

EV GROUP - The runnability team - improves your paper machine productivity.

The **EV Group (EVG)** is a team of specialists providing customized services and technologies to optimize paper machine runnability, process efficiency, and paper quality. EVG is specialized in solving PM operational bottlenecks and

problems. They offer tailored services for your existing and new machinery and do their best to optimize PM runnability, process efficiency and paper quality, as well as, to maximize energy savings and production capacity.

They have served paper producers worldwide already since the year 1992. Their reliable and precise service and high quality products have been recognized in hundreds of PM optimization projects.

Drying Section Optimization

PM drying section optimization improves process

RUNNABILITY	ENERGY EFFICIENCY	CLEANING
<p>15% additional profit</p> <ul style="list-style-type: none"> Analyze deeply reasons for runnability and paper quality problems (survey required) Optimize runnability and quality with machine geometry up-date and web stabilizers Keep the fabrics and cylinder surfaces clean to maintain excellent runnability and paper quality 	<p>40% energy cost savings</p> <ul style="list-style-type: none"> Require accurate and real information on moisture profile and ventilation bottlenecks (survey required) Ensure even moisture profile with efficient pocket ventilation Do not use steam box just to correct moisture profile peaks, but to increase dry content Overdrying of web causes massive energy costs Measure and control hood exhaust humidity values and operate heat recovery effectively Keep the cylinder surfaces and fabrics clean to ensure efficient heat transfer 	<p>20% savings in steam consumption Even 70% savings in investment costs for fabrics</p> <ul style="list-style-type: none"> Invest in cleaning systems for fabrics and cylinder surfaces. This helps to maintain excellent runnability and efficient heat transfer. Use fabric cleaning systems with low pressure water because their operation and maintenance costs are 0 euros Prevent contamination on cylinder surface with a constant cylinder cleaning concept to ensure optimal heat transfer
<p>DEEP ANALYZE ON WHAT IS CAUSING PROBLEMS AT DRYING SECTION</p>		

EV Web Stabilizers - for press section

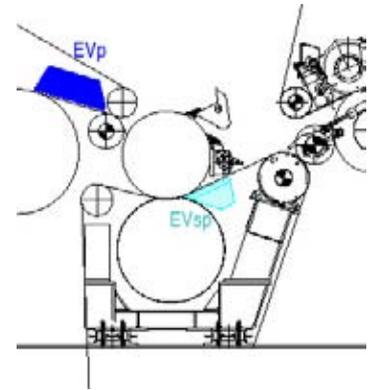
EVp and EVsp web stabilizers ensure fluent runnability at PM press section.

EVp web stabilizer

- supports the sheet from the press to the dryer section

EVsp web stabilizer

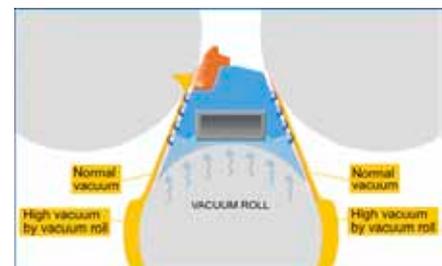
- eliminates blowing problems in free-standing presses



EV EasyOne™ - supports web release with a high vacuum area at single felted section

EV EasyOne™ optimizes the web release between upper cylinder and vacuum roll. It eliminates runnability problems that are caused when the sensitive wet web tends to follow the upper cylinder surface.

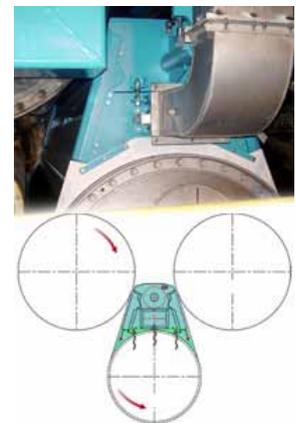
- Excellent runnability of the first single felted drying groups
- Eliminates sheet flutter and paper defects
- Additional PM speed
- More tolerance to process fluctuations
- Reduction of raw material costs



EV EasyGo™ - for superior runnability and ropeless tail threading at single felted section

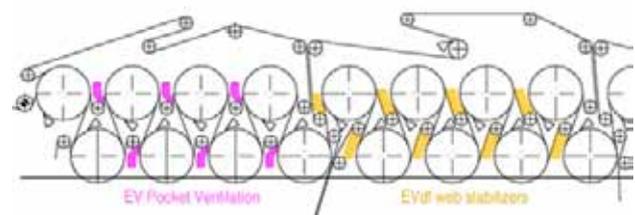
An excellent runnability concept for the PM single felted drying section. It combines the web stabilizing and the vacuum roll technologies to ensure best possible runnability, drying efficiency, and paper quality.

Installed on top of the vacuum rolls to support the sheet and create a vacuum inside of the vacuum roll. EV EasyGo™ concept exhausts air through the holes of the vacuum roll and blows air through the nozzles of the web stabilizer creating vacuum from the opening nip to the closing nip.



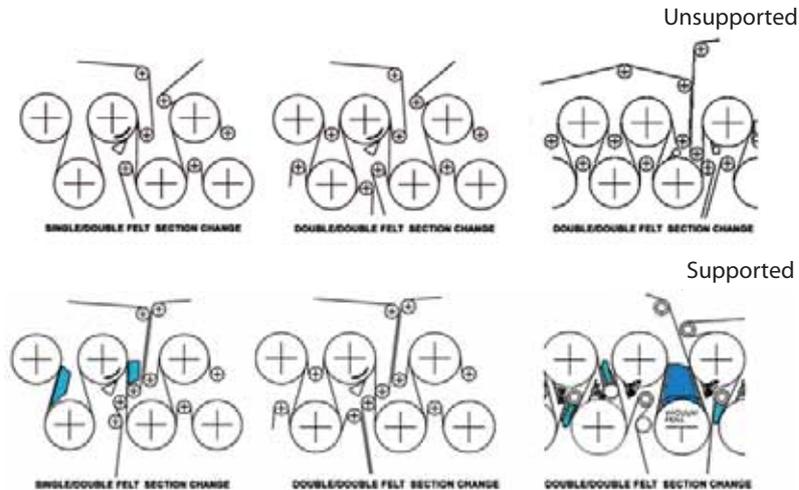
EV Web Stabilizers - for double felted drying section

In double felting, the drying capacity is greater than in single felting. Though, runnability problems are more common. EVdf web stabilizers and EV Pocket Ventilators are the cure for runnability bottlenecks at double felted drying sections.



Machine geometry modification

Machine geometry changes are improving PM runnability and speed. Already a small change can make a big difference on sheet run. Runnability problems at the section change can be a bottleneck also after the single felt has been equipped with web stabilizers. These problems are a result of moving surfaces, and mainly caused by pressure differences and axial air flows caused by pumping effect of dryer fabrics. Runnability problems in the group caps are solved by minimizing the open free draw.

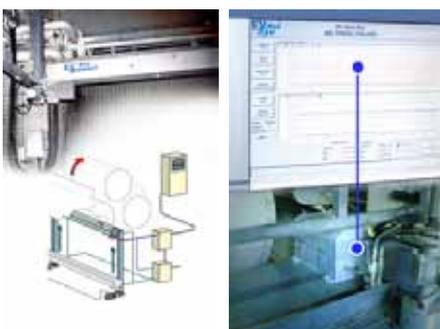
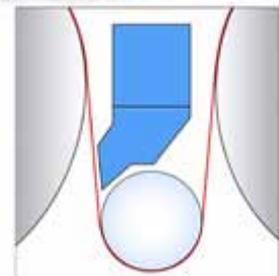


EVpv Pocket Ventilation™ - results in even moisture profile and energy savings

PM drying section is a major steam consumer: 75% of paper machine steam consumption is used in the drying process. Energy waste, uneven sheet moisture profile and runnability problems are the result if cylinder pockets are not well ventilated.

Underpressure in the unventilated cylinder pocket creates dry air flows into the drying pocket causing high pocket humidity in the centre of the pocket and sheet fluttering. Poor pocket ventilation causes uneven final moisture profiles at the reel and over-drying at both edges of the sheet. This means poor paper quality and more paper breaks. Decreased evaporation capacity and uneconomic steam consumption are also results of poor pocket ventilation.

EVpv Pocket Ventilation is installed in the cylinder pockets of dryer sections to blow dry supply air into the pockets. This decreases the pocket humidity level and allows moisture profile correction. In addition, the system decreases steam consumption and it also prevents over-drying and edge flutter.



Online Measuring™ - reliable tools that enable accurate process adjustments for economical drying.

EV Web Eye™ and EV Web Scanner™ provide you with reliable information of sheet moisture and temperature profiles or trends already at the beginning of the drying section. This helps you to control the drying process correctly right from the start.

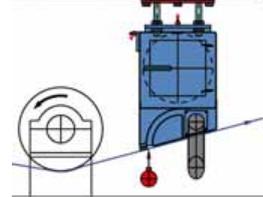
Cleaning Systems

EV MRS™ - Forming section optimization

EV MRS™ technology is a part of an environmentally friendlier, energy saving forming section. It provides effective mist removal in combination with additional aid for fabric cleaning. This results in improved paper quality, process efficiency and energy savings. Machine hall without spreading mist is more comfortable to work at.

EV MRS™ includes a mist suction box, an exhaust duct, a preseparator, and the EV Blower separator fan, which is a special construction combining a centrifugal fan and an efficient water drop separator.

The residual water from the evacuated mist / air is separated with an EV Blower fan. The EV Blower is equipped with a self cleaning system and a teflon cover to prevent clogging.

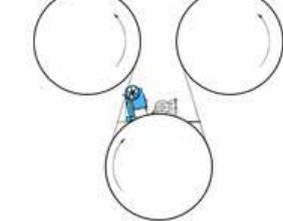


EV ReDoc® - For continuous reconditioning for rotating surfaces

EV ReDoc® is a continuous reconditioning system for paper machine cylinder and roll surfaces.

The EV ReDoc® system eliminates dirt like stickies, fibres and coating colour from cylinder surfaces by using steel brushes. Even old and worn out cylinders can be cleaned effectively with the help of EV ReDoc®. Conventional doctoring systems are not able to keep cylinders clean. The EV ReDoc® system can be used with an existing doctoring system.

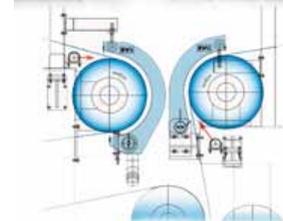
Continuous reconditioning improves the heat transfer from cylinder to paper, which increases the drying capacity. Results can also be seen in better paper quality, as defects in paper are minimal. It is also possible to increase the PM speed as a result of an improved drying process and runnability.



EV Cleaner™ - for effective dryer fabric cleaning and longer fabric life

The EV Cleaner™ technology keeps the fabric clean and open across the entire fabric width. The EV Cleaner™ enables reliable and maintenance-free cleaning: it does not require any moving parts, high pressure water, compressed air, or power supply.

The EV Cleaner™ improves PM runnability and paper quality, as the high permeability of fabric keeps the cylinder pockets well ventilated. Customer experience shows that the EV Cleaner™ can increase the fabric life time to even 300%.



EV Online Cleaning System™

With online cleaning, your mill has remarkably less need for washing stops and chemicals. Constantly high wet end hygiene means better process efficiency and quality.

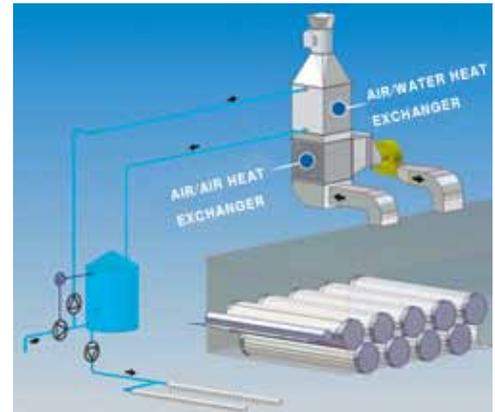
The EV Online Cleaning System™ keeps all wet end areas clean: Channels, towers, tanks, bow screens, disc filters, water plates, surface of open areas, thickeners.

Energy Efficiency Optimization

EV Heat Recovery™

Significant energy savings for paper machine

Paper industry is a big energy consumer. Energy costs are high, and they will rise as energy will be more and more expensive in the future. To decrease emissions of greenhouse gases, paper industry must limit the use of fossil fuels. For these reasons, paper industry must reduce energy consumption and find new ideas for more efficient energy usage.



EV Heat Recovery™ is a highly effective system to update existing heat recovery systems and to modernize a paper machine, in order to meet the requirements of today. The EV Heat Recovery™ technology reuses heat to replace primary energy sources, therefore savings in energy costs are evident.

EV Heat Recovery™ recovers drying section heat energy and takes it back to production. The exhaust air is processed through air to air or air to water heat exchangers that are durable and always tailor-made to customers' needs.

A typical heat recovery system includes supply air preheating, process water heating and machine hall heating.

EV Survey™ Services

„EV Group helps you to eliminate process bottlenecks and optimize production.“

You may see the PM process bottlenecks and problems, but often it is difficult to know what exactly causes them. The EV Survey team has the know-how, the experience and the modern measuring technology to tell you what is going on with your paper machine.

Dryer Section Survey Tool

Solutions to decrease energy consumption and improve drying capacity and runnability

- Pocket humidity and temperature
- Hood air systems
- Cylinder surface temperature measurements
- Calculation of drying parameters
- Mechanical checking
- Sheet temperature measurements
- Other measurements

Ventilation Survey Tool

The machine hall ventilation survey tool for better working conditions and less energy consumption

- Exhaust and supply air measurements
- Machine hall air balance
- Temperature and humidity measurements
- Airflow direction and air velocity measurements
- Machine ventilation



Sheet Moisture Profile Survey Tool

A sheet moisture profile survey tool to find out where the moisture profile problems are generated

Common measurement places:

- Against the pick-up felt
- After the press section
- End of the slalom section
- Before / After the sizer
- Before / After the coater
- At the reel



The EV Survey entails extensive research. We analyze the reasons for your PM problems and after measurements, we provide you with detailed information on how to eliminate them.