Paper Technology Center
Järvenpää, Finland
Every papermaker is continuously looking for ways to improve sheet surface properties, boost productivity, enhance runnability, save on materials, lower production costs or develop new grades that stand out from the competition. We can show how innovative finishing solutions can make a difference.

Valmet Paper Technology Center in Järvenpää, Finland, provides you with a full range of research, development and pilot testing services with world-leading know-how in modern facilities. The center is equipped with a versatile pilot coater, three pilot calenders, two pilot winders, a pilot reel and a runnability pilot machine, all incorporating the latest technology.

Running trials with top pilot machinery offer a reliable, precise and economical way to analyze papermaking concepts. Each trial program is tailored to meet specific customer needs and is carried out with the help of our professional staff.

At completion of the trials, you will get a trial report that presents all results, makes appropriate recommendations for operating parameters, and suggests new line concepts or equipment modifications for your existing machinery.

A full-service trial run includes:

- Preparing a trial plan
- Trial runs with a selected concept
- Valmet’s technology specialists and operators to carry out the trial runs
- Paper or roll quality testing before and after the trials
- A complete trial report
Coating trials with the latest technology

For coating trials, the versatile pilot coater can be used for film coating, curtain coating or blade coating (with roll or jet application). It also features a film and pond size press as well as spray sizing capability.

The OptiSizer film transfer coating and sizing unit is ideal for single or simultaneous twosided applications, and is equipped with a wide range of roll cover options. It delivers excellent runnability and uniform application for many paper and board grades.

OptiSizer with spray application is a noncontact method for single or twosided sizing applications. It gives better runnability and a wider range than conventional application methods.

The OptiCoat with jet and roll application unit features precise blade loading control for stiff and bent blade coating. The unique constant tip angle control ensures stable and repeatable coating results and superior paper quality for today’s paper and board coating processes.

Advanced short-dwell type coating unit provides good runnability and improved paper quality especially for LWC grades.

The OptiCoat with duo jet application method with a long dwell time is suitable for coated grades that call for good color coverage or high coat weight.

The OptiCoat Layer curtain coating unit applies one or several coating layers at the same time with excellent coverage. It has a very wide operating window both in coat weight and running speed. It is equipped with three color supply systems including efficient degassing units to ensure totally air-free coating.

For coating color preparation, there is a coating color plant that features modern coating color and size preparation equipment including a native starch cooking system. Coating effluent is treated with Valmet ultrafiltration process.

The drying concept consists high-intensity OptiDry Coat air dryers, other air dryers and IR dryers. OptiDry Coat provides the best drying results and its maximized energy efficiency offers over 50% energy savings compared with IR drying.
Innovation with numerous calendering concepts

At the Paper Technology Center, you have access to Valmet’s innovative calendering technology for all paper and board grades. The three 0.55-m-wide pilot calenders allow you to test and tune your calendering concept to the smallest detail.

**Multipurpose pilot calender for newsprint, fine paper and board**

One of the pilot calenders is a flexible machine that can be used for soft and hard calendering applications.

**Soft calendering** is well suited for final calendering of newsprint, fine papers and different types of board. The pilot calender also features a matt calendering capability for coated fine papers.

**Hard nip calendering** is possible for precalendering of coated grades and final calendering of board or paper.

The multipurpose pilot calender is equipped with moisturizing equipment.

**The multinip pilot calender for printing grades**

OptiCalender Multinip technology combines unique control of calendering parameters and optimized roll covers. These capabilities provide maximum capacity for high-quality production at high speeds.

Traditional supercalendering with filled rolls is available, too.

The multinip pilot calender is equipped with moisturizing equipment.
**Unique: Metal belt pilot calender for paper and board**

Calendering took a giant leap forward a few years ago as Valmet introduced its pioneering **OptiCalender Metal Belt**. At the Paper Technology Center, you can test this innovative solution in which the traditional calendering nip has been replaced with a one-meter-long machine-direction calendering zone. The calender has a smooth, heated metal belt and a thermo roll that calenders both web sides simultaneously in one extended zone.

The metal belt calender boosts production capacity by removing existing bottlenecks, such as the Yankee cylinder and wet stacks. It improves bulk and bending stiffness contributing to significant raw material savings. The metal belt calender provides excellent printability, even ink setting, and a decreased print mottling tendency.

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**Calendering concepts**

- **OptiCalender Multinip**
  - 6–12 rolls
  - Polymer rolls
  - Heated thermo rolls
  - Even nip load distribution

- **Supercalender**
  - Fiber/polymer rolls
  - Heated thermo rolls

- **Other multinip calenders**
  - Any fiber/polymer roll combinations

- **Soft calendering**: 1–4 nips
- **Matt calendering**: 1 nip
- **Hard calendering**: 1–2 nips
- **Shoe calendering**: 1–2 nips
- **Metal belt calendering**: 1 long nip
Leading winding technology at your disposal

You can test your ideas with our advanced winding solutions for all paper and board grades. Delivering over 500 winders has definitely established Valmet as the leading developer of winding technology.

Belt-bed or two-drum winding – either is possible

Thanks to the interchangeable design of the multipurpose pilot winder, it is possible to run trials with virtually any two-drum winding layout. The pilot wind-up section can be configured into a belt-bed or twodrum winder or a modified twodrum winder with soft covered drums.

In the OptiWin Drum two-drum winding, rolls are wound on a front drum and a rear drum. It has tools to eliminate roll defects such as core bursts and dished rolls caused by insufficient winding tightness. It can also be upgraded for winding high nip load tolerant grades.

In the OptiWin Belt winder, there is a driven belt support instead of front drum. The winder offers the broadest operating range of the winding force, which is used as a primary tool to control the roll structure. It is applicable to all paper and board grades. The multipurpose OptiWin Pro winder has new winding tools with state-of-the-art censoring capabilities that make it possible to avoid vibration and bouncing associated with high-speed winding. One of its highlights is that it can demonstrate a fast 12-second set change.

Two-drum winder

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<tr>
<th>Max. trim width</th>
<th>2,800 mm</th>
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<tr>
<td>Max. roll diameter</td>
<td>1,800 mm</td>
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<tr>
<td>Max. operating speed</td>
<td>3,500 m/min</td>
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The highest level of technology: a multistation pilot winder

The other winder at the center is a pilot version of a OptiWin Roll multistation winder in which each roll is individually wound in its own winding station. Both steel and various soft-covered winding drums are available for trial runs.

OptiWin Roll represents the highest level of winding technology available today. It is the perfect choice for all paper grades, especially for rotogravure printing papers and other demanding paper grades. It delivers the best roll quality and the highest capacity on the market. The winder is designed to produce jumbo rolls as well as top-quality narrow rolls.

Multistation winder

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<th>Max. trim width</th>
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Laboratory analyses show more than the eye can see

Although all papermakers have developed an eye for assessing sheet quality, laboratory analyses show the true value of Valmet’s equipment.

Carrying out trial runs on any of the pilot machines in the Paper Technology Center’s modern, well-equipped laboratory means that the paper or board samples go through a wide range of paper and coating color tests.

The laboratory has an automated paper testing laboratory. It also offers a wide selection of industry-standard tests to examine paper and board samples.
Looking for improvements in runnability?

In addition to expertise in coating, calendering and winding processes, the modern Paper Technology Center and its professionals provide you with support in your runnability challenges.

Towards better web runnability

Is web runnability causing you a major headache? We have the cure: a web runnability pilot machine that is available for your tests. There are test possibilities for flying splice unwinding, the reeling process, web runnability, web threading, edge cutting and iRoll measurements. The maximum running speed of the runnability pilot machine is 3,000 m/min.

The web runnability pilot machine plays an important role in Valmet paper web handling research and development work. It has also proven to be an invaluable tool in helping papermakers improve their runnability issues.

Better solutions to reeling challenges

Our pilot reel represents the latest and most advanced reeling technology available, with or without center drives. Reel drum cover solutions meet the demands of the most demanding paper grades and the highest running speeds.

Reeling is possible with world-record-breaking performance: with web width and roll diameter at a maximum of 3,000 mm. The reel features the latest turn-up technology as well as iRoll parent roll quality and web tension profile measuring tools. Wound-on tension and traditional parent roll quality measurements are also available.
Valmet’s Paper Technology Center in short

- A versatile pilot coater
- Three pilot calenders
- Two pilot winders
- A web runnability machine
- A pilot reel
- A modern paper laboratory
- Top technology specialists
- World-leading finishing technology know-how

Ask your local Valmet contact for more information or contact us directly.
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