

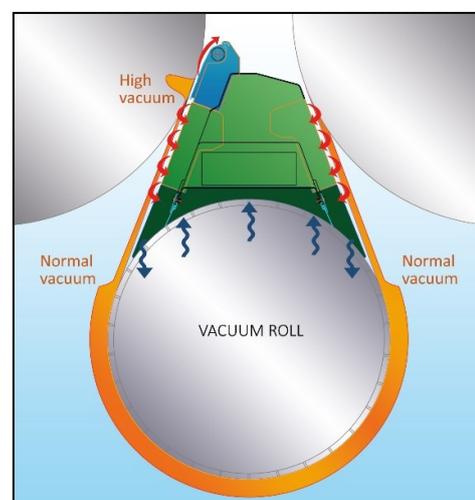
## EVG's Runnability Concepts go eco!

**Productivity problems, such as the number of breaks, long tail threading times and unnecessarily high draws, all due to sheet instability in the beginning of the single felted dryer sections, can now be further reduced with EV Group Oy's EV EasyOne eco concept. A tailor made concept applicable for all different dryer section geometries and thus an excellent tool for upcoming rebuild projects.**

The EV EasyOne web stabilizer is a product developed especially taking into account the challenges and demands in the beginning of the single felted dryer sections on any paper or board machine. Traditional air nozzles of the stabilizer across the machine in the critical opening nip have been replaced with a high release (HR) nozzle with extremely high manufacturing tolerances.

Air is blown with high speed through the high release nozzles against the running direction of the fabric. Due to the geometry, the construction of the stabilizer and the dynamic forces created by the air flows a negative pressure will be created in the opening nip. This negative pressure will ensure the web sticks to the dryer felt and not to the cylinder surface. Comparable, targeted production and quality levels can be reached with good web stabilization at even lower web tensile strength after the press section. The pay-back time for such an investment project can be calculated taking into account both savings in raw material costs and an increase in production rates.

*Principle of EV EasyOne eco concept*



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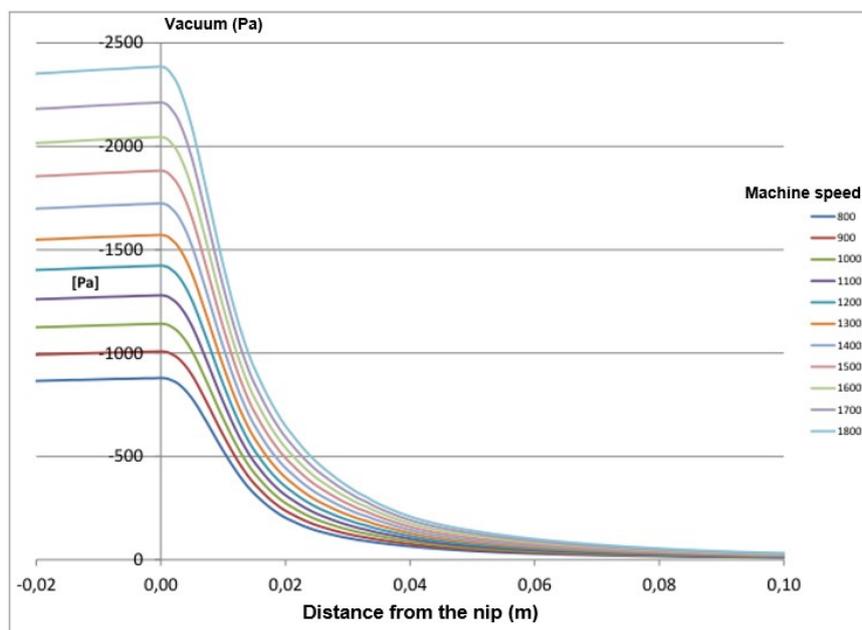
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## Maintenance free concept

The EasyOne stabilizer concept can be seen as more or less maintenance free, despite many components being included. No mechanical sealings exist between the stabilizers and the dryer fabrics and there is no actual contact between the stabilizer and the dryer fabric regardless of the installation. Therefore no damage or mechanical wear to the dryer fabrics can occur. The stabilizers being installed together with vacuum rolls enables ropeless tail threading from the press section into the first double felted dryer groups.

Existing bottom row dryer cylinders or rolls can be converted into vacuum rolls by on-site drilling unless they already are connected to a vacuum system. The drilling and balancing of the cylinders can be done in situ, without removing cylinders from the paper machine. This reduces the shut down time required for this kind of complex rebuild. Vacuum in the drilled cylinders will be created through the vacuum connections in the stabilizer. Thus only minor modifications are needed to the cylinder or rolls in connection with this kind of a process conversion.

The ropeless tail threading will be further secured through installation of a variety of EV Tail Threading technology solutions, all being tailor-made for each application and need.



*Natural vacuum in the opening nip*

## Improved energy efficiency

The increased energy input used by the compressor and needed with the high release nozzles compared to traditional nozzles will be compensated for by the cost savings in the reduced number of web breaks, the reduced time required for cleaning work and tail threading following a web break.

Despite this benefit the EasyOne concept has recently been further improved. The overall energy efficiency and the efficiency of the high release air nozzle has been boosted, using complex air flow simulation models.



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The negative pressure level needed on the dryer fabric side of the opening nip is highly dependent on the production speed. This negative pressure has to counter the negative pressure created on the paper side, thus making the paper follow the fabric surface and not the cylinder. The development of the high release nozzle now enables us to reach these underpressure levels even by leaving out the cross machine air nozzle on the up-run side of the stabilizer.

This will reduce the electrical energy needed for the traditional air systems installation by **more than 40%**, without any increase needed to the compressed air system. In addition, this development will mean less investment needed in traditional air system equipment and rebuild lay-out solutions and demands. It is quite normal that the main part of the existing stabilizer air systems, based on the dimensioning criteria, can be re-used in these rebuilds.

The air to the high release nozzles of the stabilizers is produced with a low-pressure compressor and the optimal conditions (air flows and pressure levels) are efficiently adjusted through the loading of the compressor motor. The air connections to the stabilizers are done with hoses. In wide machines or machines with a narrow geometry between top and bottom cylinders any large air duct connection will reduce the space for cleaning work and accessibility to the dryer. There will be no surfaces actively collecting paper scrap as a result of a web break since there is no contact between the stabilizers and the dryer felts. The narrow distance between the high release nozzle and the dryer felt in combination with a high air flow velocity will ensure that no paper scrap build-up will occur on the high release nozzle surface.

The mill pressurised air needed for the tail threading function of this concept is equal to that of traditional rope free installations. The overall need and consumption of mill pressurised air will decrease due to improved runnability with less web breaks and thus also time needed for tail threading operations.

The **EasyOne eco concept** is today in many cases the first choice for the runnability improvements in the first single felted group or groups.

## EV Stabilizer Family and References

The EasyOne stabilizer technology based on the high release air nozzle technology is accompanied by a variety of traditional air nozzle web stabilizers and ventilators, all from press section to supported double felted dryer group applications.

The EasyOne technology has received a good foothold in the European market with successful installations among others at DS Smith, Aschaffenburg PM1 in Germany, Aarepapier PM3 in Switzerland and Sappi Nijmegen PM7 in The Netherlands.

These installations among others have given the customers a tool to further optimize the productivity of their production lines - through reduced draw (having a positive impact on end product properties and furnish concepts), less web breaks, reduced tail threading times or alternatively, the possibility to go up in production speed, still though avoiding sheet fluttering problems in any part of the machine.

*The EV Group Oy has delivered during more than 20 years of its history, more than 1600 web stabilizers and pocket ventilators, the majority to the European paper and board industry.*



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