

50 years of finnish combine harvester manufacture



Half a Century of Combine Manufacture in Pori, Finland

Rosenlew has made harvesting history by first developing threshing machines and later on, since the 1950s, self-propelled combine harvesters. The industrial structural change that got underway in Finland in the 1980s also affected the Rosenlew Company when Rauma-Repola Oy bought out the Rosenlew share capital in the 1980s. This deal set in motion possibly the most significant structural change in industry in the Pori region. Some of the Rosenlew business operations came to an end; some were merged into new organizations and some became independent companies like the combine harvester industry. Sampo Rosenlew Ltd bought out the combine harvester business in 1991 and continued to develop it further.

Harvesting efficiency of combines has increased more than tenfold in the past 50 years. The same is true of the manufacture

of combines, which has been modernized and developed enormously. Interaction between farmers and the Company personnel has been of utmost importance in the development process. The world is changing and it is increasingly important to us to anticipate and respond to changes that affect us.

In today's global world economy combine production is looking for fresh ideas and new models as our products are sold to countries further away than ever before. Today nearly two thirds of our combine production is exported. It is the trust our customers put in a Finnish combine and the expertise of our personnel that will count most in the future, too.

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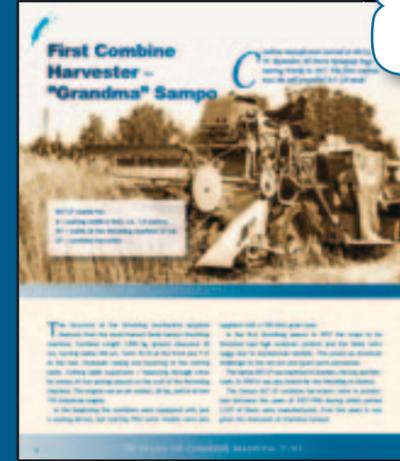
On the right Sampo 657 LP
manufactured in 1957.
On the left SR 3065 L manufac-
tured in 2007.
In the background the facade
of foundry built in 1903.

Tradition

The first threshing machines were manufactured in Pori in the 1860s. They were manually operated. In the 1920s the threshing machine was named Sampo. The name originates in Finnish folklore, which Elias Lönnrot collected and compiled to form the Finnish national epic, the Kalevala.



6



8

10



Sampo 10

The Sampo 10 started its success story in 1965. Over a period of fourteen years more than 10,000 Sampo Tens were manufactured.

The 2000 series

The Sampo-Rosenlew 400 series was launched in the early 1970s. The combine was modified in many ways in a short period of time. The modifications were based on the 400 series and in the late 1970s a new Sampo was introduced in the 600 series.

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The first combine harvester

Combine manufacture started in Pori in 1957. The first combine in serial production was the Sampo 657 LP model. Later on it was given the nickname of Grandma Sampo.

The 500 series

The successful Sampo 10 series was followed by the new 500 series in 1978. The number of straw walkers and width of the threshing machine were increased. The combine was the best in its size in tests conducted by agricultural testing institutes.

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The 2000 series

As farms increased in size and farmers needed higher threshing capacity, there was a demand for bigger and more efficient combines. The SR2000 series was launched in 1990.

The 3000 series

Particularly with the export markets in mind we developed the heavy-duty 3000 series. The first models were manufactured in 2001. The SR3085 TS was added to the range in 2003. The new pre-cylinder increased efficiency, which allowed wider cutting tables and a larger grain tank.

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Localization

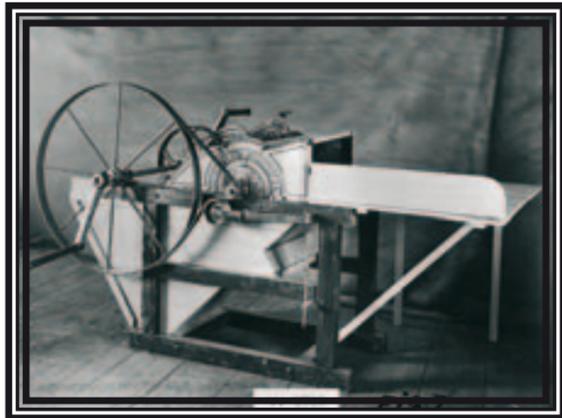
Localized final assembly of combines by our partners.



Long Tradition of Threshing Machines

Threshing machines were manufactured at the Porin Konepaja Engineering Works as early as the 1860s. In the beginning they were manually operated.

The threshing machine in the photo was manufactured in the early 1900s. The threshing mechanism consisted of a spike-tooth cylinder and a concave beneath it. Power transmission meant crank handles for two. On the rear side of the machine you can see a belt pulley driven by



"The name Sampo originates in Finnish folklore"

the power unit. Later on straw walkers were added to separate the grain from the straw and a shaker shoe to clean the grain from the chaff.

In the early 1920s SAMPO was adopted as the brand of the threshing machine. Today we manufacture Sampo combines, and Sampo is also part of the Company name.

The name Sampo originates in Finnish folklore, which Elias Lönnrot (1809-1884) collected and compiled to form the Finnish national epic, the Kalevala, published in 1849. In the mythical hierarchy Väinämöinen, the everlasting wise man, and Ilmarinen, the smith and the forger of the sky, rank right below the Creator.

In the tenth Kalevala poem Väinämöinen sends Ilmarinen far up to the North to woo the fair maiden of Pohjola. The maiden's mother, Louhi, the mistress of the Pohjola North Farm, promised her daughter to Ilmarinen in return for forging her the Sampo. After four "prototypes" Ilmarinen forged for three days and finally succeeded:

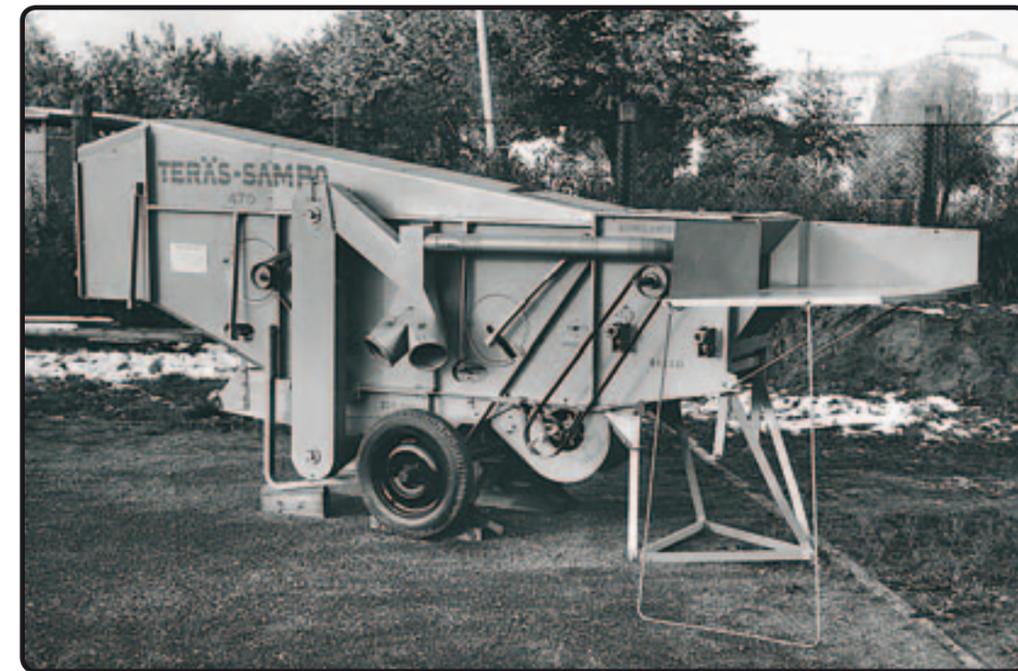
*"On the third night Ilmarinen,
Bending low to view his metals,
On the bottom of the furnace,
Sees the magic Sampo rising,
Sees the lid in many colors.
Quick the artist of Wainola
Forges with the tongs and anvil,
Knocking with a heavy hammer,
Forges skilfully the Sampo;
On one side the flour is grinding,
On another salt is making,
On a third is money forging,
And the lid is many-colored.
Well the Sampo grinds when finished,
To and fro the lid in rocking,
Grinds one measure at the day-break,
Grinds a measure fit for eating,
Grinds a second for the market,
Grinds a third one for the store-house."*

The Kalevala
by Elias Lönnrot
Translated by John Martin Crawford
[1888]

The mistress of the Pohjola North Farm was pleased with the Sampo, but the maiden refused to go with Ilmarinen as she had so much to do at home. Ilmarinen had to return home sad and lonely without the fair maiden of Pohjola.



A wooden threshing machine threshing back in the 1930s.



In addition to the wooden-framed threshing machines we launched the metallic Teräs-Sampo in the early 1950s. The manufacture of threshing machines spanning a hundred years came to an end at the Porin Konepaja Engineering Works in the early 1960s.



First Combine Harvester – “Grandma” Sampo

Combine manufacture started at the Oy. W. Rosenlew Ab Porin Konepaja Engineering Works in 1957. The first combine was the self-propelled 657 LP model.

657 LP stands for:

6 = cutting width 6 feet, i.e. 1.8 metres.

57 = width of the threshing machine 57 cm

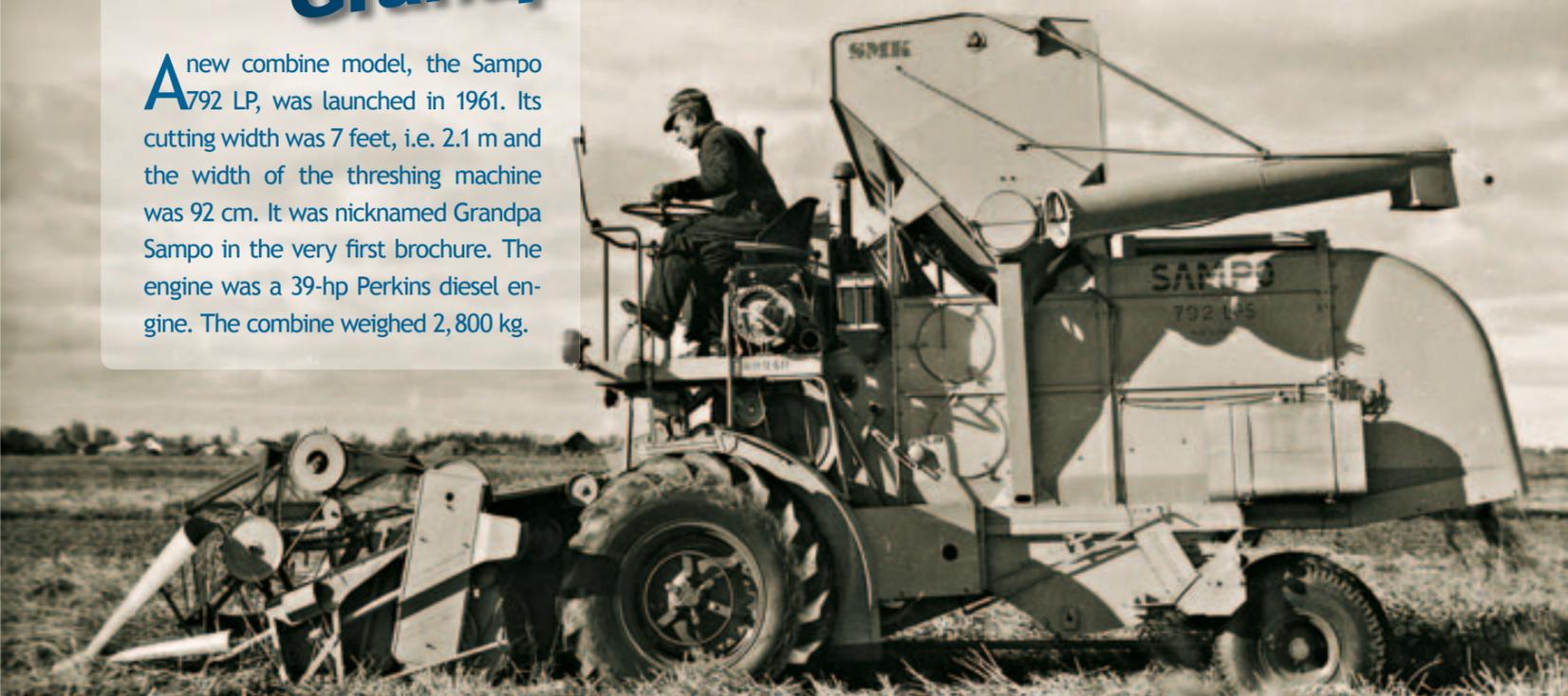
LP = combine harvester



Grandpa Sampo



A new combine model, the Sampo 792 LP, was launched in 1961. Its cutting width was 7 feet, i.e. 2.1 m and the width of the threshing machine was 92 cm. It was nicknamed Grandpa Sampo in the very first brochure. The engine was a 39-hp Perkins diesel engine. The combine weighed 2,800 kg.



In 1963 the combine was supplied with a 1,100-litre grain tank. Also available was a version with a sacking device in addition to the grain tank. This was the

792 LPSS model. In 1964 an 8-foot, i.e. a 2.4-metre, cutting table became an option. This became the Sampo 892 LP.

The structure of the threshing mechanism adopted features from the steel-framed Teräs-Sampo threshing machine. Combine weight 1,900 kg, ground clearance 30 cm, turning radius 365 cm. Tyres 10-24 at the front and 7-12 at the rear. Hydraulic raising and lowering of the cutting table. Cutting table suspension / balancing through wires by means of two springs placed on the roof of the threshing machine. The engine was an air-cooled, 28-hp, petrol-driven VW industrial engine.

In the beginning the combines were equipped with just a sacking device, but starting 1963 some models were also

supplied with a 700-litre grain tank.

In the first threshing season in 1957 the crops to be threshed had high moisture content and the fields were soggy due to exceptional rainfalls. This posed an immense challenge to the service and spare parts personnel.

The Sampo 657 LP was exported to Sweden, Norway and Denmark. In 1959 it was also tested for rice threshing in Greece.

The Sampo 657 LP combine harvesters were in production between the years of 1957-1966 during which period 2,527 of them were manufactured. Over the years it was given the nickname of Grandma Sampo!

In 1964 the Sampo 892 was tested in Portugal. When threshing extremely dry wheat, it performed far better than the German and British combines being tested. It also achieved excellent results with a variety of wheat that had been considered impossible to thresh as pieces of spikes had got through into sacks unthreshed when other makes of combine harvesters had been used.

The Sampo combine reached threshing output of 4,000 kg an hour. Speed was slowed down by the man on the sacking platform! There were only approximately 1,000 combines in Portugal at that time. 1,812 Grandpa Sampos were manufactured over the years of 1961 - 1966.



Sampo 10 Series

The basic Sampo 10 model was introduced in 1965. It became a real success story with a total of 10,122 combines manufactured in different versions over a period of 14 years.

The Sampo 10 had a cutting width of 7 feet, i.e. 2.1 m and a threshing machine width of 80 cm. It had both a 1,100-litre grain tank and a sacking device. It weighed 2,750 kg. A 43-hp Perkins diesel engine was housed low down on the right side of the threshing machine.

In 1967 the Sampo 10 model was supplied with an 8-foot cutting table, and the new models became the Sampo 20 with a 7-foot, i.e. 2.1 m, cutting width and the Sampo 30 with an 8-foot, i.e. 2.4 m, cutting width. The engines were 3-cylinder 54-hp Valmet engines. Grain tank volumes were 1,200 and 1,500 litres.

In 1971 Sampo became Sampo Rosenlew, and two new models

were launched: the Sampo Rosenlew 25 and the Sampo Rosenlew 35.

These were the years of strict price control when only well-justified model modifications gave manufacturers the right to increase sales prices. In order to obtain a new type approval, there had to be a considerable increase in threshing capacity. Larger straw walker and sieve areas, an increased grain tank capacity and a more powerful engine contributed to expanding threshing capacity.

The Sampo Rosenlew 310 and the Sampo Rosenlew 360 were the new models in 1973. The grain tank capacity of the latest model was 1,700 litres, the weight 3,360 kg and the engine output 54 hp.



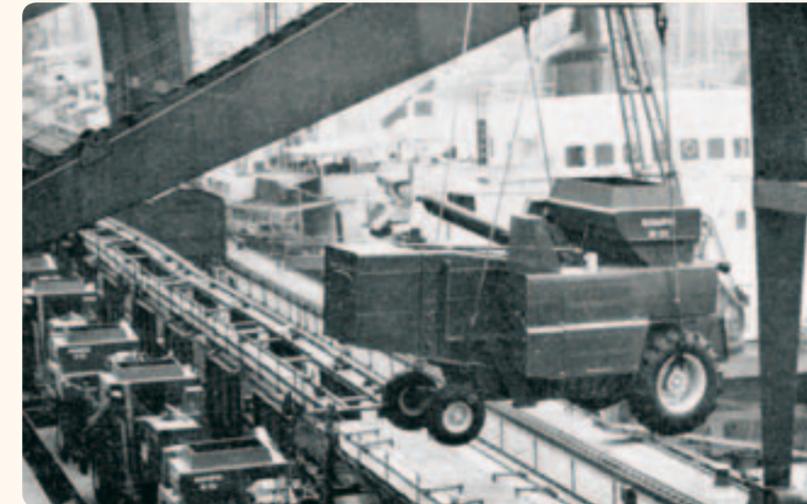
Sampos to the world

Combines for export markets

Exports to Sweden were started through Maskinköp AB, which was jointly owned by the W. Rosenlew & Co. Porin Konepaja Engineering Works and Valmet Oy. In 1968 an agreement was made with AB International Harvester Company to sell Sampo combine harvesters in Sweden under the trade names of the IH-SAMPO 20 and -30. Exports to Denmark were started through IH in 1970 and to Norway through A/S Edw. Björnruud, an IH representative, the same year.

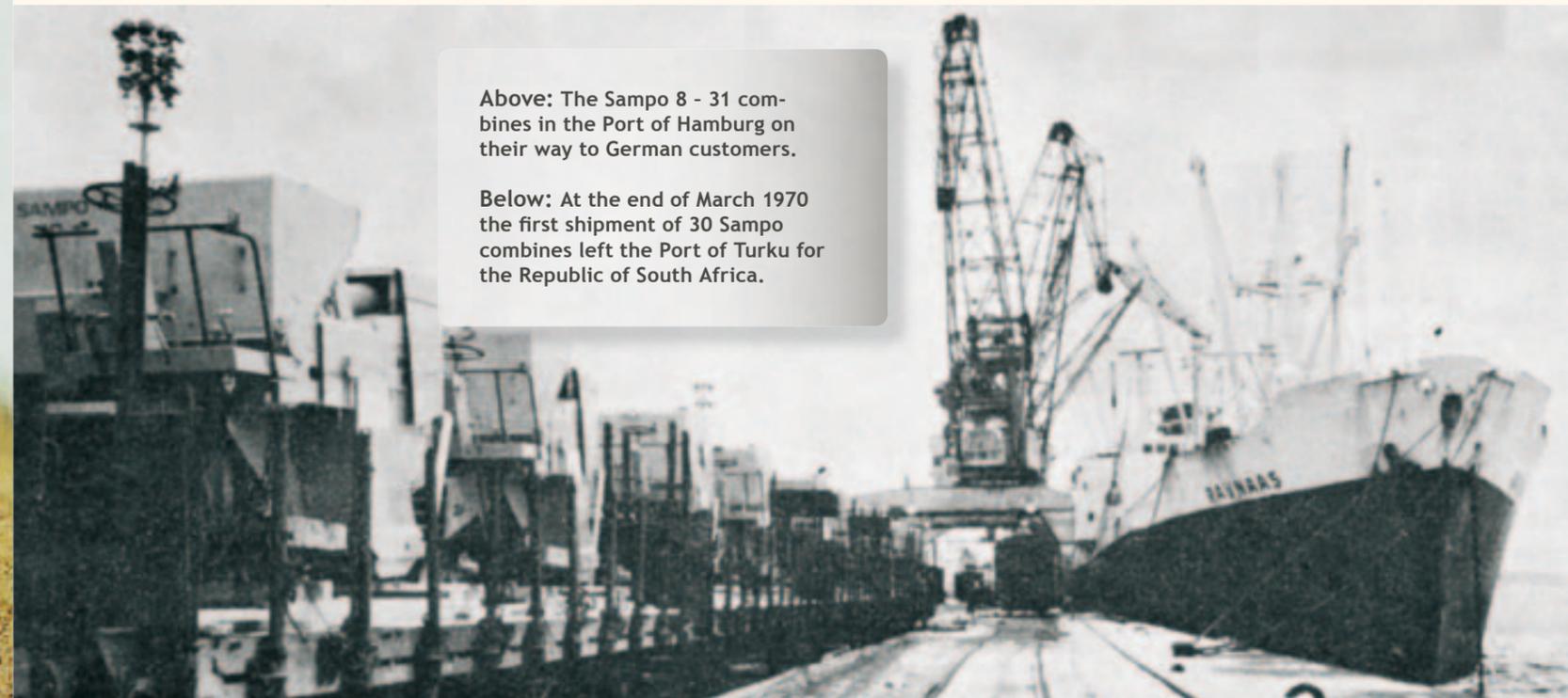
An export contract was clinched with IHC G.m.b.H., the West German subsidiary of IH, in 1969 to export 600 Sampo 8 – 31 combines to West Germany over a period of three years. Exports to Austria and South Africa were started in 1970 through companies that imported the Belgian Clayson combines.

"Exports to Austria and South Africa were started in 1970"



Above: The Sampo 8 - 31 combines in the Port of Hamburg on their way to German customers.

Below: At the end of March 1970 the first shipment of 30 Sampo combines left the Port of Turku for the Republic of South Africa.





The 500 series

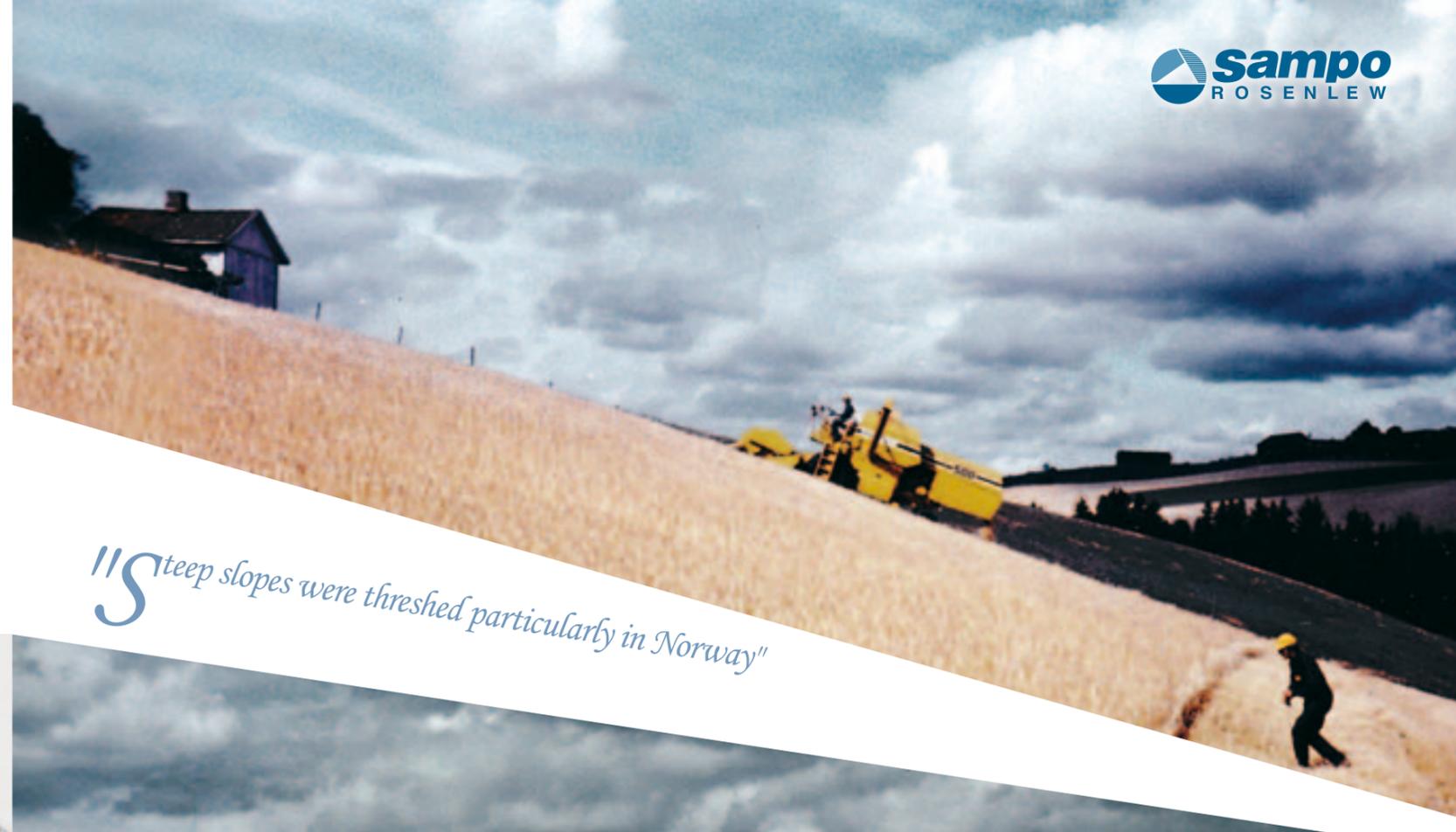
In 1978 the Sampo Rosenlew 500 combine replaced the Sampo 10 series. The width of the threshing machinery increased from 80 to 87 cm, cutting width to 2.7 m (9 ft.) and the number of straw walkers from 3 to 4. The 64-hp Valmet engine was still on the right side of the combine, but now sideways to the threshing machinery with no gearbox.

The grain tank was designed in a low W shape with a capacity of 2.1 m³. This modification meant that the combine centre of gravity remained down - a real benefit when threshing on slopes. Steep slopes were threshed particularly in Norway.

In 1980 the Sampo Rosenlew 500 beat all the other combines of its size in threshing capacity in tests conducted by agricultural testing institutes in Finland and Sweden.

In 1985 the Sampo Rosenlew 580 model was introduced and in anticipation of the new millennium in the 1990s the Sampo Rosenlew 2020 and -2025 models. Engine outputs in the 2000 series were as high as 79 and 87 hp.

We manufactured 10,388 combines in the 500 series over the years of 1978 - 97 with 2,336 of them the red Massey Ferguson models: MF 330, MF 16, MF17 and MF 19.



"Steep slopes were threshed particularly in Norway"



The 400-/600 series

The first medium-size combine with a 10-foot (3-metre) cutting width, the Sampo Rosenlew 40, was launched in 1971. The threshing mechanism was 106 cm wide with 4 straw walkers, a 2, 250-litre grain tank and an 82-hp Valmet engine behind the grain tank on the roof of the threshing mechanism.

This combine model was rapidly modified. As early as 1973 it was available with either 10- or 11.5-foot (3 and 3.4 m) cutting tables. These were the Sampo Rosenlew 410 and - 460 models.

Starting 1977 combines in the SR 400 series came with the optional extra of an air-conditioned cab.

In 1979 the models were adapted again to become the Sampo Rosenlew 600 / 650 models and once more in 1985 to become the Sampo Rosenlew 680 /690 models.

In 1979 in tests conducted by the Agricultural Research Institute of Sweden, the Sampo Rosenlew 600 outdid the other combines in threshing capacity, durability, ease of cleaning and maneuverability.

In 1981 an agreement was made to sell the Sampo Rosenlew 600 combine to France under the trade name of Braud 600 In 1982 a marketing contract was signed with Massey Ferguson. MF marketed the SR600 combines painted red under the trade names of Massey Ferguson 430 and starting 1985 under Massey Ferguson 20.



A blue Braud s600 combine at the SIMA Agricultural Exhibition in Paris in 1981.





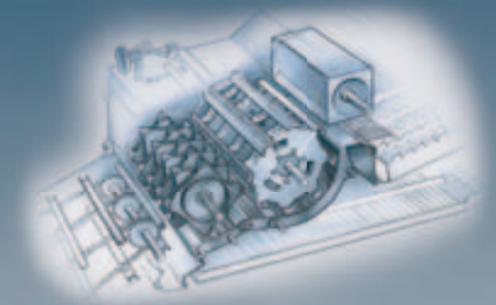
The 2000 Series

The first combine in the 2000 series was launched in 1990. The range had been designed to replace the long-lived 600 series. Threshing mechanism in the new series was 112 cm wide and the diameter of the threshing cylinder was 50 cm. As the separation surfaces were also larger than in the 600 series, threshing capacity increased significantly.

The first model was the SR2055 with hydrostatic transmission and a six-cylinder engine. It had 120 horsepower and a grain tank capacity of 3,300 litres, which was soon enlarged to 3,700 litres. Optional cutting widths were 3.4 m and 4.2 m. Another new feature was that the rear tyres had ridge-patterned tread and travelled along the same tracks as the front tyres.



More Threshing Efficiency with Pre-cylinder



The new SR2075 TS was launched in 1996. It was 42 cm longer than the basic models. The increase in length was due to a pre-cylinder fitted in front of the threshing cylinder. The additional letters of TS stand for twin separation. Engine power increased to 185 hp and as the combine was longer, the grain tank capacity rose to 4,600 litres. Cutting width measured 4.8 metres.



More Models

New models were soon added to the 2000 series: the SR2045 had an 87-hp, 4-cylinder engine and the SR2050 a 100-hp engine. These combines were of a conventional type, i.e. driven by a variator.

The combine was equipped with a heavy-duty cylinder that had 8 concave beaters and a large 4,200-litre grain tank.

The most powerful combine in the range was the SR2060 with its 140-hp, 6-cylinder turbocharged

The next year the combine was supplied with a fifth straw walker and named the SR2065. At the same time maximum cutting width increased to 4.5 metres.

In 2003 – the New 2000 Series

Time of intensive R&D

Sampo Rosenlew design engineers are continuously developing the 2000 series in cooperation with our customers. New features are added annually to improve threshing capacity and usability. The biggest modifications to the series were made in 2003. Based on the experience gained during the development of the Sampo Rosenlew 3000 series, major modifications were made to power transmission, the cab, cutting table, hydraulics and engine compartment. At the same time the appearance of the combine changed.



The 2000 Series – An International Success Story

"The 2000 series combines have been sold to nearly every country in Europe"

With the larger-scale combine model we intensified our export activities. From the very beginning the Sampo in the 2000 series were also marketed outside our traditional market areas. In the early 1990s 90 combines in the 2000 series were exported to Latvia, which had just gained independence.



In cooperation with Massey-Ferguson, combines were exported both to and outside Europe. By now combines in the 2000 series have been sold to nearly every country in Europe. Iceland can be mentioned as one of the most fascinating among our export countries. Since the mid-1990s international funding has enabled us to sell combines e.g. to the former Soviet countries of Armenia, Azerbaijan, Georgia, Kirgystan, Tajikistan and Uzbekistan. Combines have also been sold to African countries, namely to Zimbabwe, Moldova, Lesotho, Egypt, Ethiopia and Eritrea.



SR2000 in the world

The 3000 Series

As the new millennium was approaching, there was more and more demand for combines bigger than those in the 2000 series. Our export customers in particular expressed interest in a more powerful combine.



Ethiopia

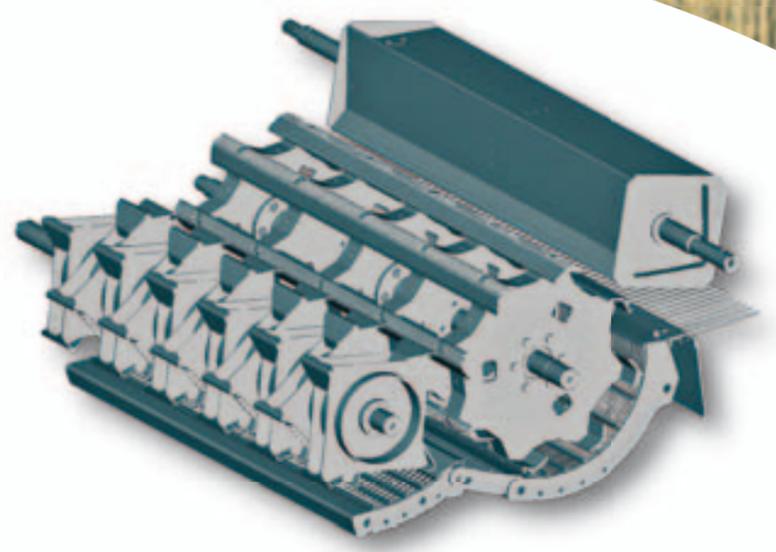
Sampo Rosenlew supplies SR2085 combines to Italy where Comep, a local company, adapts them for harvesting on slopes. The combines are sold under the brand of Deutz-Fahr.



Italy

SR2065 on the African continent in Ethiopia.

As a result of our design work, the Sampo 3000 series was launched in 2001. The first SR3045 and SR3065 models had six straw walkers with 134 cm wide threshing mechanism. There were three engine options: 175, 200 and 220 horsepower. Cutting table options ranged between 4.2 and 5.7 metres. The grain tank capacity was either 5,200 or 6,500 litres. Although the combine had been designed with the export markets in mind, it had the unrivalled strengths our other ranges had always been renowned for: it was easy to clean and service.



Pre-cylinder

In 2003 the 3000 series was supplemented with the SR3085TS model. Similarly to the 2000 series, the 3000 series had a large combine with a pre-cylinder. This improved the overall efficiency

of the combine, which meant that also the cutting width and the size of the grain tank could be increased. Maximum cutting width was now 6.3 metres and the grain tank was 8,100 litres.



Moldova

Acceptance of the new SR2075TS combines in Moldova with the head of state in attendance.



Iran

Getting ready to start harvesting in Iran.

Targeting at Export Markets

We were fully aware when starting the design that export markets would play a decisive role in the future of the 3000 series. For example in 2006 nearly 90 per cent of our production was exported. Year by year, however, the numbers sold domestically have increased as Finnish farms are growing in size.



Above: Harvesting wheat in Turkey. Temperature in the sunshine was nearly 70 °C.

Below left: Preparing for rice harvesting in Uzbekistan.

Below right: Blessing the combines before starting harvest in Japan.

Next page: The Sampo-Rostov combine assembled in Russia.



Localization – Combines Exported in Sub-assemblies

Shipping costs are of major importance in the exports of combine harvesters. The remoteness of Finland means enormously high freight charges to Sampo Rosenlew Ltd. In order to maintain the competitiveness of the Sampo combines, a project was undertaken to reduce shipping costs.

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A pilot project was started in cooperation with a Russian partner with the aim of localizing the final assembly of combines in the Town of Rostov in southern Russia. The ever-increasing Russian combine markets provided excellent basis for this project.

All the components and parts supplied to the local Sampo Rostov Company are manufactured at the Pori factory. Combine sub-assemblies are transported to Rostov by road for final assembly.





Harvesting rice in Turkey on the Uzel 8250 (SR 3085 L TS) combine harvester equipped with front chain tracks.

After the pilot project Uzel Makina in Turkey was our next significant partner in localized manufacture. The company is the largest tractor manufacturer in Turkey, so including combines in the product family was a natural solution. Combines are shipped in containers from Pori straight to the Uzel assembly line in Istanbul. In Turkey the combines are marketed under the well-known and highly regarded trademark of Uzel using their company colours.

In 2006 we packaged the combine intended for localized assembly. Packaging involves major investment in the product, product development, training and the provision of instructions and directions. The first deals after packaging have been signed and new projects are underway.



Tying the last straps.



The 3000-series threshing mechanism, crop elevator and grain elevator ready to be placed in a container.



The representatives of our partner are trained by Sampo Rosenlew specialists at our factory with real combines.



The first 3000-series combine on the assembly line in Iran. Training under way.

The Sampo 657 combine harvesters were in production between the years of 1957 - 1966 during which period 2,527 of them were manufactured. Its cutting width was 1.8 metres and threshing machine 57 cm wide. Engine output was 29 horsepower.



9, 138 combines were manufactured in the 400 -/600 series in 1971 - 1990. Cutting widths were 3.0 and 3.4 metres, threshing machine width 106 cm and engine output 82 - 100 horsepower.

The cutting widths of Grandpa Sampo were 2.1 and 2.4 metres and threshing machine was 92 cm wide. 1, 812 of them were manufactured in 1961 - 1966. Engine output was 39 horsepower.



Cutting width in the 500 series was 2.7 and 3.1 metres and threshing machine width 87 cm. In 1978 - 1997 we manufactured 10, 388 combines. Engine outputs were 64 - 87 horsepower.

There were several models in the Sampo 10 series. The Sampo 10 was the first combine exported. Over the years of 1965 - 1978 the number of combines made amounted to 10, 122. The threshing machine was 80 cm wide and cutting widths were 2.1 and 2.4 metres.



The 2000 series was introduced in 1990. Cutting widths are 3.1 - 5.1 metres and threshing machine width 1.12 m. Engine options are 100 - 185 horsepower.

Manufacture of the 3000 series was started in 2001. Cutting widths are 4.2 - 6.3 metres and threshing machine width 1.34 metres. The SR3085 L TS with a pre-cylinder was launched in 2003. Engine options range between 175 - 276 horsepower.



