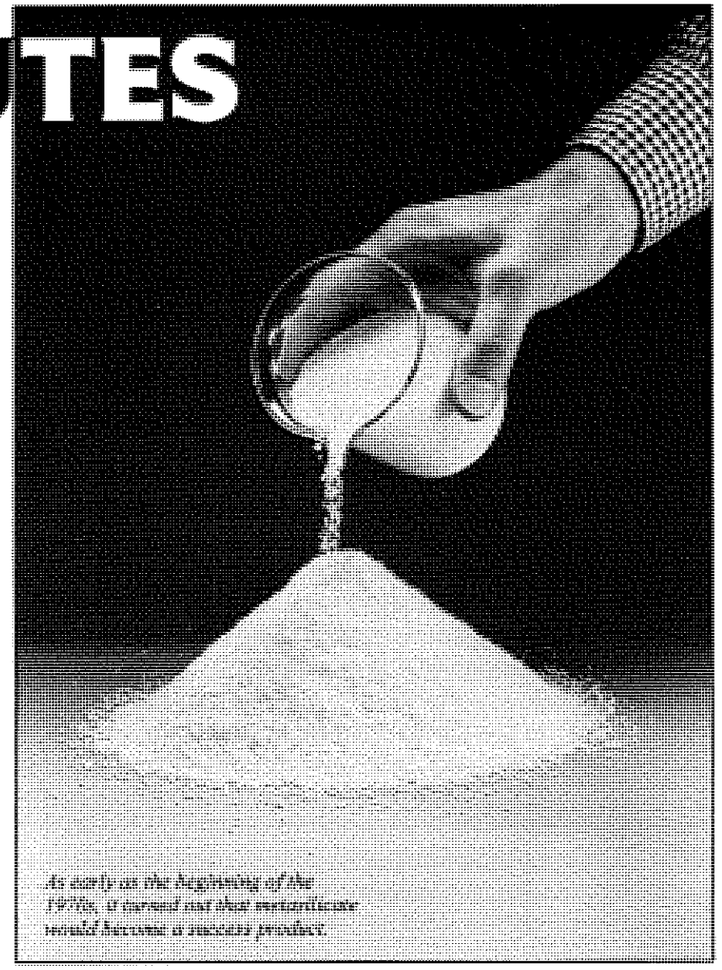
EKA TRIED NEW ROUTES



Over a fairly long period, Eka was involved in a search process. At a rather early stage, it became clear that the company should invest in hydrogen peroxide. The picture on the left shows the electrolysis hall in the old plant.



Over a period of time, Eka was also on its way to building up a catalyst operation but the project was later sold. In the picture, a spray-dryer on laboratory scale in the FCC laboratory.



As early as the beginning of the 1970s, it turned out that metasilicate would become a success product.

for big chlorine products for forward integration but all alternatives were more or less bad. One project was chloromethanes with methylene dichloride as the main product which, however was discontinued because of poor profitability. Other concepts were chlorinated rubber, chlorinated paraffins and thionyl chloride.

"For a very long time, we had looked at pharmaceuticals and had also asked ourselves the question whether Eka sooner or later did not require expertise in organic chemistry," says J G Montgomery. In that way, the organic intermediaries project was started, based on a medium-sized chlorine product, benzyl chloride, as the base product for a brand-new product tree in the pharmaceutical industry. But when environmental protests in 1980 put a stop to the plans for building a benzyl chloride plant with an adjacent alcohol plant in Stora Viken, north of Bohus, the project was transferred to Maastricht, Holland.

Saviour for chlorine

The saviour for chlorine was EDC, an intermediate for PVC plastics. In 1979, the then KemaNord invited Sweden's chlorine producers to convert chlorine on certain terms into EDC in a new reactor that KemaNord was planning in Stenungsund, Sweden, and which started in December 1981. Everyone except Eka said no to participation as the calculations did not look particularly attractive. But for Eka, a yes meant a temporary solution to the chlorine problem and during the 1980s, EDC as a whole meant good business for the company.

On the growth side it was primarily hydrogen peroxide which emerged as a good possibility. Hydrogen peroxide had started to be produced in Eka as early as the mid-1930s in accordance with an electrolysis method but the production was very limited. Eka's small electrolytic plant would not be competitive in the long term. But it took until 1966 before the company decided to invest in the new AO-based technology. (See separate article)

New market for metasilicate

Another extremely important development took place in silicates which, among other things, led to Eka being able to establish itself within paper chemicals. The big breakthrough came in 1979 when a patent for Compozil was applied for - but it would take nearly 10 years until the market accepted the innovation in earnest. (See separate article)

During one period, Eka was alsoonthe way to building up a catalyst operation but the product was later sold as it was too far removed from the core operation.

On the other hand, a new silicate product - Kromasil - has on a small scale grown increasingly strong and is now a unique, successful special chemical for the purification of pharmaceutical substances.

One project with a long tradition in Eka is sodium metasilicate. At the beginning of the 1970s, Eka was a small local manufacturer of meta-5aq which was mainly used in industrial detergents. In 1972, a new plant became operational for manufacturing unhydrous metasilicate and already at that time it was possible to see that demand would grow even further and three years later a new plant was up and running.

Market leader

Metasilicate had its real breakthrough when dishwashers became common in the home. Meta-5 aq was not considered usable in washing agents - it would be the more energy-intensive meta-0. Eka therefore built a meta-0 plant.

But with more knowledge about the market and the customers' requirements, it soon proved that only Eka had a meta-5 granule which meant an advantage that no other manufacturer was able to offer. Eka's meta-5 could do the same in washing agents as the more expensive meta-0.

It did not take many years until Eka was the market leader in meta for machine washing agents.

Internationalization

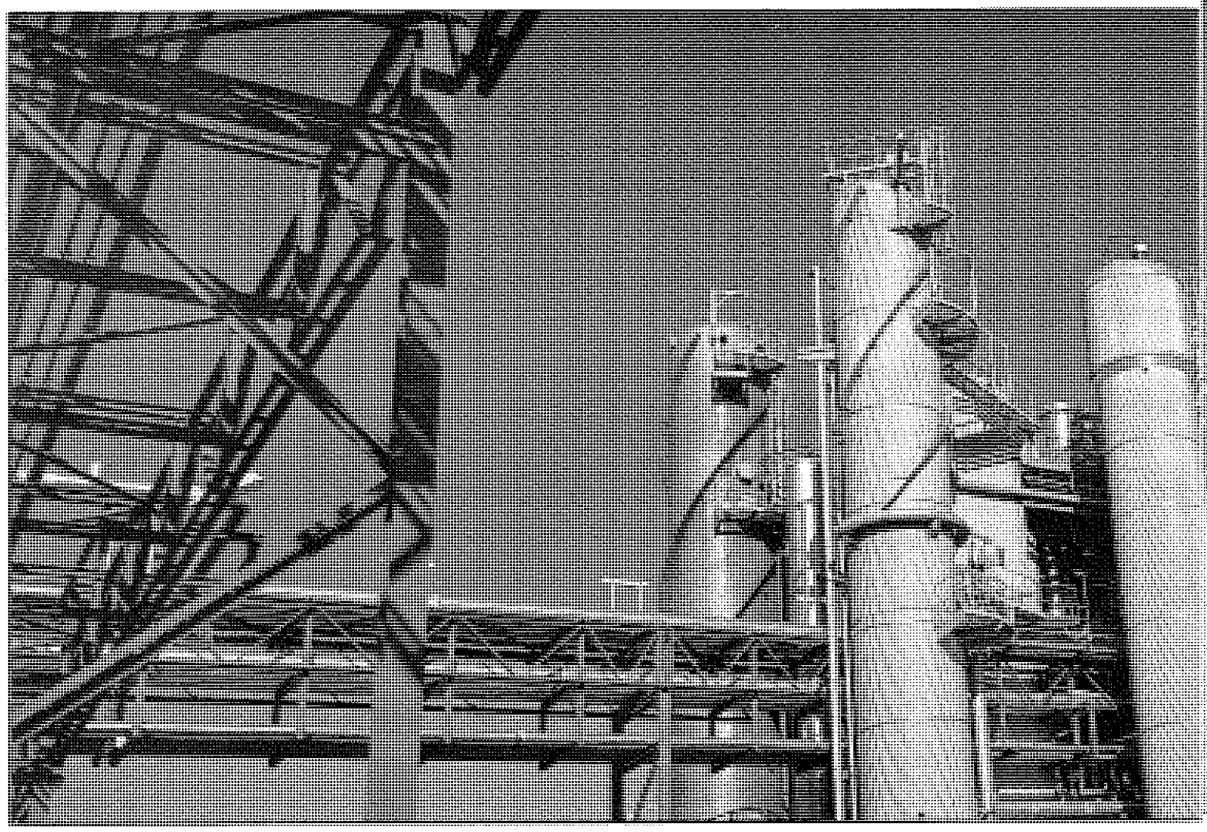
The successes with metasilicates meant that Eka's management for the first time saw an opportunity to begin a process of internationalization. In order to minimize the risks of establishing operations abroad, various forms of joint venture were discussed but with increasing response in the marketplace, the actual risk factor was reduced and Eka decided to invest under its own management.

Thus started the Eurozil project which led to the decision in 1978 to construct a metasilicate plant in Maastricht.

Pedagogical task

Within Eka in Bohus, a major pedagogical task arose which was to explain to the staff and trade unions that the establishment of an operation abroad was in everyone's interest. In addition, it was necessary to have union approval as the Swedish Central Bank would otherwise not grant a license in accordance with the foreign exchange regulation legislation which applied at that time.

Eka was granted its license and as a result Bohus was no longer the obvious center for the corporate development. An international development for the former works company had started which in the future - sometimes slowly and sometimes in leaps and bounds through acquisitions and new investments - have led to approximately 75 per cent of the operations being carried out outside Sweden at the present time.



HYDROGEN PEROXIDE BECAME EKA'S TRUMP CARD

About the art of adapting to new conditions

Although Eka was slightly late at the start, compared with its competitors in Europe, hydrogen peroxide has become a trump card. When the collapse of chlorine as bleaching agent for pulp came, Eka had a very good alternative from an environmental viewpoint and was therefore able to maintain and strengthen its position.

The launch of peroxide is about timing and the abil-ity to adapt to new condi-tions and to work with a market in a new way.

Today, the largest area of application for hydrogen peroxide is as a bleaching agent for mechanical and chemical pulp as well as waste paper for recycling. But peroxide is also used for production of perborates, surface treatment in the metals industry, wastewater treatment, disinfection and the bleaching of textiles.

Bleaching of textiles

When in the mid-1930s Eka started to manufacture hydrogen peroxide in accordance with the electrolysis method, it was primarily to provide the Swedish textile industry with a bleaching agent. The textile manufacturers had for many years purchased hypochlorite bleaching solutions but they now began to abandon this chemical in favor of purchasing peroxide from foreign manufacturers instead.

In order to keep up with the competition, Eka started its own production of hydrogen peroxide. On December 4,1935, the first delivery was made to three companies in Borås.

But right away there was a fly in the ointment. It turned out that on arrival, the hydrogen peroxide had lost more than two-thirds of its strength. Its stability was thus insufficient. The problem was, however, soon overcome and on the last working day of the year, Eka was able to deliver the first five perfectly satisfactory peroxide demijohns.

Torpedo fuel

During World War II, the defence authorities began to take an interest in hydrogen peroxide which was at that time used as torpedo fuel. However, the defence authorities did not want Eka's standard 35 percent peroxide but a more concentrated product - 85 percent proof. Eka also planned a manufacturing plant but opted out in the final stages of negotiations and the plant was instead built by the National Defence Research Institute in the Stockholm area. But the 35 percent proof peroxide , which was used as the base material in the concentration plant, was supplied by Eka. Non-military use of hydrogen peroxide also increased and during the period up to 1962 four new plants were built, all using the electrolysis method.

Pulp industry interested

At the beginning of the 1970s, the interest in hydrogen peroxide as a bleaching agent increased within the pulp industry. In Europe, a new manufacturing process was being applied, the AO method, which meant higher investment costs but lower running expenses than the old method.

Several European countries were interested in entering into joint ventures or sell licences to Eka but in order to keep its independence and be able to act on all markets, a Russian process was selected.

The plant was constructed and built under Eka's own management during 1966-1967 and, at the beginning of 1968, it was time for its inauguration with pomp and circumstance.

No major success

During the first few years, the Russian plant proved no major success. The technology was old-fashioned and the initial problems meant that the old electrolysis plant had to be kept running until 1970.

It was during this period that Eka changed from having been a wholly productoriented company to becoming marketoriented. Marketing activities were started on a broad front for using hydrogen peroxide primarily for mechanical pulps.

"For the first time, we traveled to the industry and asked what we could do for them," says Inge Månsson who was in charge of the peroxide market.

Huge response

The response from the marketplace was huge and as early as 1973 a decision was made to build a new hydrogen peroxide plant.

Instead of expanding the Russian plant, Eka invested in acquiring a license developed by the German company, Degussa.

"In our first contacts with Degussa, we planned a plant to produce 7,500 tonnes which was rather a lot bearing in mind our production in the Russian plant," says Inge Månsson. "Before the agreement was ready, we raised that to 12,000 tonnes. As early as 1979, the next step was taken and the capacity was increased to 25,000 tonnes.

Thanks to their own peroxide technology, the European market was at that time controlled by 3 or 4 large manufacturers. They sold licences and had the market under control. Eka worked on its own technology and in 1975 built a small-scale plant for process development.

"Through the agreement with Degussa, we were to keep to ourselves," recalls Inge Månsson. "We had a large market in Sweden and parts of Norway."

Peroxide was initially mainly used for bleaching mechanical pulp. But at the beginning of the 1980s, hydrogen peroxide also began be used for bleaching chemical pulp.

Gigantic investment

"When the break came into chemical pulp, the need arose for yet another plant," says Inge Månsson, who made forecasts for the future use of peroxide.

"The estimates showed that there

would be a market for a plant with 25,000 tonnes capacity at a cost of SEK 200M - at the time a gigantic investment for a company of Eka's size."

As the hydrogen gas produced in Bohus was insufficient for an additional plant, it was decided that the new peroxide plant would be built together with Alby Klorat next to its chlorate plant in Alby in the north of Sweden. A joint company was formed and Alby Klorat undertook to deliver all the required hydrogen gas, whereas Eka would be responsible for plant construction, staffing and sales. The new company was named Eka Alby Kemi AB in which Eka had a majority stockholding.

The establishment of the Alby plant also had other advantages. The large pulp mills are located along the coast in the north and by locating to Alby, transport costs decreased significantly. In 1982, the building of the Alby plant started in line with the new licence from Degussa and in 1984, the plant was inaugurated.

"When the plant had actually started to operate, the rapid increase in chemical pulp which I had forecast did not come," says Inge Månsson. "The saviour was a fire at the large Interox peroxide plant in Great Britain. During a transition period, Eka succeeded in becoming a major supplier to Interox and in that way we managed to pull through, both with regard to capacity utilization and financially."

Tougher demands on the mills

But later, Inge Månsson's forecasts and intuition proved to be very accurate. Society's increasingly strict demands on the mills with regard to the limitation of hazardous discharges paved the way for a strong expansion for hydrogen peroxide.

At the same time, Eka had acquired the necessary expertise for helping the mills and participating actively with tests and trial runs.

A Board Meeting on June 15, 1989 resolved to continue investments in hydrogen peroxide. The plant in Bohus was extended at a cost of SEK 70M, SEK 190M was invested in a plant in Venezuela in a joint venture with DuPont and Mitsubishi Gas Chemicals Corp but with Eka as the principal owner. For the first time, Eka now had a process of its own and no longer had to depend on the licenser. The Board also decided on a 20 percent ownership of an hydrogen peroxide plant in New Zealand.

In the following year, it was again time to expand in Bohus; this time the investment amounted to SEK 200M. In the same year, the establishment of an important operation abroad was carried out when a decision was made to build an peroxide plant adjacent to the chlorate plant in Columbus, Mississippi.

In later years, the extension continued in Alby which doubled its production and in 1991 acquired Rjukan Kemi with a hydrogen peroxide plant in Norway. The plant was rebuilt and extended to 15,000 tonnes.

In Sweden, political decisions at the end of the 1980s, brought about demands on the mills to reduce discharges of chlorine compounds (AOX) significantly. At the beginning of the 1990s, discharges of chlorinated organic compound, measured as AOX, was 2-3 kilos of AOX per tonne of bleached chemical pulp. Seen in an international perspective, these contents were very low. Today, the requirements for certain mills are 0.5 kilos AOX.

Lignox method launched

In order to improve the bleaching process for chemical pulp and reduce its effect on the environment, Eka Nobel in collaboration with Aspa Mill, Sweden, developed a new bleaching technology, the Lignox method, based on hydrogen peroxide and chelating agents.

As a result, it has become possible - efficiently and at reasonable cost-virtually to eliminate discharges of chlorine compounds.

The first full-scale trials with Lignox took place at Aspa Mill with astonishingly good results. AOX discharges reduced by nearly 80 percent.

Today, many mills in Scandinavia bleach their paper pulp using the Lignox method. The result is competitive pulps with lower residual contents of chlorine compounds and a reduction of chlorine compounds in the discharge.

Rapid development

The development for Lignox away from chlorinated bleaching agents mainly from chlorine gas - has been extremely rapid.

No one in the industry would have thought in 1990 that chlorine gas would have disappeared as a bleaching agent by 1994, which happened in Sweden.Market forces and environmental demands, primarily in Germany, showed that it was no longer the authorities and politicians who regulated the development. Opinion-formers and consumers have been factors to reckon with, also for the capital intensive process industry.

Compozil - Eka's own revolutionary discovery

Throughout the 1970s, extensive R&D work was carried out within Eka in various sectors. The search ranged widely. A small group was involved with silica sols on the hypothesis that it would be able to achieve strengthening effects in various environments. Among other things, the conclusion was arrived at that it would be possible to reduce the volume of plastics in wallpaper if a small quantity of silicates was mixed in. Laboratory tests were also carried out on the reverse side of textiles, car mats, different paper varieties, etc.

When one day in 1979, a discovery was made which came to be extremely important for Eka's development and which lay the foundation for a paper chemicals operation in the Company.

What the scientists discovered was that cationic starch and silica sols produced surface-chemistry effects which involved a firm binding of paper fiber and that managed to get fillers such as chalk and clay to adhere to the fibres. A new paper chemicals system, which was given the name Compozil, was a fact.

The discovery was revolutionary and it was not long before the first factory trials were carried out at the Håfreström Mill in Dalsland, Sweden.

At Håfreström, titanium dioxide was being used as filler but the problem was that the titanium dioxide was not retained but flowed out into the wastewater. When Eka's experts added Compozil, the retention was very good and the volume of titanium dioxide in the discharge reduced very considerably.

"With this we will conquer the world"

"It was a success right away and we thought that with this product we will conquer the world," remembers Inge Månsson.

The effects of Compozil were:

1. Increased retention, i.e. fibers and filler are flocked and bound together better so that they remain in the web of the machine and do not travel with the water which is removed. The loss of fibers and fillers reduces.

2. De-watering is improved, i.e. the water from the stock (cellulose fibers and fillers mixed with water) runs faster off the wire gauze of the paper machine. Improved de-watering reduces the energy requirement for drying the paper. Sometimes, the speed on the wire can be increased and productivity improved as a result.

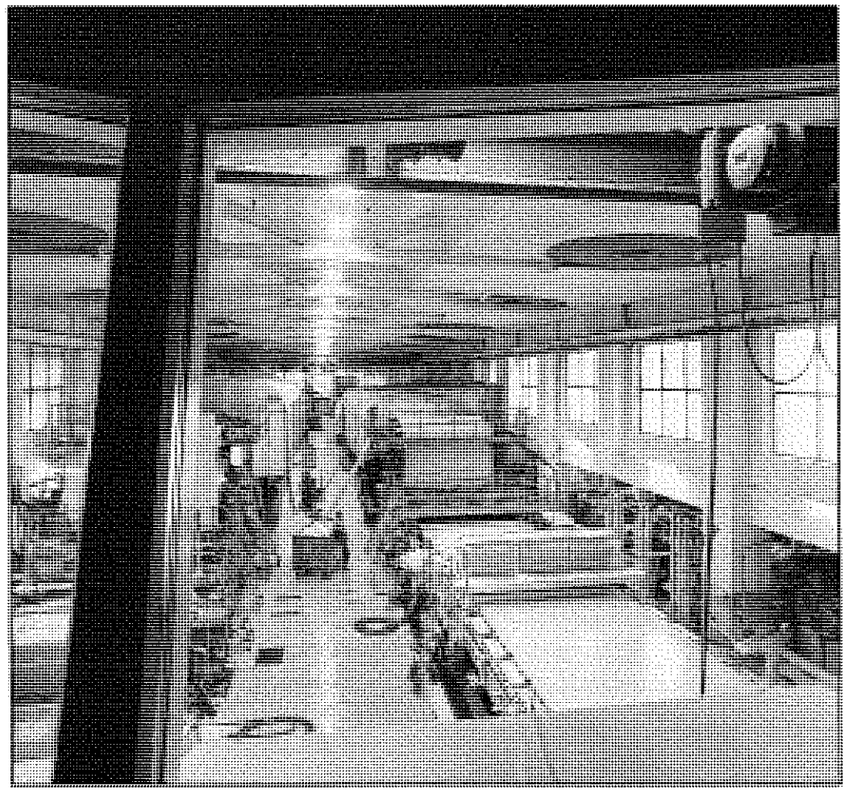
3. The paper becomes stronger.

Production of Compozil started in the 1980s but it would be many years before the new paper chemicals system would have its break-through on the market. In Europe, it took place in 1989 and in the USA in 1992.

"After the first euphoria had died down, it turned out that Compozil was not as good in all areas," says J G Montgomery. "The effect was best on high paper qualities and further research and tests were required to make Compozil a complete paper chemical".

Market sceptical

At the beginning, the market was very sceptical about Compozil. After three years, ten customers with an annual production of approximately 700,000 tonnes of paper had begun using the system.



In 1994, Compozil was used at 168 mills which produce approximately 12 million tonnes of paper. The photograph is from Lessebo Mill, Sweden.

Initially, the launch was made in Sweden, Finland, France and, in the USA, via a subsidiary, Eka Chemicals Inc. In 1984, a Compozil project was begun in Japan, the world's second largest paper-manufacturing market. In order to cope with the language, culture and personnel supply, a joint venture was started with the Japanese Nissan Chemicals company.

Red figures

"The development costs for Compozil were very high and it began to become irritating for me always to produce red figures for this operation," says J G Montgomery. On his own Board of Directors there was also strong criticism of Compozil.

In order to share the risks and get a reliable partner, a joint venture was started with the American company, DuPont, which had a well-established marketing organization in the paper industry.

But the collaboration with DuPont began to crack, particularly because of different corporate cultures and in 1991, Eka bought out DuPont from the joint company, Procomp.

Technology service

Extensively, the launching of Compozil also concerned technical service, getting involved with customers' problems and helping them improve the quality of paper and reducing costs. When the Compozil system is installed, it must more or less be tailor-made as every paper machine is unique. Participation of Eka's specialists is therefore required during long trial runs and evalutions.

Today, five different colloidal silicas are being used. Each of these can be combined with a number of different cationic components. Compozil has had, and still has, its strength in the area of wood-free paper and board qualities based on chemical pulp. But with time, the Compozil system has been developed to get involved also with wood-containing and recycled paper-based paper products.

Used in 168 mills

In 1994, the Compozil system was used by 168 mills which together produced approximately 12 million tonnes of paper a year. Of this, fine paper accounted for 61 percent, board 19 percent and liner 15 percent. The successes will certainly continue and not least the merger with Akzo means that Compozil is provided with opportunities on new markets.

Eka tackled the environmental problem successfully

THE COMPANY'S ENTIRE EXISTENCE WAS PUT IN DOUBT

At the beginning of the 1970s, the battle of Eka took place. The newly-awakened interest in the environment resulted in Eka's entire existence being questioned by the authorities as well as by various pressure groups. It was only after very extensive environmental control investments that Eka emerged victorious from the battle, not only with the authorities and public opinion but also with its own unsuspecting behavior in the past.

Today we all agree that Eka was not a pretty sight at the end of the 1960s. Many things appeared old and worn, the entire area was ugly with holes, hoses and pumps. Although Eka had been visited as early as 1964 by the National Water Protection Service which wanted to inquire into Eka's production and the quality of its wastewater, Eka was not hit by the big environmental storm until the beginning of the 1970s, following the introduction of the Environmental Protection Act in 1969.

As a result of the visit by the National Water Protection Service, Eka initiated a number of investigations into discharges into water and air. But at that time, no ready refined methods were available for decreasing the ratio of many pollutants.

Unaware of the dangers

It was Eka's newly-appointed President, J G Montgomery, who had to tackle the big problems.

"Like many others, in the 60s we were not aware of the environmental hazards," he now says, some 25 years later. "When it became clear to us what the issue was all about, we didn't have a great deal with which to counter the demands placed by the authorities."

The initial criticisms concerned the discharge of mercury into the river Göta Älv. Throughout the plant area, there were some 40 pipes which led into the river direct. It meant that some process water and all the surface water flowed entirely untreated into the river. Altogether, it probably involved, a few tonnes of mercury per annum among other things.

Untried methods

As early as 1967, work started with the aim of putting an end to the mercury discharges. Many of the tests were unsuccessful.

Eka was forced to invest in completely untried methods as there was no previous experience. Initially, it was assumed that the problem was solely the wastewater from the chlorine plant. Later, it was found that practically all discharges from Eka contained small volumes of mercury which, despite intensive environmental work, together amounted to several hundred kilos.

"We started to tackle the nastiest discharges but when we had solved that problem, ten new ones appeared and then another ten with a multiplying effect," comments J G Montgomery. In due course, the measuring methods increasingly improved and it was possible to trace almost anything.

Mercury-proof plant

In 1970, a new chlorine plant was built. In principle, Eka was faced with a choice of either ending the manufacture of chlorine and thus in practice closing down the whole of Eka - or building a new plant. The new plant cost SEK 25M and was constructed to be "mercury proof".

A water-rights court had ruled that the discharges were allowed to contain a maximum of 50 kilos a year. Regarding discharges from the chlorine factory itself, Eka came out fairly well. But the issue was to put a stop to mercury from all discharges at Eka.

In 1973, there was a breakdown which involved large discharges, not only of mercury. The Water Board in Gothenburg sounded the alarm. In Eka, work was accelerated aimed at creating a system for handling all discharges in which there were also safety margins for coping with the additional discharge volumes which may occur when a break-down happens.

April 1, 1974, a fateful date

April 1, 1974, was a date when Eka's fate was more or less decided. The authorities had demanded that by that date Eka should have carried out investments and rebuilding to ensure that the discharges of mercury into the Göta Älv amounted to a maximum of 50 kilos a year. Independent consultants were hired and samplings proved that the environmental work had succeeded. The relief was very obvious and a magazine, which was distributed to the inhabitants of Ale and Kungälv, included headings such as "We got through the crisis" and "Eka wants to be a good neighbor".

At the end of 1974, the National Franchise Board for Environmental Protection published its verdict on Eka's operations in Bohus.The effect of this was that Eka over a two-year trial period was charged with conducting a large number of investigations into the company's effect on the overall environment - water, air, noise, etc. In addition, Eka was charged with continuing negotiations with the Water Works in Gothenburg with the objective of that company handling the process water within two years. In connection with the court proceedings, Eka had also undertaken to implement further measures aimed at improving the environment.This partly concerned a rearrangement of the sewerage system, reduction of mercury discharges into air and water as well as solving waste-handling together with the county council and the municipality. In addition, there were a number of specific activities in the various plant units. Even if Eka was charged with tougher environmental demands for its continued operations, the battle had been won. Operations could continue in Bohus and over the years, environmental work has continued to have a high priority in Eka.

TILL ALLA HUSHÅLL

EKA BOHUS·SWEDEN

I BOHUS

— MAJ 1974 —

EKA klarade krisen

VI klarade det! Några hundra Ale- och Kungälvsbor har sin sysselsättning tryggad. En livskraftig industri skall finnas kvar.

● EKA har varit ett av de mest kritiserade företagen i den här landsändan — ofta med all rätt. Företaget har medfört problem och olägenheter. Men en hård satsning på miljövård har givit resultat — bland andra de här:

● EKA:s kvicksilverutsläpp till Göta älv ligger med god marginal under den s k 50-kilosgränsen. Mätningarna visar inte högre kvicksilverhalter nedströms EKA än ovanför.

● Företaget får fortsätta i Bohus — det var vad koncessionsförhandlingar i Bohus den 14 och 15 maj ytterst handlade om.

● Miljövårdsarbetet skall fortsätta — det var EKA och koncessionsnämnden också överens om.

● Debatten om EKA går naturligtvis vidare — och kritik får företaget säkert också räkna med. EKA vill delta i den debatten — och lyssnar gärna till kritik. Det vill vi markera med den här tidningen.

Tryggad sysselsättning för flera hundra anställda. EKA fortsätter driften i Bohus.

EKA vill vara en god granne!

EKAs verkställande direktör John-Gabriel Montgomery vid Göta Älv — vattendraget som mycket av vattenföroreningsarbetet rör sig kring.

— Det är nödvändigt för EKA att vara en god granne för människorna i Göteborg, Bohus och Kungälv, skriver EKA:s chef, John-Gabriel Montgomery i en kommentar till företagets läge när det gäller miljövårdsarbetet.

— I dag har EKA en tätposition både inom landet och internationellt när det gäller kvicksilver och vattenvård. Vi har fått en kontroll över våra totala utsläpp som knappast något annat företag med vår typ av tung och komplicerad kemisk produktion.

— Det är också svårt att komma tillrätta med utsläpp till luft, men det som är möjligt att göra, det skall vi också göra. Redan nu kan vi — och förhoppningsvis också människorna i Bohus — notera klara förbättringar. Vi skall göra mer.

— På lång sikt är vårt mål att EKA inte skall ha några kemikalieutsläpp alls till Göta älv. Att vara en god granne — det har två lika viktiga sidor, anser EKA-chefen:

● Att se till att grannarna — människor i Bohus, Kungälv och Göteborg — inte får några olägenheter av EKA.

● Att skapa en bra arbetsplats för människorna i den här bygden.

● SIDAN 2

Göteborgarna och deras smakstötar
● VA-verkets bas i Göteborg Erik Rindegård berättar en lidandets historia. Sid 2.

Nobel gav EKA allt sitt stöd
● Få trodde att en industri som EKA skulle ha någon framtid. Alfred Nobel skänkte 100 000 kronor till företagets start. Sid 3.

Miljödeckare spårar kvicksilver
● Åke Aronsson är en levnadskonstnär som också spanar in kvicksilverutsläpp från de mest osannolika källor. Läs sid 5.

Vad tror du om industrin?
● Hälsovårdsnämndens ordförande i Ale kommun Nils Svensson debatterar med John-Gabriel Montgomery. Sid 6.

Kungälv kräver bättre besked
Jag tycker företaget borde tala om vad man sysslar med, säger Bengt Arnholm, kommunfullmäktiges ordförande i Kungälv i en intervju på sid 7.

Hur var det med dödsmolnet?
● Klorgasen — är den en fara eller en tillgång för oss alla? Sid 10.

EKA-andan lockar folk
● "Av alla dåliga arbetsplatser är EKA den minst dåliga". Det säger en av dem som kommit tillbaka till företaget igen. Sid 14.

This is the front page of the magazine which Eka published and distributed to the households in the community.

Nasty taste in Gothenburg

What attracted most attention in the media during the stormy years were the "nasty tastes" which hit the drinking water in Gothenburg and which was taken from the river.

Newspaper headlines at the beginning of 1971 were far from gracious: "New nasty taste - the 18th in two years". "Gothenburg water poisoned". "Public Health Board asleep". "Water comedy continues...". Etc.

Whether these "nasty tastes" were caused by discharges from Eka or other industries along the river never became clear. On some occasions - including May 27, 1971 - the Water Board was however able to establish that Eka was the cause of a five cubic meter discharge from chlorine production and that this was the cause of trouble with the Gothenburg drinking water.

"People would call me at home in the middle of the night and complain about nasty tastes," says J G Montgomery. "But I think it can be said with almost 100 percent certainty that Eka wasn't the biggest culprit."

Entire company mobilized

Obviously these years were very difficult both for the staff and the management.The entire company was mobilized to participate in the environmental work. During the five year period, 1972-76, tens of millions of kronor - partly with a Government contribution - were invested in environment-improving measures. In the management, many hours of work were spent on changing thinking and attitudes.

"We used the environmental struggle to devise the creative company, an organization willing to implement changes and which is able to adapt to new times and new demands," states J G Montgomery.

Major profitability problems

But the management also found other problems. The environmental struggle took place during a deep recession and for the corporate management it was a matter of keeping the company alive.

"We had very considerable profitability problems," says J G Montgomery. "As a result, the workforce was cut significantly from 650 to 450. For most people the cuts came as a great shock as it was generally considered that Eka was an efficient company, which was not actually the case."

Environment always on the agenda

Since the big environmental battle at the beginning of the 1970s, environmental issues have continued to be high on the agenda at Eka. Although the company's existence has never again been called into question, issues concerning the environment have continuously given rise to debate with the authorities and environmental organizations. Very recently, the fight was about the large quantities of polluted earth which are stored on Eka's site. But the battle now concerns how best to take action against old "sins" and store polluted soil in order to protect the environment in the best possible way.

New industrial company.

On the application of Dr Alfred Nobel, Entrepreneur C W Collander and Engineer R Lilljeqvist, His Majesty's Government on August 9 ratified the Articles of Association of Elektrokemiska Aktiebolaget with a capital of not less than SEK 350,000 and not more than SEK 600,000. The Company, the Board of Directors of which has its registered office in Uddevalla, Sweden, is charged with producing chemicals by electro-chemical means at Bengtsfors.

The Inaugural General Meeting was held last Tuesday under the Chairmanship of Member of the Swedish Parliament, C W Collander, and then elected to the Board of Directors the latter as well as Works Manager Arthur Zachau and Engineer Rudolf Lilljeqvist, the latter as the President of the Company. Wholesaler J N Sanne and Lieutenant Mats Svensson were elected Deputy Board Members. Cashier of the Schoolmasters' Pension Association, P Lydell, and Accountant H Sanne were appointed Auditors with Cashier Robert Blay as Deputy Auditor.

1895 On July 22, the three founders of the Company, Alfred Nobel, C W Collander and Rudolf Lilljeqvist adopt the Articles of Association of Elektrokemiska AB. They were ratified by the Government on August 9 in the same year.

1897 Construction of the plant is completed and on November 4, 1897, the start-up of the electrolysis plant which had been awaited with great excitement takes place. Small bangs and explosions are heard and after ten hours "an ignition took place of a mixture of chlorine gas and hydrogen gas" with the result that the cells as well as the pipes were more or less destroyed.

1899 The chlor-alkali plant generates a profit for the first time: SEK 3,500. But the accounts nevertheless show a loss of SEK 10,000.The year's production amounts to 150 tonnes of lye and 100 tonnes chloride of lime.

1900 Price falls and foreign competition causes a drain on the capital. A new share issue raises SEK 250,000.

Attempts to make Parliament introduce protective tariffs are unsuccessful as Eka is unable to meet Sweden's demand for the stated products.

1902 The stockholders are paid a dividend for the first time.

1910 Eka starts its own manufacturing of soft soap and gets positive opinions about the product by experts and consumers. But the soft soap manufacturers, who buy the main product - lye - protest and a few years later, Eka's own production has to be discontinued.

1923 Rudolf Lilljeqvist resigns as President and is succeeded by Sven C:son Lindberg who in turn leaves Eka at the end of 1925. Christian Beck-Friis becomes acting President for 2 years.

1924 Domestic and international competition, transport problems and the irregular water supply in the Bengtsfors streams cause the Board of Directors to decide on a relocation of the entire production to Bohus.

Aktiebolaget Bohus Kemiska Industrier (the name of which was changed to Elektrokemiska AB four months later) is inaugurated in Gothenburg on May 20. AB Kväveindustri in bankruptcy sells the real estate in Bohus for SEK 900,000. The cash capital invested in Bohus Kemiska Industrier amounts to SEK 534,000.

On Christmas Day, the first electrolytic cell starts in Bohus.

1925 The first collective agreement between Eka and Swedish Factory Workers' Union, Department 12 in Bohus, is signed. It shows, among other things, that employees and their families are given free health-care and free medicine.

At the year-end, 85 electrolytic cells are in operation.

COLLECTIVE WAGE AND WORK AGREEMENT
between
ELEKTROKEMISKA AKTIEBOLAGET
and
The Swedish Laborers and Factory Workers' Association
Department No 12, Bohus.
Para 3
Wages

Laborers	SEK 1.00 per hour
Shift workers /in cell rooms, boiler rooms, evaporation, melting and salt refining/	SEK 1.10 per hour
Iron workers, blacksmiths, carpenters and plasterers	SEK 1.20 per hour
Mates of the above	SEK 1.00 per hour
Drivers and cell repairers	SEK 1.15 per hour
Sheet metal packaging workers	SEK 1.10 per hour
Female workers	SEK 0.65 per hour

The Company will make a separate agreement with specially qualified skilled workers.

The aforementioned wages apply to workers over 18 who are fully fit.

On repairing and cleaning work inside the chloride of lime towers or the calcium chloride towers, when the air is mixed with chlorine and chloride of lime dust, a supplement of 20 percent will be paid on the hourly wage.

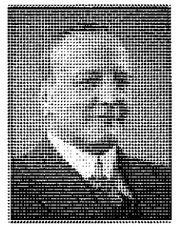
On repairing and cleaning work in lye cisterns and evaporation appliances where corrosion of clothes and shoes cannot be avoided, a supplement of 20 percent on the hourly wage will be paid unless clothes are provided by the Company.

Quote from the first collective agreement.

1926 The first full year of production in Bohus. Chemicals totaling 2,720 tonnes are manufactured with a sales value of SEK 1,237,038.

Production is augmented with calcium hypochlorite solution to the paper mills, and potassium and sodium hypochlorite solutions to the textile industry.

50 staff were made redundant during the latter part of the year.

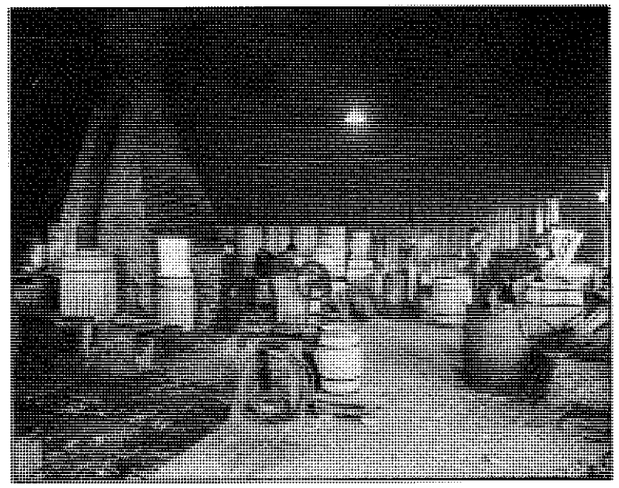


Ryno Thelander

1927 Ryno Thelander takes up the position as President on March 1. Despite hard times, production and sales progress slowly.

Production of water glass starts.

Coopers are linked to the company to manufacture wooden barrels for transport of, among other things, chloride of lime.



From 1927, Eka let premises to Master Cooper Pettersson, who together with his sons, manufactured barrels for Eka's needs under his own management.

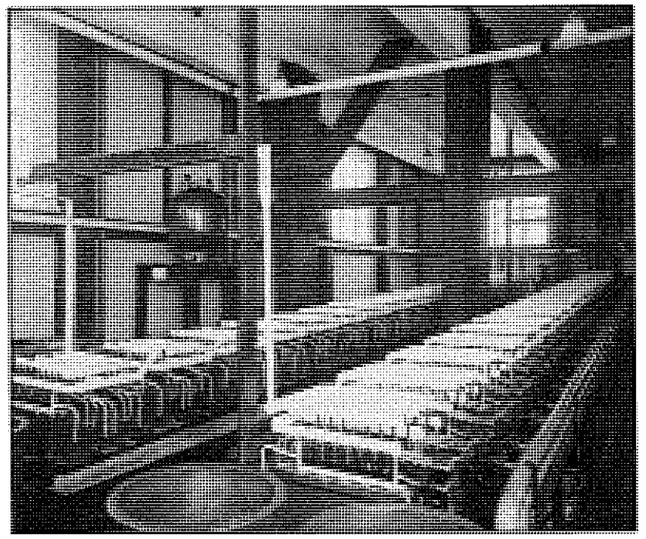
1928 Strike at the paper mills in Sweden. Sales of chloride of lime cease completely and there are some redundancies at Eka.

Eka links up with a sales representative covering the USA and Canada.

1929 Successful test for making potassium and sodium pellets of solid, chemically pure alkali.

Production also starts of potassium chlorate with a chemically pure quality. Small plants are constructed for the operations.

The company and the trades unions agree to introduce a 25 öre penalty for every late arrival. The penalties are used for charitable purposes under the trades union management, for example to help on sickness and death.



1932 Cuts in production because of hard times. But at the same time, there are new investments. Among other things, production of hydrochloric acid and ferric chloride starts.

This year also sees the start of manufacturing of a large number of chemicals and the entire production process was something in between a pharmacy and a large grocery store.

After about 10 years, most chemicals disappeared from Eka's product range.

Tage Nilsson is employed as production engineer for the hydrochloric acid and ferric chloride plant.

The start-up of Eka's first hydrogen peroxide plant had its problems and it was not until after five months' production that the estimated production attained 500 kilos of 30 percent peroxide per day.

1933 To retain its customers in the textile industry, Eka starts planning for hydrogen peroxide production. But when the factory has been completed and the electric current from the transformers is gradually switched on, all the porous ceramic diaphragms in the electrolysers crack.

Production starts of various types of metal salts for the galvano-technical industry. Production continues until 1954/1955.

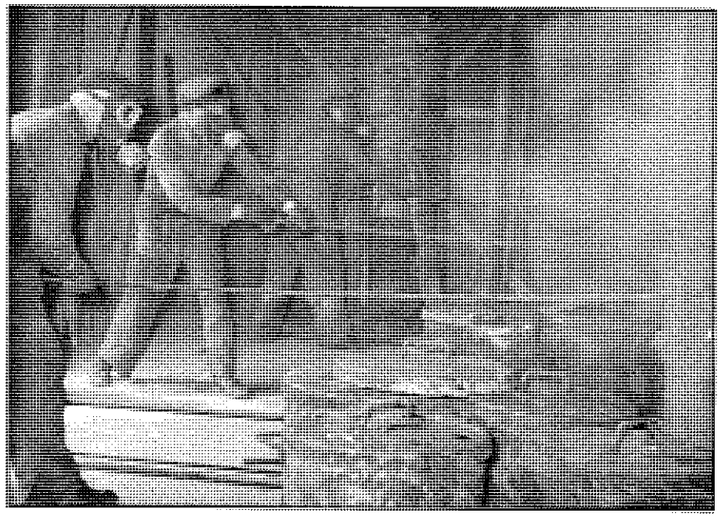
1934 Carl-Otto Fredriksson is hired to manage the newly-started galvano-technical production.

For the first time since the relocation from Bengtsfors, the stockholders are paid a dividend: 4 percent.

1935 Tests with hydrogen peroxide continue and on December 4 the first delivery is made of Eka-manufactured hydrogen peroxide. The first customers are three plants which each receive a sample demijohn.

1936 Manufacturing starts of liquid chlorine and sodium perborate and the first tests in production of metasilicate are initiated. The chlor-alkali plant is rebuilt and 45 diaphragm cells are exchanged for 48 mercury cells.

1937 Metasilicate 9 aq is a success. Appliances for 300 kilos per day are installed but after only six months, the capacity is trebled. Thereafter, new extensions ensure up to no less than 7 tonnes of metasilicate 9 aq per day.



1939 Disagreement in wage negotiations lead to a nearly three-month strike at Eka. Ryno Thelander succeeded extensively in, among other things, making the white-collar workers keep a large proportion of the plant running during the entire strike period. When the strike is over, the organizers of the strike leave their jobs and a new trades union board is elected.

The peroxide plant which is closed during the strike, suffers serious damage on its restart.

Manufacturing of carbon disulphide for the textile industry starts and gives rise to the characteristic Eka smell which is similar to that of rotten eggs. (And the smell did not reduce when manufacturing of xanthate started a few years later). The smell of carbon disulphide does not disappear until 30 years later when the production is closed down.

1940 Eka adjusts its production to war conditions. Export opportunities stop. Production is made considerably more difficult as it is not possible to import raw materials. But innovation is very considerable with regard to finding replacement possibilities.

The defence authorities want Eka to build a plant for concentrating hydrogen peroxide to 85 percent proof. Plans are initiated but Eka backs out at the last moment.

Chloride of lime is primarily produced as an emergency measure for decontaminating mustard gas in a possible state of war.

A large number of new products is added and the biggest by far is granulated soda. At the peak, 42 women work in the packing hall which packages the granulated soda and metasilicate 9 aq in one kilo paper capsules. Both chemicals are manufactured at a rate of approximately 30 tonnes a day. The granulated soda disappears from production a few years after the war, whereas metasilicate is sold in small packages until the end of the 1960s.

Metasilicate is one of the few products which Eka sold direct to consumers.

A good work environment did not characterize the production of carbon disulphide.

In the photograph, an automatic scale for weighing and packaging DDT preparations.

Anti-aircraft emergency defense is introduced at Eka and anti-aircraft defense exercises are carried out in pitch darkness as all lights are switched off or screened off.

1942 Rebuilding of Cellhouse A starts and continues in stages until 1946.
Organized safety work which includes six factory rounds a year.

1944 A holiday home with two apartments for the Eka workforce is inaugurated in Tostekulla on Lake Lygnern.

1945 The Board of Directors decides to extend the peroxide capacity to 100 tonnes.
The swedish chlorine manufacturers form a joint sales company, AB Svenska Klorfabrikanter.
Monochloro benzolene is manufactured in a small cube-like concrete building which is popularly renamed the lice box.

Production starts of chlorinated hydrocarbons such as DDT, dichlordiphenyltrichlorethane and chlorinated naphthalenes (artificial wax). However, manufacturing of chlorinated naphthalene is brief and is discontinued following an accident in which two lives are lost.

At the end of the war, there are 125 different products in the product range.

1946 Production is readjusted for peace conditions. A large number of chemicals are removed from the product list.

1947 A works council is formed at Eka.

1948 After many difficulties, partly caused by import bans on components, the new hydrogen peroxide plant starts up.

Ryno Thelander dies and Tage Nilsson is appointed President.

Tage Nilsson

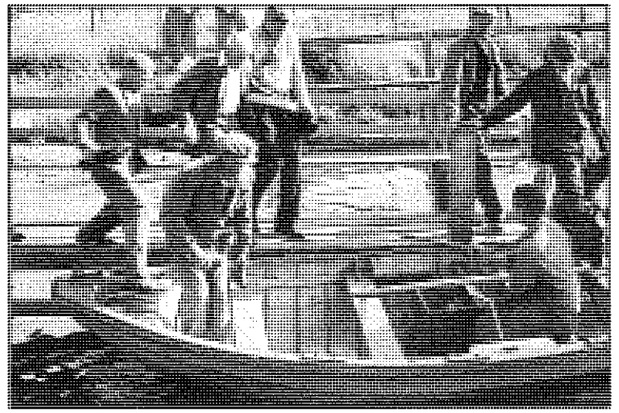
1949 Electro-chemical production of perborate via hydrogen peroxide starts.

1951 Development is initiated of a continuous chrystallization process for metasilicate 5 aq.

Tests aimed at manufacturing carbon disulphide without foul-smelling gases. Despite major efforts to find satisfactory solutions, the project is written off.

Most transport roads within the factory site are asphalted.

Canteens, changing rooms and washrooms for



the collective employees are prepared.
A motor-boat for 12 people is acquired to transport employees across the river Göta Älv.

Eka is acquired by Iggesunds Bruk AB and becomes a wholly-owned subsidiary. The head office is refurbished.

The Eka Arts Club is formed.

Before the Jordfall Bridge was built, morning and evening transport was a major problem and Eka therefore purchased a small motorboat for speedy crossings of the Göta Älv.

1952 DDT production ends.
Regular management meetings with the employees begin.

1953 Decision is made to build an ammonia plant with a daily capacity of 5.5 tonnes. Production does not start until 1956 partly because of a wrongly-constructed furnace.

The staff decides that every Eka employee will make a SEK 3 contribution to surviving relatives on the death of employees or pensioners.

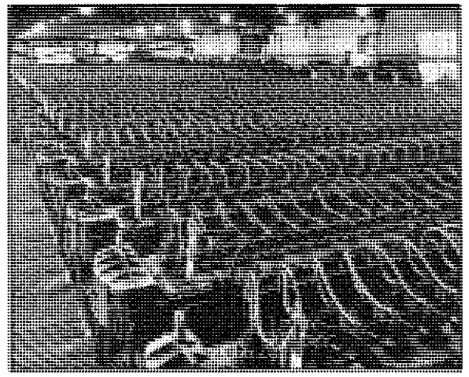
1954 Rebuilding of Cellhouse B starts and the peroxide plant is modernized.

1955 The rebuilding of Cellhouse B is hardly complete when the Board of Directors decides to extend the chlor-alkali plant still further. After six years of expansion, the total number of cells five years later was 191, divided into three series.

The new peroxide plant starts up.

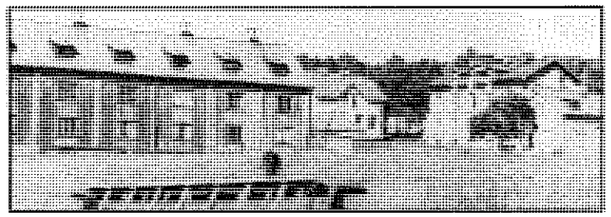
The first telex machine is purchased.

A plant is built for filtering the river water for cooling purposes and for chemically cleaning the water so that it can be used as process water.



Cellhouse B after rebuilding.

1956 A purchase association for Eka employees is established.



Solbacken which Eka took over from Kväveindustri, was demolished in 1963.

1957 During Winter and Spring, the staff works overtime to be given six Saturdays off during Summer.

1958 A major geotechnical investigation, brought about by the landslide in Göta in the previous year, is carried out within Eka's site.

1959 A decision is made to build a canteen with space for 230.

1960 A decision is made to extend hydrogen peroxide production at a cost of SEK 5M.

Rebuilding of head office.

The carbon disulphide warehouse is extended by six 45-tonne storage cisterns submerged in water.

1961 The tancar fleet is extended with 40 26-tonne chlorine vehicles and 10 rubber-lined lye vehicles.

A decision to construct a new high-tension switch gear plant with two transformers of 40 MW each. Granulating apparatus for perborate becomes operational.

Modern staff rooms are furnished.

1962 The peroxide plant is rebuilt. Heavy rain causes floods on Eka's industrial estate.

1963 A decision is made to build a production office and new plant for carbon disulphide production.

Eka's staff apartments at Solbacken are demolished.

Tage Nilsson dies and Carl-Otto Fredriksson is appointed President.

Carl Otto Fredriksson

1964 First visit by the National Water Protection Service which wants to study Eka's production and the quality of the wastewater. The plants which are considered most dangerous from an environmental viewpoint are those using mercury. Eka initiates investigation into discharges into water and air.

Production start of sulphuric acid and sulphur dioxide.

1965 Large demand for chlorine and the salt solution system is extended to a capacity of

100,000 tonnes a year. The liquid chlorine plant is rebuilt with a capacity of 60,000 tonnes a year.

Eka gets its own medical officer.

1966 Decision to build an AO-based hydrogen peroxide plant. The AO licence is acquired in Moscow. The Board of Directors also decides on a new perborate plant.

Large-scale tests aimed at producing sodium chlorate are discontinued, partly because the market has become a veritable wasps-nest as the Swedish manufacturers have increased their capacity very considerably.

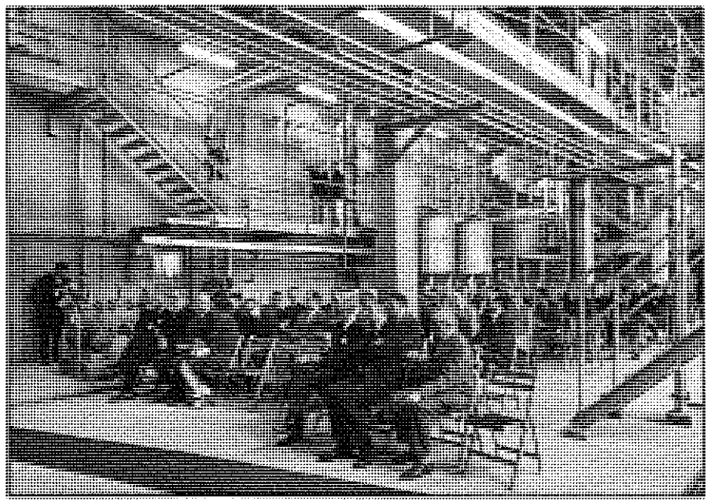
At the same time, Eka capitulated for the second time in 30 years with regard to sodium hydrosulphite.

New IBM 360 computer system taken into use.

1967 Decision about a new mechanical workshop.

Xanthite production discontinued.

A provision of SEK 500,000 is made to reduce discharges of mercury into the Göta Älv.



Some 100 people participated in the inauguration of the new peroxide plant. The USSR was represented by a six-man delegation which included Acting Trade Counsellor JBrezhnev, son of a later and not unknown ruler in the Kremlin.

1968 The new peroxide plant, the so-called Russian factory is inaugurated with much pomp and circumstance. The production result, however, is so poor that the electrolysis plant must be kept running until 1970.

New sodium perborate plant becomes operational.

The last wooden box with pure alkali is packed for export to the USA. Corrugated board takes over as packaging material.

The authorities set strict limits with regard to mercury discharges.

1969 The Board of Directors decides to increase the production capacity for chlorine and alkali from 60,000 tonnes to 90,000 tonnes. As a result, Eka becomes Sweden's largest manufacturer of chlor-alkali. A brand-new electrolyser hall will be erected. Total investment SEK 30M.

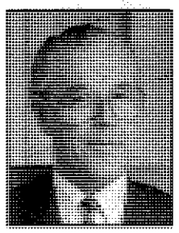
A new logotype is introduced and new regulations for the suggestions activities.

Supervision center for production taken into use.

1970 The Water Rights Court announces a preliminary verdict regarding the discharge level of mercury into the Göta Älv. Later set at 50 kilos a year.

The Board decides on manufacturing of unhydrous metasilicate.

1971 John Gabriel Montgomery becomes President of Eka.



J. G. Montgomery

A new organization plan with sectorization in production, sales and development is adopted.

A reduction is made in personnel. Supernumerary staff complete investment projects and are involved with decontamination work.

The carbon disulphide plant is closed.

1972 The new Cellhouse in full production.

Investments in unhydrous metasilicate and ferric chloride as environmental chemicals. Earnings improve after several poor years.

Extensive environmental improvement work is carried out which includes drawing 7,000 metres of pipes for process wastewater in new pipe "streets".

New Eka-container transport packaging for chlorine, developed by Eka taken into use.

1973 The Board decides to invest SEK 27,2M in a new hydrogen peroxide plant.

The personnel at Eka reaches its minimum at 460 - 160 white-collar workers and 300 blue-collar workers.

Eka's turnover in excess of SEK 100M for the first time.

1974 Threat of energy shortage in the steps of the energy crisis. Major savings campaigns.

Eka acquires two subsidiaries, Nordnero AB for engineering chemistry and Aqvarinse AB for consumer products detergents.

Eka receives a first decision from the National Franchise Board for Environmental Protection.

1975 Production start of a new plant for unhydrous metasilicate under license from Diamond Shamrock.

Disilicate Dizzil is produced as a new detergent product.

Eka is 80 and the whole staff travel to Denmark in a chartered ship.

The new peroxide VP-D plant starts up.

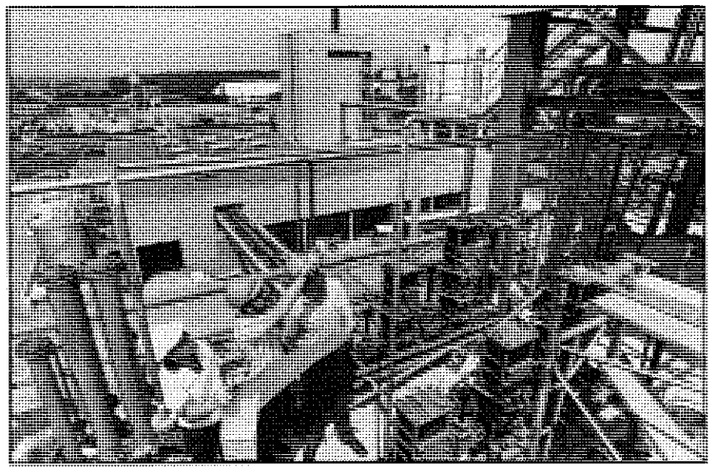
1976 Comprehensive rebuilding of the ferric chloride plant.

Investment in development operations, laboratories and a central research function.

New office building is completed as is a modern health centre.

1977 Eka obtains final concession with regard to waste and discharges into water.

A new sector, DS (detergents and silicas), is formed.



Construction of a metasilicate plant in Maastricht was decided in 1978 and two years later, production was in progress.

1978 Eka begins internationalization and decides to build a metasilicate plant in Maastricht, the Netherlands.

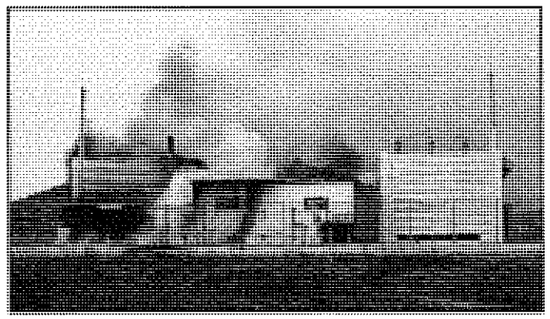
Automatic current control system for increased electricity yield taken into use in the chlor-alkali plant. Construction starts of zeolite production plant.

Ekasol, a binder based on colloidal silica, is launched.

In its work on defending chlorine as a bleaching agent, Eka - together with the Danish Company, DDS - develops ultra filtration for mill discharge.

1979 Change of name from Elektrokemiska AB to Eka AB.

The switch-gear plant is completely destroyed in a fire which spread like an explosion. New switch-gear and transformer plant becomes operational four months later.



The switch-gear plant which was totally destroyed by fire.

Substantial investments in peroxide, metasilicate, sulphuric acid, ferric chloride and the build-up of zeolite-based catalysts production.

Benzyl products planned.

Agreements about chlorine deliveries to EDC production at Kema Nord in Stenungsund.

Sales company established in Germany.

The National Franchise Board sets the terms for discharge of mercury into air. As a result, Eka has a concession for all its operations in Bohus.

1980 Manufacturing of metasilicate 5 aq starts in Maastricht.

Eka receives the National Franchise Board's most extensive decision regarding the operations in Bohus. The decision extensively applies also in 1995.

Patent for the Compozil system is applied for.

The benzyl chloride project in Stora Viken becomes an environmental issue but Eka is granted a concession.

FCC catalysts are manufactured in Bohus and the associated company, Katalistiks, is established in Amsterdam by Eka and CRI.

The number of employees increases from 580 to 680.

Earnings-related salaries and wages introduced at Eka.

1981 Silicates grow in importance. The BMA plant for binders and Compozil starts in Bohus.

Katalistiks starts an FCC plant in Delfzijl in the Netherlands.

1982 Independent business areas are introduced. Service is placed under one umbrella: Eka service.

A decision is made to build a hydrogen peroxide plant in Alby together with Alby Klorat AB. A new company, Eka Alby Kemi AB, is formed.

Construction starts on a district heating plant with heat pumps for utilising Eka's waste heat.

The license to establish a benzyl chloride plant in Bohus is cancelled and manufacturing starts in Maastricht instead.

Eka embarks on a joint venture company for pure alkali in Brazil.

1983 Paper chemicals grow in Sweden and internationally. A PC division is formed.

Katalistiks inaugurates plant and laboratories in the USA.

The Energy Division begins investment in car exhaust catalysts.

The new suggestions activities have a brisk start with 2,670 entries.

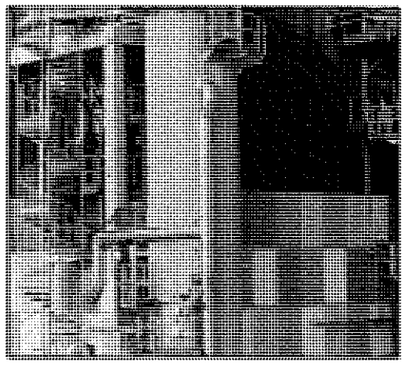
New office and laboratory building constructed.

Modo acquires 49 percent of the stock in the Iggesund Group.

Eka's associated company in Finland becomes a wholly-owned subsidiary.

1984 Katalistiks is sold to Union Carbide and Eka receives a good dividend on its investment.

EKA NOBEL OVER 100 YEARS - 1985-1990



The peroxide plant in Alby was inaugurated in 1984. It was later extended very substantially.

Compozil projects start in Japan.

Construction begins on plant for chemically pure alkali in Brazil.

The peroxide plant in Alby is inaugurated with much pomp, Eka's largest investment so far.

As a complement to the paper chemicals, Chemtronics is formed for work with control systems.

A new IBM computer is installed with ten times the capacity of the old one.

150 kilos of chlorine seeps out during filling of tanker wagons. Gas alarm triggered but leakage had already been stopped when the alarm sounded.

1985 Eka acquires Thor's Kemiske Fabrikker A/S in Norway.

Eka forms joint ventures in Japan and the USA, and a subsidiary in Great Britain.

1986 Nobel Industries acquires Eka AB which becomes one of seven business areas in Sweden's largest chemicals and defense industry company.

Nobel Industrier

Eka and KemaNord bleaching chemicals, the world's largest producer of sodium chlorate, are merged into Eka Nobel.

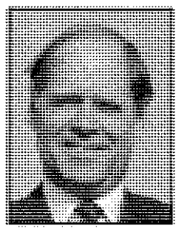
Cellchem is awarded an order for SEK 500M in East Germany.

The benzyl chloride operation is discontinued.

Eka is organized in three business groups with ten divisions as well as Eka service and staff functions.

Dag Strömqvist becomes new Deputy President.

1987 A new chlorate plant is inaugurated in Magog in Canada.



Dag Strömqvist

The first PCC plant is inaugurated, built adjacent to Lessebo Mill, Sweden.

Permascand becomes a wholly-owned subsidiary of Eka Nobel.

1988 On January 1, a change in presidency at Eka Nobel. J G Montgomery retires and Dag Strömqvist takes over.

Nobel Industries acquires Berol from Procordia.

Nobel Paper Chemicals (NPC) is formed through the merger of the paper chemicals operations of Eka, Berol and Casco. Eka is given the main responsibility for the development of paper chemistry.

New extension at Magog decided. Kemi-Intressen becomes a subsidiary of Eka.

Emissionsteknik builds a plant for exhaust catalysts in Karlskoga, Sweden.

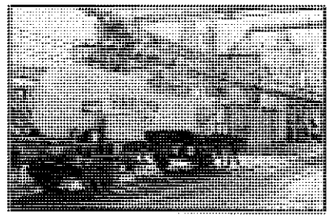
The associated company, Conteka, invests SEK 110M in a zeolite plant in the Netherlands.

Kromazil is launched on the market.

Discharges into the Göta Älv of 40 cubic meters of sodium lye due to overfilling of a tank. The Water Works in Gothenburg closes its water intake.

1989 SEK 200M is invested in a third North American chlorate plant in Moses Lake, USA. Decisive for the investment is increased demand, reliable supply of electricity at favorable prices.

Production of Compozil and Bindzil increases in Bohus.

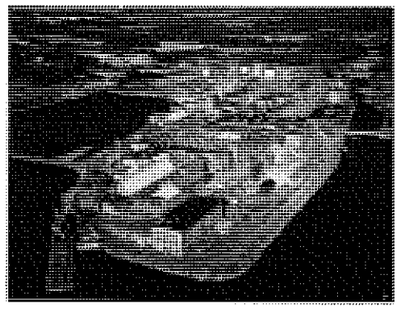


Due to, among other things, reduced demand, the sulphuric acid plant was closed after 25 years. The picture dates from 1968.

Decision about hydrogen peroxide joint venture with DuPont and Mitsubishi in Venezuela and New Zealand. Eka's ownership in Venezuela 60 percent, in New Zealand 20 percent.

The sulphuric acid plant closes. Since its start in 1964, the plant has manufactured half a million tonnes of sulphuric acid. Discharges of sulphur dioxide decreases by 300 tonnes per annum.

1990 Nobel Industries acquires Stora Kemi with Skoghall Kemi, Alby Klorat with chlorate production in Sweden, Norway, North America and South America. In the same year, Albright & Wilson's paper chemicals operations throughout the world are acquired.



Nobel Industries' acquisitions during 1990 included Skoghall Kemi.

Extensive investment in production of peroxide in Venezuela, Bohus, Alby and the USA.

Continued extension of chlorate capacity in the USA, France and Chile. A total of SEK 2 billion is invested.

Eka acquires DuPont's interest in Procomp which thus becomes a wholly-owned subsidiary of Eka.

Rana Kjemis chlorate plant is inaugurated.

Conteka BV in the Netherlands goes bankrupt. Eka, which owns one-third of the company, attempts reconstruction which, however, does not succeed.

Nobel Paper Chemicals (NPC) becomes the Paper Chemicals Division in Eka.

EKA NOBEL OVER 100 YEARS - 1991-1995

Dioxin is discovered in slurry which had been deposited on Eka's site long ago.

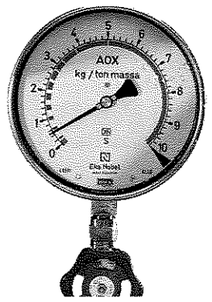
Chlorine production ceases at the 50 percent-owned company, Diacell AB, in Gävle,Sweden.

Eka acquires Ekoflock to augment its paper chemicals product range.

Eka Nobel's quality policy is adopted.

Work is initiated aimed at attaining quality certification under ISO 9000 at Eka.

Eka launches the Lignox system for bleaching chemical pulp with hydrogen peroxide.



Lignox is being developed for bleaching of sulphate pulp without chlorine gas.

1991 The finance crisis hits Sweden. Nordbanken acquires Yggdrasil's stock in Nobel Industries and becomes the new principal owner of Nobel Industries and thus also of Eka Nobel.

Metsä-Serla, Finland acquires Eka's CMC plant in Skoghall.

The Board decides to build a new MCA plant in Skoghall.

The Paper Chemicals Divisions make a substantial investment in AKD-wax. A new plant is built in Stockvik, in the north of Sweden.

A decision is made to double the production capacity of hydrogen peroxide in Alby.

Eka acquires the bankrupt company, Oxynor, in Rjukan and as a result becomes the owner of an additional hydrogen peroxide plant.

A project group is appointed to work with the closed cycle bleaching plant.

Eka plans a plant in Glomfjord in Norway for the production of 50,000 tonnes of lump glass a year.

The Paper Chemicals Division coordinates its operations in Great Britain to Worle. Continued success for Compozil.

Increased production of Kromasil.

Meta-0-production in Bohus is closed and the oxygen gas plant in Skoghall is demolished.

Eka's peroxid plant in Venezuela and the chlorate plant in Moses Lake inaugurated.

Bishop Jose Vicente Henris Andueza blesses Eka's new plant in Venezuela.

1992 Construction starts on disilicate plant with two partners in Maastricht.

The plants in Ambes outside Bordeaux, France, inaugurated.

Following four years of construction, the new plant in Columbus is inaugurated.

Closure of chlorate production at Dokem Sweden.

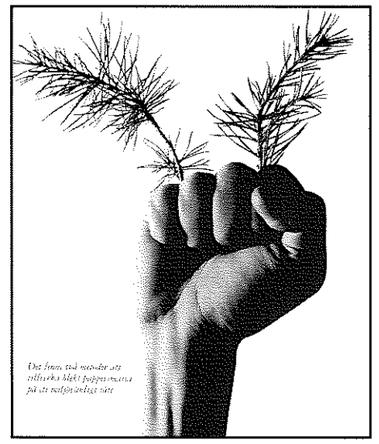
Manufacturing of AKD emulsions starts in Moses Lake and Ekoflock in Columbus.

The Paper Chemicals Division inaugurates office premises and laboratories in Rollsbo, Kungälv.

New production line for resin sizing agent in Les Molettes.

Cellchem sells chlorine dioxide plant to China.

1993 Extensions of the chlorate plant in Brazil from 15,000 tonnes to 40,000 tonnes. The investment is worth approximately SEK 125M.



Eka carries out an information campaign about bleaching and its effects on the environment.

New MCA plant inaugurated in Skoghall.

Manufacturing and sales of AKD emulsions begins in Thailand.

A large number of operations within Eka become ISO-certified.

On November 8, the preliminary agreement is announced that Akzo N.V. and Nobel Industries will merge.

Eka's information campaign about bleaching attracted well-deserved attention both in Sweden and abroad.

1994 On February 25, the merger between Akzo and Nobel Industries is completed. Eka Nobel becomes a Business Unit within Akzo Nobel.

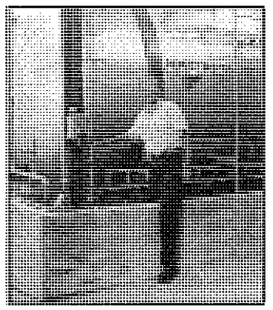
AKZO NOBEL

Eka sets environmental targets.

Zeolite plant in Bohus resurrected.

Decision to close the chlorate plant in Trollhättan, Sweden.

A plant for AKD emulsions is built in Finland.



The first delivery of peracetic acid to Aspa Bruk.

A pilot plant for manufacturing peracetic acid for bleaching paper pulp is built in Bohus. The first full-scale trials are made at Aspa Mill.

Pilot plant for closed cycle bleaching processes started at Gruvöns Mill.

New resin dispersion plant starts in Brazil.

1995 Eka Nobel is 100 years old.

Eka - one of Sweden's most innovative companies

Eka Nobel is one of Sweden's most creative companies. In the "patent barometer" published in the business daily, Dagens Industri, during the past year, Eka Nobel was on every occasion among the ten top companies competing with companies which are many times its size. In addition, Eka in Bohus has for more than 10 years been one of the top companies in Sweden when it comes to staff suggestions.

The patent operation in Eka made its breakthrough in the 1970s and has since developed increasingly, particularly within the Paper Chemicals, Bleaching Chemicals and Electro-chemicals Divisions.

Thanks to its active patent policy, Eka has acquired an effective protection against its competitors in important high-technology areas such as retention and de-watering in paper production (Compozil) or technology for production of chlorine dioxide for bleaching pulp (SVP Lite).

Many inventions are aimed at improving the environment by reducing or putting an end to environmentally hazardous discharges. Lignox is one example of this. Eka has also applied for patent on methods aimed at making possible closed cycle bleaching plants.

Claes-Göran Bertling, far left, with Eka Nobel's diploma and in the company of, among others, representatives of Ikea and Erics-son. Jack Norlin, head of (SIFV) is on the right. Photo: Hans Blomberg.

Started in 1946

The first general rules for "suggestions activities" in Sweden existed in the so-called Works Council Committee Agreements from 1946.

In 1964, it was noted in Eka that 333 suggestions had been submitted since the start 17 years earlier, and to stimulate increased innovation activities, an award system was introduced aimed at getting individual staff submit more recommendations. Three submitted suggestions were awarded with cuff-links, six with a watch, 9 with a wallet plus SEK 300, 15 with a film-camera and 25 with a TV set.

In Eka in Bohus, interest in the suggestions activities increased somewhat and as an example can be mentioned that 47 suggestions were submitted in 1973, 70 in 1976 and 104 in 1977.

Breakthrough in 1983

The big breakthrough came in 1983 when on April 29, the company started a brand-new form of suggestions activity. Claes-Göran Bertling was one of the initiators and has since led and administered the suggestions activities in Bohus.It is based on the four corner-stones: generosity, speed, participation and simplicity. The campaign produced splendid results - the number of recommendations received was up by 650 percent.

"The suggestions activities were a signal to employees that we wish to be a creative company and that everyone can contribute to Eka's development," says J G Montgomery.

The campaign was presented on posters and in the brochure "Chemical ideas".

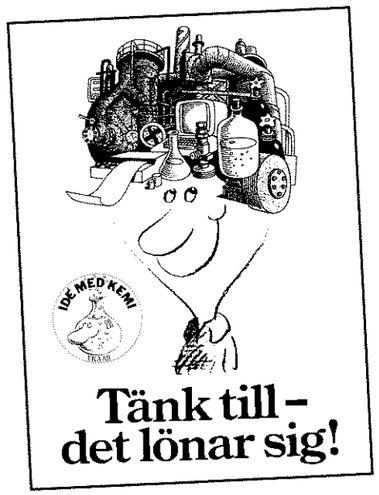
"What particularly separated Eka's new suggestions activities from the previous ones was that all ideas were rewarded, regardless of whether they led to any change in the operation," says Claes-Göran Bertling.

In addition, a so called "chal"-person was appointed in each department whose task it was to assist in developing an idea into a suggestion. The responsibility of the chal was also to make an initial evaluation of the idea and issue awards at two different levels, depending on the value of the idea. Suggestions which were profit-calculable were passed on to the Suggestions Committee.

The campaign proved an extraordinary success. During May-September, 12,000 ideas were submitted. The most profuse innovators were people employed in the peroxide plant.

During 1984-1993, the number of ideas submitted ranged between 1,920 (1984) and 3,216 (1989). If one calculates the number of suggestions per hundred employees, 1987 was a peak year with 388 suggestions.

On some occasions, the successful suggestions activities in Eka attracted the attention of scientists, formed a model for a number of companies and were featured in a BBC TV program. Over the past 12 years, Eka has been placed number one on eight occasions in the statistics covering the suggestions activities which is produced by the Swedish Institute for Suggestions Activities (SIFV). It should be a very long time indeed before a Swedish company will be able to beat that record.



This is how the new ideas campaign which started in 1983 was presented.

Keep an eye on Eka's environment

In order to strengthen and brush up on the environmental awareness here at Eka, a campaign will run for just over two months.

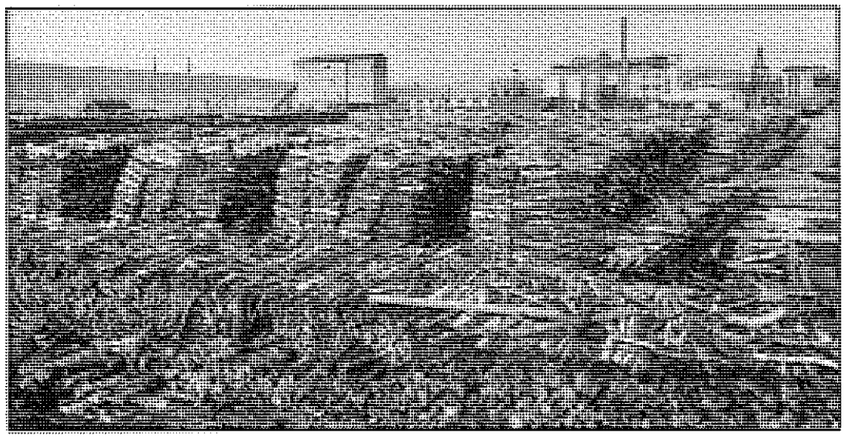
The reason is that there is a great deal of carelessness which is difficult to pinpoint. It concerns small quantities which are dripped, spilled and lost and which register on measuring instruments in sewers and in the river.

Unfortunately, environmental awareness has been slightly de-escalated and a reminder about the importance of jointly protecting the work environment and outdoor environment is therefore justified.

In the campaign, we urge all Eka staff to keep their eyes open. In addition to carelessness, there may also be leakages which no one has noticed and which must be attended to immediately.

Staff Magazine Elysören no 7 1983

Wood as far as the eye can see



Over a period of time, Eka was a large buyer of wood. The wood was used for production of charcoal which was used in the manufacturing of carbon disulphide. The picture shows Eka's stock of wood in 1945.

Sweden's first chlorine train

On December 29, a special train departed from Bohus solely with chlorine wagons for direct consignment to its destination in East Germany (DDR).

The train, which was equipped with empty chlorine wagons as protection for the filled chlorine wagons immediately following the engine and last in the train consisted of 31 chlorine wagons containing approximately 1,050 tonnes of chlorine.

Staff Magazine Elysören No 1 1976

"Speedy Anders" rewarded

Anders Magnusson has worked in Eka for 37 years. Throughout the chlorine accident on September 12, Anders made good use of his long expertise in chlorine. Thanks to his resolute intervention, a much larger gas spillage was averted. Anders had such a cool head that he walked into the chlorine condensing department and closed the remote-controlled chlorine valves which cut off the supply of chlorine from the storage tank and valves on the chlorine wagon.

Anders' skillful intervention resulted in a reward: he was allowed to select a picture from an art gallery.

Staff Magazine Elysören No 9 1984

All staff must quit at 67

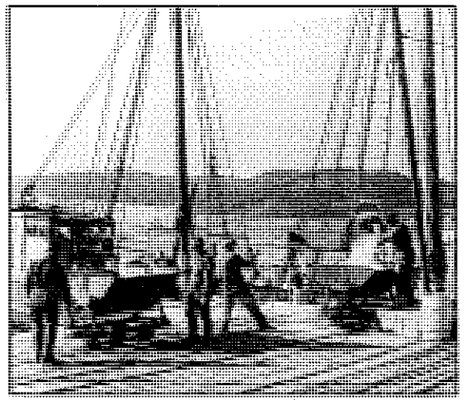
Staff employed under collective agreements have previously been allowed to stay on for two years after reaching pensionable age, if they were able to provide a medical certificate which stated that they would be able to cope with the general work during this extended period of employment.

In order not to delay natural retirement, this rule was abolished from January 1 this year and 67 thus applies as the retirement age. As a result, the workforce will reduce by ten this year.

Staff Magazine Elysören, No 1 1967

Unloading common salt at Eka in 1935

The salt arrived in a motor-sailing vessel and was unloaded with the vessel's winch. Thereafter, it was transported by rail to the salt store.



First female trainee

Now there has been a female trainee in the electrical workshop. As far as we know, this is the first time a woman dressed in overalls has worked in our electric workshop. We asked her what it felt like to be the only woman among so many male colleagues. She felt that it had worked very well. No complication whatsoever had occurred - and how could it, as they were all gentlemen - she commented.

Staff Magazine Elysören No 3 1965

Master Cooper Pettersson had enormous authority, was straight-backed and radiated as much energy as a fir tree.

Herman Ehlvén worked in Eka for 53 years and did not retire until he was nearly 81.

Colorful profiles among Eka's employees over 100 years

Eka's history is also the history of its employees. The staff who, in their various jobs - in good times and bad - have given of themselves, inspired to do their best. In addition, many devoted large parts of their active lives to Eka, felt satisfied in their work where they experienced much companionship. Not everyone can be mentioned here but everyone can be remembered for their contribution. Now that Eka is celebrating its 100th anniversary many of the pioneers who worked there in the early days deserv to be remembered.

One employee who is still talked about was Herman Ehlvén, "Handsome Herman", who was born on March 10, 1867. He was employed right at Eka's start in 1895, having just completed his employment as a regular hussar. Military life taught him loyalty, diligence and discipline: three pillars on which his life was built.

Herman Ehlvén participated in the pioneering work in Bengtsfors and his proficiency in the area of technology soon gained him promotion. He became foreman of the electrolysis department where a man who was matter-of-fact, unafraid and conscientious was really needed.

When Eka relocated to Bohus, Herman Ehlvén settled into Solbacken 2 with his wife and daughter. He kept his job as foreman in the cellhouse and his interest in the much-loved objects and their function never diminished.

He showed a vitality and stamina in his work which bordered on the unnatural despite a "comfortable" weight of just over 250lbs during his time at Bohus. His excellent health and great interest in the electrolysers guaranteed that he was hardly ever absent from his work during more than 53 years of service.

The foreman of the workshop in Kungälv, Arthur Karlsson, had the ability to treat his staff in the right way.

Mercury in his boots

There a very good reason why he was called "Mr Hg" by his colleagues. After every working day, he emptied his boots of the mercury which had collected there during the day. He always had a glass jar in his locker for that purpose. But sometimes one could also detect mercury "pearls" in his well-groomed handlebar moustache.

But Herman Ehlvén was also able to let his hair down. It is said that the major attraction on his 65th birthday in the company of good friends was doing the rumba in which the heavy-weights Ehlven and Cooper Pettersson were the main performers.

Ehlvén retired form Eka on New Year's Eve 1948 at the age of nearly 81.

Tough struggle in negotiations

Master Cooper Pettersson was head of the coopery in which his sons also worked. Pettersson had an enormous authority, straight-backed and radiated as much energy as a radiated an enormous energy fir tree. It has been said that there was a tough struggle when Cooper Pettersson negotiated the price of the barrels with Manager Ryno Thelander.

Ryno Thelander himself spoke about one of his skirmishes with Pettersson:

"I haven't been harassed many times in my life but at one time I was actually threatened with being beaten up. Cooper Pettersson and I didn't agree on a matter and there was a furious exchange of words when Pettersson - straight-backed - shouted "if it wasn't for the fact that you are so old, you son of a bitch, I would have jumped your desk and punched you on the jaw".

It should be pointed out that the difference in age between them was not very large. But when the strong words had died away, the two men shook hands and things were peaceful and quiet until the next negotiation.

Caught in a rotating shaft

Another man who was known for his impressive build and strength was Edvard Holländer, foreman of the transport team. He had enormous strength in his arms and hid hands were like a vice.

On one occasion, his blue shirt got caught in the rotating shaft. In an instant, Holländer was caught in the power of the shaft and began to rotate with it. While rotating, however, he had the presence of mind to get hold of a water pipe and by using all his strength he managed to stop his body from rotating. The rotating shaft pulled all his clothes off except his socks, shoes and the wrist-band of his blue shirt. A man of a more normal physical constitution would hardly have survived the adventure but Holländer was back at work only a few weeks later.

Every department has some personality who is well-known for his stories, his mischief or ability to end up in every possible and impossible situation.

Queues to the lavatory

"Fager of the workshop" - his real name was Fagerström, carried his own beer bottle to quench his thirst. But "Fager" was not allowed to keep it to himself and complained to the staff of the laboratory. When he left there, he brought with him a white powder which, having taken some long draughts, he put in to the bottle. A little later in the day, queues began to form outside the lavatories and the result was that "Fager" was allowed to keep his beer bottle to himself.

Supervisor and politician

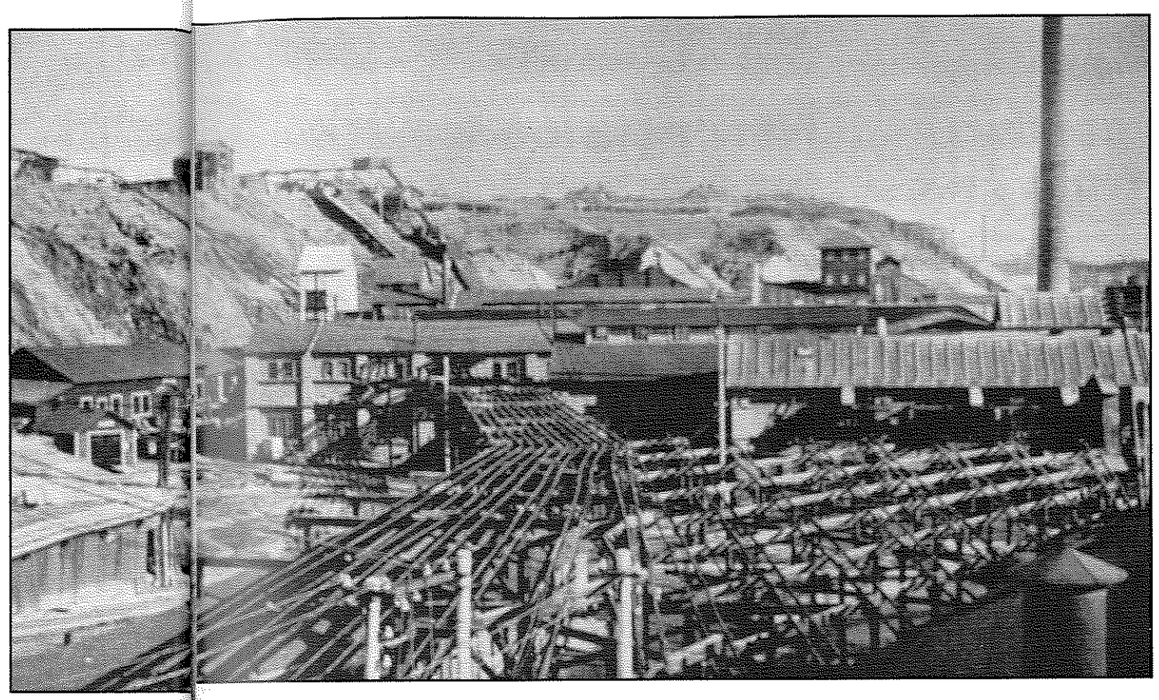
One of the more colorful personalities was the foreman of the workshop in Kungälv, Arthur Karlsson, who had the ability to treat his men in the right way.

Arthur Karlsson was born in and lived in Tuve and became very active politically. Among other things, he was a member of the municipal council, municipal committee, building committee and the church council. But when Tuve was incorporated into Gothenburg, Arthur Karlsson thought it was time to take things a little easier.

At the age of 90, he took part in Eka's gala party at the Park Avenue Hotel in Gothenburg in 1984. There, he handed over three coins from 1924 - the year when Eka established its operations in Bohus.

Patent from 1890 laid the foundation for KemaNord's chlorate expansion

Today, Eka Nobel is the world's largest producer of sodium chlorate. It has gained this position thanks to the merger of KemaNord Blemkkemi with Eka Nobel, strategically correct investments and acquisitions. But the foundation for the success is the patent by Oscar Carlsson, approved on November 15, 1890.



In Månsbo, Oscar Carlsson constructed a power station, chlorate plant and residential accommodation, etc, and in 1894, chlorate production started.

Oscar Carlsson was a contemporary of Alfred Nobel and, like his more wellknown fellow countryman, was interested in explosive substances. Oscar Carlsson was on of the founders of Stockholms Superfosfat Fabriks Aktiebolag which began operations in 1891 by building a superphosphate plant in Gäddviken near Stockholm.

During his travels in Great Britain, Oscar Carlsson had heard that a man was trying to produce chemical preparations with the aid of electric current. At the beginning of the 1890s there was also manufacturing operation in France of sodium chlorate on an industrial scale through electrolysis.

These impulses caused Oscar Carlsson to carry out tests into the manufacture of potassium chlorate through electrolysis of potassium chloride. The experiments led to a new process, "Means of producing hypochlorous acid and chlorous acid salts through electrolysis", for which he was granted a patent.

Established plant in 1894

In 1892, the new process was tested at a pilot plant in Gäddviken. Oscar Carlsson immediately saw the vast industrial application of his method and Superfosfatbolaget acquired the Månsbo real estate together with waterfalls in the River Dalälven. A power station, chlorate plant, residential accommodation, etc were constructed in Månsbo and chlorate production started in 1894.

From chlorate manufacturing, the company switched to producing perchlorates which are used in explosives and this led to the establishing of an operation in Trollhättan for production of chlorate and perchlorate.

When, around 1910, Oscar Carlsson was not granted permission to expand the power station in Månsbo, production was established at Hågstaforsarna in the River Ljungan. Ljungaverk was the name given to the industry as well as the community which grew up there.

After World War I, demand for chlorate and perchlorate fell and for some years production was discontinued in both Månsbo and Trollhättan. In 1925, Månsbo was sold to the match company Svenska Tändsticks AB and operations were taken over by its subsidiary, Alby nya Kloratfabriks AB.

In 1924, manufacturing was resumed in Trollhättan. The sodium chlorate manufactured there was used both for combating weeds and for ammonium perchlorate.

New user

The production volume of sodium chlorate remained virtually unchanged until the 1950s when a new user appeared on the scene. It was the cellulose industry which had found that chlorine dioxide produced from sodium chlorate was an extremely efficient and - what would be proved in due course - an environmentally compatible bleaching agent for paper pulp.

The Trollhättan plant was extended in stages from 2,000 tonnes a year in 1962 to approximately 15,000 tonnes in 1965. That, however, did not cover the requirement and a new plant was built in 1962 at Stockviksverken with a capacity of 10,000 tonnes a year. Over the next few years, expansion of the capacity continued in both Trollhättan and Stockviksverken.

In the company, a large number of other products were also being developed, such as plastics raw materials. In Stenungsund, plants were established for manufacturing chlorine, vinyl chloride and PVC. In addition, acquisitions took place which included Liljeholmens Stearinfabrik, with candle production, AB Casco, adhesives, and Barnängen, making soap etc.

In 1970, the Group changed its name to KemaNord.

During the 1970s, intensive development work of the manufacturing process of sodium chlorate was underway and several patents were granted in Sweden.

Patent battle

Just as in Eka, there was an interest in KemaNord in internationalization. But KemaNord's international activities were preceded by a patent battle in the USA and Canada which KemaNord won. After a time, KemaNord was invited by one of the competitors, PPG, to acquire that company's chlorate and chlorine plants in Beauharnois in Canada.

Dag Strömqvist, who was in charge of the chlorate operations in KemaNord, politely but firmly declined the offer during a meeting in Pittsburgh.

Discord

Because of discord in PPG's Canadian operation, some members of the plant management began to make plans for a chlorate operation of their own. In extreme secrecy, they investigated a suitable location, production method, financing, market, etc. They found a splendid place - Magog in Quebec - that solved most of the problems, but had problems with the financing.

In that situation they turned to KemaNord and offered a partnership. Dag Strömqvist negotiated an agreement with the effect that KemaNord financed and owned the plant, whereas the initiators were given some kind of management contract. Dag Strömqvist also forced through that the plant would be built using KemaNord technology.

The plant, which started up in 1979, became a technological and financial success.

KemaNord had proved that it had a chlorate technology which was very competitive on the international market.

As early as 1981, an extension was carried out which had the effect of doubling the production to approximately 70,000 tonnes a year. New extensions followed in 1985 and 1986 with units of 35,000 tonnes a year.

Start in Mississippi

As a result, KemaNord had gained a firm foothold in the northeastern part of the North American Continent and felt it urgent to establish a similar foothold further south.

In the mid-1980s, an out of date graphite-based chlorate plant was acquired in Columbus, Mississippi. Construction of a new unit for approximately 36,000 tonnes a year started in 1985 and in 1989 was augmented by approximately 42,000 tonnes a year.

But before that - in 1986 - Nobel Industries had acquired Eka and transferred KemaNord Blekkemi to Eka Nobel.

The next operation was established in Moses Lake, Washington. It has been said that a delegation from Moses Lake visited Stockholm to find an industrial market for a surplus of electricity. That fitted Eka Nobel like a glove and in 1990 a plant was started in Moses Lake with a capacity of approximately 50,000 tonnes a year.

Uncertainty about energy prices

Plans for further expansion in Sweden were shelved because of uncertainty about future electricity prices and instead a plant was started in April 1992 in Ambes in France with a capacity of 50,000 tonnes a year. In 1991, Columbus was extended with two units each for 50,000 tonnes a year. As a result, Columbus became the largest chlorate plant in the world.

But the chlorate expansion also took place through acquisitions. In 1990, Stora Kemi was acquired and as a result, the Alby plant was added with 80,000 tonnes a year and the Vallyfield plant in Canada with 110,000 tonnes a year as well as Mo i Rana in Norway. In South America, Stora's contribution was two plants, Concepcion in Chile and Jundiai in Brazil.

Robust product

Chlorate has proved to be an extremely robust product. Efficient, lenient on the cellulose fiber and with insignificant effect on the environment, chlorate/chlorine dioxide increasingly replaces chlorine gas throughout the world.

This year, it is 101 years since Oscar Carlsson started his plant in Månsbo on - measured by today's standards - a small scale. He was the pioneer who with his own process built the plant and the power station - the largest in Sweden - at a time when electric power was something entirely new.

Oscar Carlsson is well worth remembering now that Eka Nobel celebrates its 100th anniversary and has a total capacity of three-quarters of a million tonnes of chlorate.

Oscar Carlsson who through his patent laid the foundation for KemaNord's expansion.

Consumer products for boats from Eka

In the mid-1970s, Eka's subsidiary, Aqva Rinse in Kungälv, launched a series of detergents for boats. They were also sold to retail customers in Eka's warehouse for one-third of the price charged in the shops.

The boat-care program consisted of Båtrent - a special detergent for boats. Kölrent - a strong detergent for badly-soiled surfaces such as keelsons. Matrent - a detergent for refrigerators and cooling bags. Motorrent, an engine detergent, which could also be used to remove fat, oil and tar spots from painted and varnished surfaces.

New pension benefits for Eka workers

"To qualify for a pension, the employee must have reached the age of 65 and have been in the company's service for at least 20 years. Pension for married workers constitutes SEK 600 for 20 years of service and then increases by SEK 30 for each year up to a maximum of SEK 900 after 30 years of service. Unmarried workers, who are placed on par with widowers or divorcees, will receive SEK 400 for 20 years of service and the figure will then increase by SEK 20 per annum up to a maximum of SEK 600 for 30 years of service."

Elysören No 4 1955

Import of hydrogen peroxide

"Demand for our bleaching agents, such as hydrogen peroxide and perborate, remains very satisfactory and, as far as the former is concerned, we would be able to sell more if only production could be increased very quickly. To be able to meet the orders on our books, we have been forced to import hydrogen peroxide from Great Britain on some occasions".

Works Council, June 17, 1958

Eka's tanker wagon fleet

In 1936, Eka's wagon fleet consisted of four tanker wagons. The wagon in the photograph was used for transporting calcium hypochlorite. In addition, there was a tanker wagon for liquid chlorine as well as two pot wagons (wagons with ten earthenware pots placed on the flat) each with a capacity of 1,000 liters for transport of hydrochloric acid.

Free hairnet to Eka employees

At the Occupational Safety Committee's meeting on June 18, 1968, it was reported that a youth with a "Beatles" hairstyle had recently suffered a nasty incident. His ample mane was nearly sucked into a fan in Cellhouse A.

All the members agreed that measures must be taken to prevent accidents of this nature.

It was therefore decided that all youths with long hair in Eka's employ, will from now on be issued a hairnet. Hairnets may be collected from the central store free of charge.

Scientists meet Eka staff

Eka has invited six scientists to a five-day seminar on May 28-June 3, 1972.

The objective of the conference is, among other things, to give the corporate management an opportunity to gether with the gathered scientific expertise to seek accurate evaluations for the development products with which we work and plan for.

An important objective in this connection is also to attain internationalization and further development of our expertise and as a result find the right routes for an expansion in the Company.

Elysören, Staff Magazine, No 5 1972

Meeting of the Works Council on September 16, 1956

Para 4

Hugo Andersson:
We would like to be informed of the result of the mercury investigations of the staff in the electrolyser halls.

Manager Nilsson:
Some show values which are not exactly good. Others turn out to be completely unaffected. The former must be relocated in order to get rid of the effect of mercury.

The mercury values mainly originate from clothing. The company will therefore provide undergarments and overalls to all staff in these departments.

Change will be effective on fixed dates.

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