



Khon Kaen PM 1

Paper grades:	Woodfree writing and printing papers, Copy papers
Production capacity (gross):	730 t/24h (based on 80 g/m ²)
Wire width:	5,850 mm
Max. paper width on reel:	5,280 mm
Design speed:	1,500 m/min
Max. operating speed:	1,300 m/min
Raw material:	
Bleached short fiber pulp	80 - 100%
Bleached long fiber pulp	0 - 20%
Filler	10 - 20%

The result of the joint efforts by PPPC and Voith: a paper machine with state-of-the-art technology.

The new PM 1 in Khon Kaen is setting quality standards

Top in every aspect

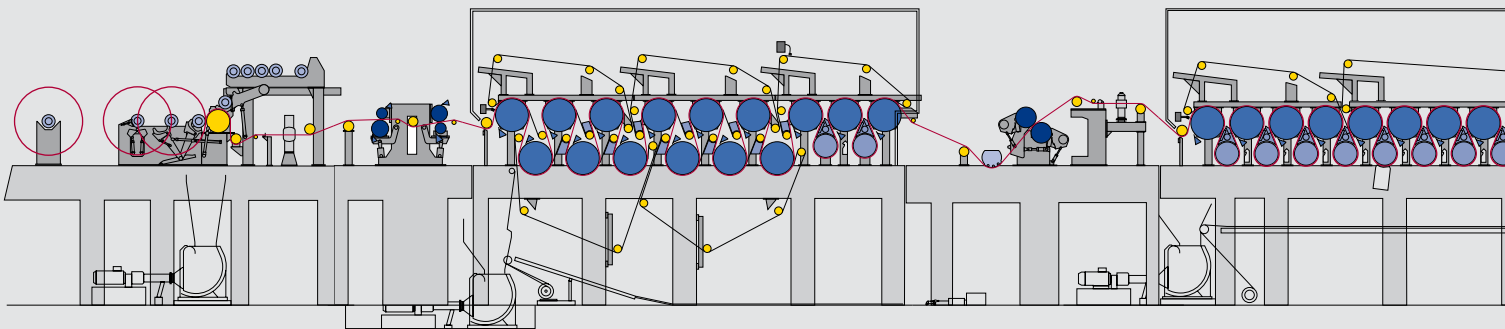


The new paper machine of Thai papermaker Phoenix Pulp and Paper Co. Ltd. (PPPC) – a subsidiary of the Siam Cement Group (SCG) - went into operation just in time for the 2008 New Year Festival in Thailand. It became clear very early on that the quality of the paper produced is setting new standards. Furthermore, all guarantees could be successfully confirmed just five months after startup.

Already during the inquiry process for this major project, PPPC asked for the best technology available to ensure the highest quality and efficiency, while keeping to optimum investment

costs. The location for the new paper machine was to be at Khon Kaen, approximately 500 km northeast from Bangkok in the heart of Thailand. PPPC has operated a factory to pro-

duce bleached eucalyptus pulp there for years. The objective of the investment was to process the pulp into high quality writing, printing and copy paper directly on site. With the new produc-



Layout Khon Kaen PM 1.



A good partnership from left to right: Egdar Roman, Voith Assembly Manager; Amnuay Ponpued, Khon Kaen Mill Director; Terasak Chamikorn, Managing Director; Surat Khoonrugsa, Paper Production Manager Khon Kaen PM 1; Dr. Martin Zimmermann, Voith Chief Commissioning Engineer.

tion line, the capacity of these papers should increase by 200,000 metric tons per year and SCG Paper will become the leading producer of graphic papers in Thailand.

The Voith Paper delivery includes the approach flow, the complete paper machine with auxiliary components, MCS, CD profile control systems and the winder. There was a tight time frame for the design and engineering work but this all went to schedule. The individual sections and components were preassembled in time at

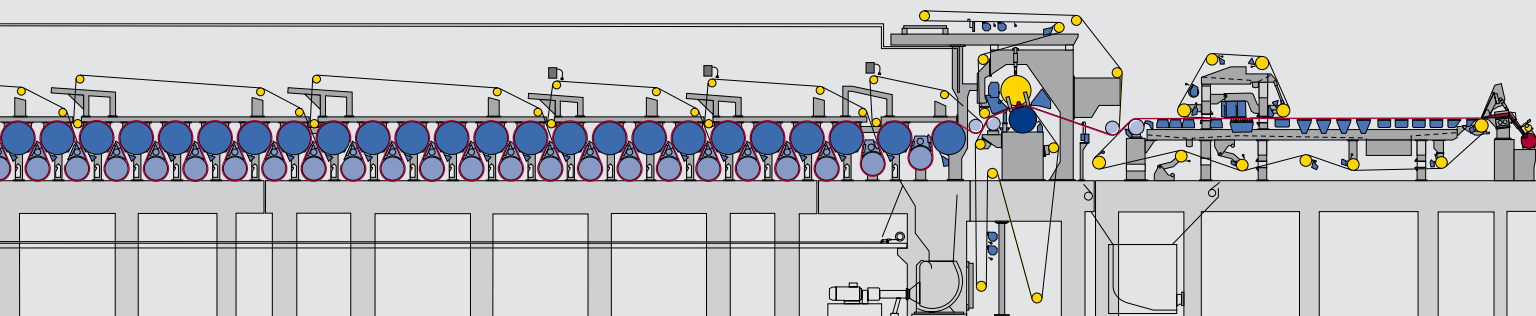
the various Voith Paper locations in Europe and China. Numerous drawings, foundation plans and piping diagrams were generated from the 3D mill model. Chests, structural components and pipes could be pre-fabricated to a great extent thanks to the extremely effective 3D planning.

Monsoon rain hinders construction

The construction and assembly teams had to battle unusually heavy monsoon rain in August 2007. "Roads

and storage areas were sodden, trucks got stuck and containers overturned. The difficult conditions led to delays with construction. However, thanks to the huge efforts of all the staff working on the building site, we managed to avoid missing the deadline," explains Voith Project Manager Hubert Eger.

The project teams from PPPC, Voith Paper and C.L. International worked extremely well together throughout the entire project. Surasak Amawat, project manager from PPPC, thanked Voith Paper for the good partnership.



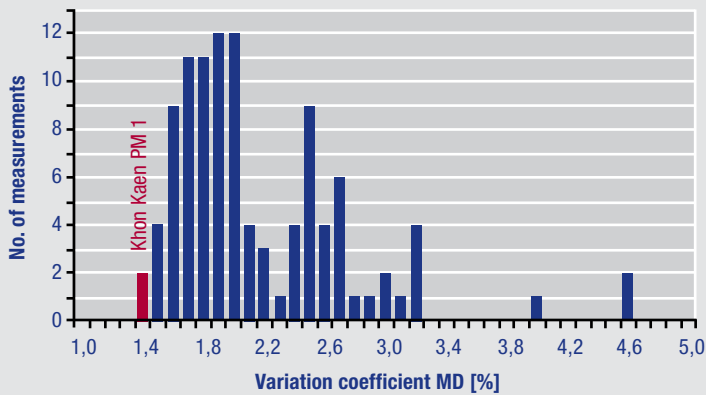


Fig. 1: Benchmark basis weight MD profile.

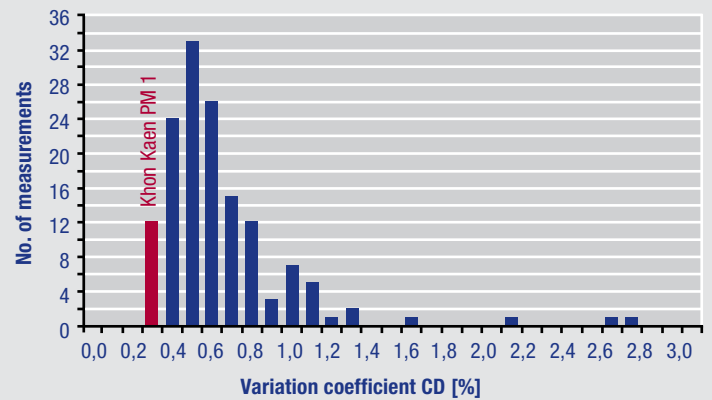


Fig. 2: Benchmark basis weight CD profile.

“We chose Voith as the main supplier for this project because we are confident in the quality of machinery and services. ... We are very happy with our PM 1.”

Terasak Chamikorn, Managing Director Khon Kaen

Customer training as a factor for success

In order to ensure the success of the project in the long term, the customer's employees received intensive training. A comprehensive training program for the customer's future operating and maintenance staff was set up and run by Chief Commissioning Engineer Dr. Martin Zimmermann. In addition to theoretical instruction, practical training modules were also completed during the shop assembly at Voith in Heidenheim and visits were made to a suitable reference mill over several days. During the startup, a group of experts from various disciplines and experienced

papermakers supported the Khon Kaen team. Surasak Amawat is convinced that these comprehensive training measures contributed significantly to the success of the project, especially to the smooth startup and effective optimization.

Paper on the reel just in time for the “Songkran” Festival

To the customer's great delight, the first paper was wound onto the MasterReel just a few hours before “Songkran,” the Thai New Year Festival on 12 April 2008. Sellable from the outset, as mill director, Amnuay Ponpued emphasizes. The starting speed of 1,000 m/min

increased to 1,200 m/min within a few short weeks. In the case of 120 g/m² offset paper, 816 metric t/d were produced three weeks after startup, 12% above the design specification.

Outstanding paper quality in every respect

It was already clear soon after the startup of the paper machine that the ambitious quality targets had been met. The quality control system displayed an absolutely even cross profile for basis weight, caliper and moisture content. The Tapio analysis in the Voith Paper laboratory confirms this: the variation coefficients of basis

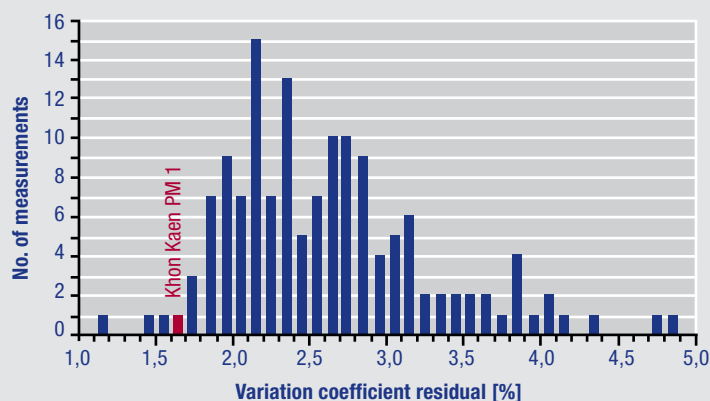


Fig. 3: Benchmark basis weight residual deviation.



The Khon Kaen team with the first full drum.

weight and caliper for CD, MD and residual deviation are among the best ever measured. This is illustrated impressively by the histograms in Fig. 1- 3. Thanks to ModulePro in the dryer section, excellent 2- σ -values of less than 0.2% were achieved for the moisture cross profile on the reel too. It is not only the profiles that are convincing; the paper from the Khon Kaen PM 1 also leads the way in technological parameters. With 80 g/m² copy paper, an Ambertec formation index of 0.32 $\sqrt{\text{g/m}^2}$ and a bulk of 1.4 cm³/g was achieved. The rough two-sidedness is within $\pm 10\%$ in the entire roughness range from 70 to 220 ml/min Bendtsen. These exceptionally good values confirm the technological total concept of the PM 1.

Greatest level of customer satisfaction

The starting curve of the machine is also a top performer. For 60 and 70 g/m² offset papers, the speed

quickly increased to the maximum operating speed of 1,300 m/min – a top speed for machines with hybrid former for wood-free grades. Furthermore, five months after startup, the warranty test runs were successfully completed first off for all reference grades. “Top quality and productivity values - and at record speeds!” Voith Commissioning Engineer, Martin Zimmermann sums up proudly.

As a result of the smooth startup, the Final Acceptance Certificate (FAC) was already signed after a record-breaking six months after the machine was put into operation.

Amnuay Ponpued, the Khon Kaen Mill Director is happy with the huge success of the project: “We are setting new standards with the quality of our copy and offset papers and are very well placed in the competitive landscape.” Managing Director, Terasak Chamikorn is also extremely pleased: “I have known Voith for a long time.

We chose Voith as the main supplier for this project because we are confident in the quality of machinery and services. Many thanks to your team for your cooperation and support. We are very happy with our PM 1.”

Tongchai Soha, Process Engineering Manager at SCG Paper, sums it up briefly and succinctly: “This machine is top notch in every aspect.”

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