In 1943, the first paper machine was put into operation with an annual production of 1,937 tons of corrugating medium. Since then, SAICA has continuously made investments and extended its production facilities. The paper mill SAICA 1, consisting of PM 6 and PM 7, is situated directly in Zaragoza.

In 1992, SAICA 2, located approximately 25 km out of Zaragoza, started production with its PM 8. Already in May 1995, the Board of Management decided to build a new paper machine for corrugating medium in SAICA 3, next to SAICA 2. To follow the ever-growing trend towards lighter paper grades, the new PM 9 was designed for a basis weight range of 75-110 g/m². On January 28, 1999, SAICA placed the order for the delivery and installation of the new PM 9 for SAICA 3, including the stock preparation system, with Voith Paper.

The new PM 9, in SAICA 3, started up on schedule in early October 2000. Already during start-up, it became clear that this new paper machine for the production of corrugating medium sets new standards for the future:

On October 12, 2000, PM 9 started up with a speed of 935 m/min at a basis weight of 105 g/m². No other paper machine for corrugating medium has ever reached such a start-up speed.

SAICA – Spain’s major manufacturer of corrugating medium

Sociedad Anónima Industrias Celulosa Aragonesa, (SAICA), is Spain’s largest producer of corrugating medium and one of Europe’s leading manufacturers with an annual production capacity of 850,000 tons. The start-up of PM 9 increases SAICA’s capacity by 350,000 tons to 1.2 million tons per year.

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SAICA PM 9 – the world’s fastest production line for corrugating medium

The concept of the new machine sets new standards in many respects. The wire width of 8,100 mm alone is very impressive, but PM 9 far outshines other machines due to its enormous speed: The new production line is designed for a maximum operating speed of 1,450 m/min. In comparison, the fastest paper machines for corrugating medium currently run at approximately 1,050 m/min, which means that PM 9 will run almost 50 % faster than the fastest production lines for corrugating medium do now.

Already in the first days after start-up, PM 9 managed to achieve its first speed record: With 935 m/min at 105 g/m², the start-up speed of PM 9 was only slightly below the design speed for this basis weight range. Any other paper machine for corrugating medium so far has never reached such a high start-up speed.

The stock preparation system

The stock preparation consists of two complete TwinPulp™ pulping lines, each for a pulping capacity of 850 t/24 h and each with an 80 m³ pulper supported by a Contaminex™ detrashing system.

This is followed in each line by two-stage Turboseparator™ secondary pulping (2.4 mm screenplate holes) together with rejects cleaners and final stage CombiSorter™ hole screening (also 2.4 mm). The full stock stream is then fed to a two-stage MultiFractor™ fractionation system (0.2 mm slots) with a production capacity of 1,200 t/24h. The long fiber fraction is passed through low consistency cleaners and MultiScreen™ fine screening (0.15 mm slotted C-bar™ baskets) followed by thickening in disk filters, then dispersion and refining. The short fiber fraction is low consistency cleaned and also thickened in disk filters. The disk filters were supplied by Andritz AG, Graz/Austria.

Both lines handle EOCC supermarket and household recovered papers. In the future, one line will convert to handling recovered kraftliner and boxboard with a production capacity of 350 t/24 h.

Voith Paper’s supply responsibility also included a rejects handling system from the joint venture partner Meri.

The design of the plant was developed in close cooperation with the customer, with the need for extremely high cleaning efficiency and exacting end product quality being particularly important factors, bearing in mind the recovered paper quality used here.
The paper machine

The complete paper machine was delivered by Voith Paper and basically comprises the following main components:

A MasterJet™ G headbox equipped with ModuleJet™ dilution water control ensures optimum CD profiles. The dilution water technology makes it possible to use the profile bar as a tool for adjusting an optimal fiber orientation angle.

The DuoFormer™ Base, developed especially for the production of board and packaging papers, is used for the first time in such a high-speed range. It ensures the optimum utilization of the fiber potential in terms of strength and guarantees high, controlled drainage, as well as excellent formation.

In the press section, the proven Voith Paper shoe press technology is used: Paper run in the DuoCentri NipcoFlex™ press is fully closed, ensuring maximum dryness, good strength values, as well as high runnability. The compact gap former design and shoe press configuration reduce space requirements, which help keep building expenses down.

Paper quality and runnability are central features in the dryer section. The entire dryer section uses a single-tier concept (TopDuoRun™) and is fitted with Duo-Stabilizers™. It consists of pre- and after-dryer sections. A ropeless transfer system and low-maintenance water jet tail cutters are installed for safe and rapid web transfer in both dryer groups. The first four groups of the pre-dryer section are equipped with DuoCleaners™ for cleaning the dryer fabrics.

A SpeedFlow™ is used to increase paper strength values through surface sizing, followed by an Airturn for contactless transfer into the after-dryer section. PM 9 is, thus, the first paper machine for corrugating medium equipped with the new Voith Paper SpeedFlow™.

The Sirius™ reel, also used for the first time for packaging papers, ensures precise and exact line force control over the entire rewind diameter, as well as maximum efficiency with roll diameters up to 3,900 mm and minimum paper losses during rewinding.

Installation and start-up in record time

On February 12, 2000, installation began with the first stand of the after-dryer section being mounted on the foundation
Statement of Francisco Carilla, Project Manager for the SAICA 3 project

During the last years, there has been a continuous trend towards reducing the basis weight of corrugating medium. When SAICA’s Board of Management decided to invest in a new mill for the production of light-weight fluting, we asked the major PM suppliers for references. Soon we noticed that the paper machine we wanted did yet not exist anywhere. After many trials on different paper machine pilot units with different forming and pressing concepts, we finally chose Voith as the supplier for the complete stock preparation line and PM.

Start-up was performed in a really smooth way, and our first impressions of PM 9’s performance and runnability, as well as its paper quality, are very positive. No big problems occurred during the commissioning or start-up phase, and we feel that PM 9 will exceed the project guarantees thanks to the deep involvement and cooperation of SAICA, Voith and the other major suppliers of this project.
rails. By mid-August 2000, the first checkouts, drive tests and electromechanical test runs were made; and on October 4, stock was on the wire for the first time.

On October 12, Spain’s national holiday and probably Zaragoza’s most important holiday, Virgen del Pilar, at 00.20, the time had come: The first paper was wound on the Sirius™ reel. As mentioned in the beginning, the new PM 9 started up with the impressive speed of 935 m/min and already on the following day, salable paper was produced.

Although the installation phase had begun approximately two months later than expected due to delays in civil engineering work, the deadlines for the end of the installation phase and for start-up were both met. This was only possible due to the great efforts of the motivated teams of both customer and supplier as well as the intensive and excellent cooperation of all parties concerned. Even after completion of the start-up phase, Voith Paper will continue to take an active part in the optimization of the plant.

Voith Paper thanks all persons responsible for the success of this project and wishes the SAICA group all the best with its new flagship, the world record machine PM 9.