



RunEco

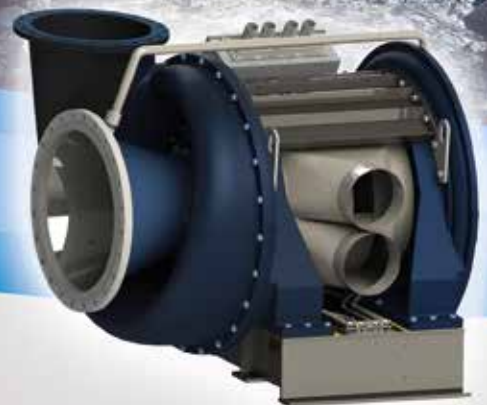
Energy and Vacuum Systems

Cutting edge vacuum solutions



Engineered Solutions

for Pulp and Paper Industry





Environmentally friendly and energy efficient vacuum system providing maximum profit

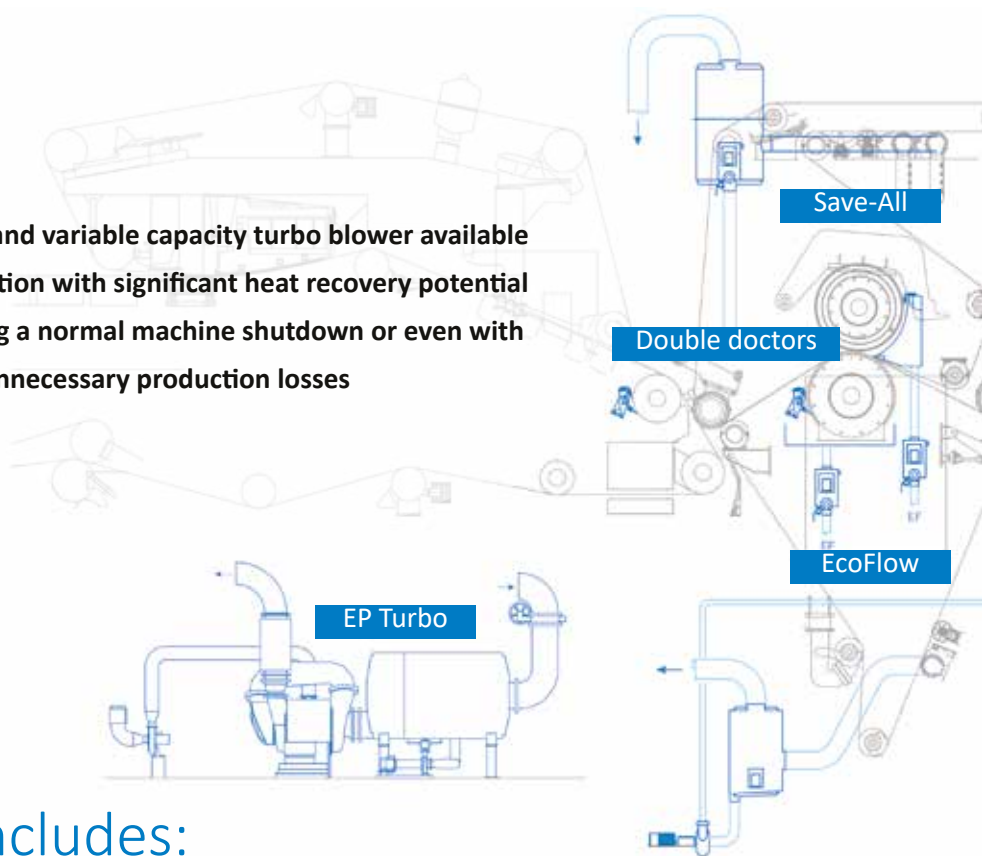
RunEco is an environmentally friendly and energy efficient vacuum system concept providing a reliable solution that is ideal for the paper industry applications.

RunEco saves 30% to 70% energy compared with traditional vacuum system and it is completely water-free. RunEco's improved energy and water consumption leads to a payback time of just 1-3 years.

We also offer a wide range of analysis services and maintenance for you to keep your machine in excellent condition for maximum profit. Our support goes beyond a total vacuum system rebuild. We can also design and deliver doctoring and save-all systems that support the optimal water removal and performance of the vacuum system.

Excellent benefits:

- **30% to 70% energy savings**
- **EP Turbo is the first variable speed and variable capacity turbo blower available**
- **Completely water-free vacuum solution with significant heat recovery potential**
- **Installation can be performed during a normal machine shutdown or even with the machine still running to avoid unnecessary production losses**
- **Payback time 1-3 years**
- **Easy to install**
- **Economical to own and operate**
- **Corrosion free materials**
- **Fast maintenance**



RunEco solution includes:

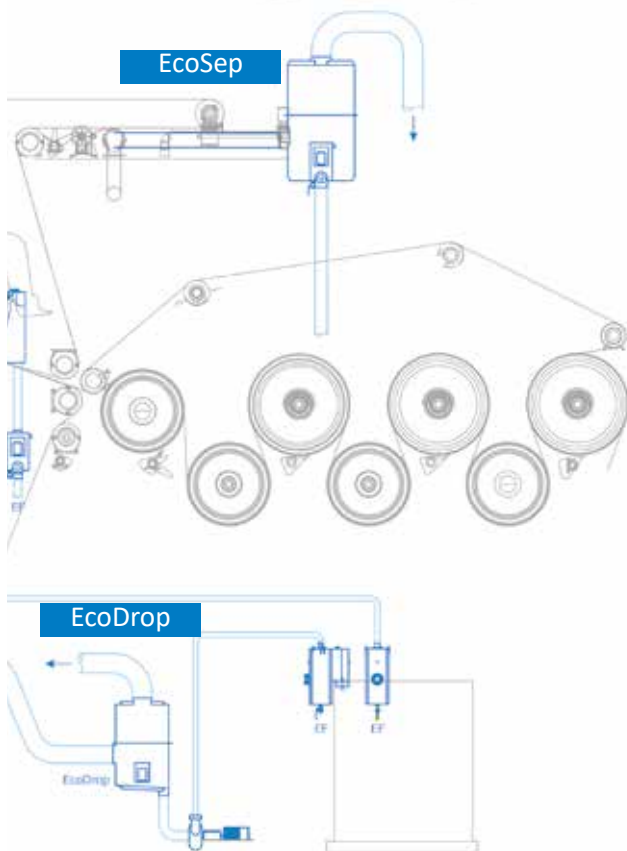
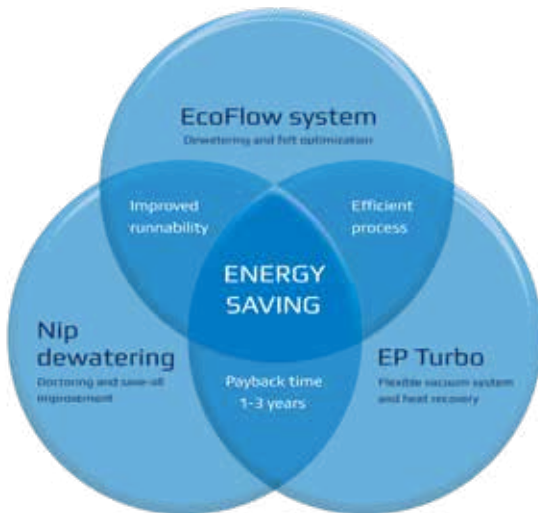
- EP Turbo Blower
- EcoDrop water separator
- EcoFlow dewatering measurement system
- Heat recovery
- High dew point closed hood
- Machine hall ventilation
- Optimized doctoring



Heat recovery systems normally include air-to-air or air-to-water heat exchangers. Systems are used to supply air preheating, fresh and white-water heating, machine hall heating, roof heating and hood exhaust humidity control. Optimized heat recovery improves overall heat recovery output and energy efficiency.

High dew point closed hood improves overall energy efficiency of the dryer section ventilation.

EcoFlow dewatering measurement system optimizes dewatering and vacuum levels in the forming and press sections. This results in maximized sheet dryness after the press section, improved machine runnability and maximum energy efficiency, while providing paper makers with accurate real-time feedback about the dewatering performance along the paper machine.



EcoDrop water separator separates water, fiber and fines. It ensures reliable and efficient vacuum generation.

Case study



Leipa Schwedt PM4

Vacuum system rebuild in Germany reaches impressive energy saving results

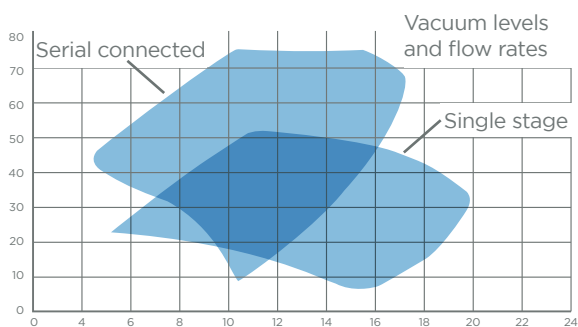
The mill commissioned a study of its original vacuum system. The study showed a very attractive ROI, making the investment decision easy. One of the original multistage blowers was replaced with an EP Turbo and the energy savings amounted to an impressive 900 kW. This turnkey project was carried out together with local subcontractors.

Leipa Schwedt's PM4 is an 8.9-meter online coating and calendering paper machine running at 1,600m/min, located in Germany near the Polish border. Production is 300,000 tons of high-quality LWC paper.

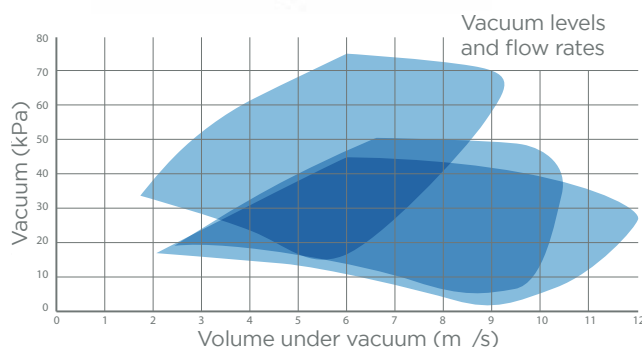


RunEco EP Turbo Blowers

EP1000 Turbo



EP600 Turbo



Variable air flow	Single stage: max 20 m ³ /s (42 000 cfm)
Adjustable vacuum level	max 73 kPa (22 inHg)
Electric motor	1,000kW 1300 Hp
	L 2,000 mm x H 1,620 mm x 1,880 mm (L 78" x H 64" x W 74") model: 5,500 kg (12,125.5 lb)
Impeller material	Carbon composite or cast titanium
Blower body	Coated mild steel
Bearings	Ceramic ball bearing with lubrication unit
Motor cooling air (EUS)	1.2 m ³ /s, +30 °C, 3 kPa (2,500 cfm, 90 °F)
Frequency converter	Built to customer specifications
Voltage	690 V
Other features	Compact design, easy maintenance and installation

Variable air flow	Single stage: max 11 m ³ /s (23 000 cfm)
Adjustable vacuum level	max 70 kPa (21 inHg)
Electric motor	600kW 800 Hp
	L 2,620 mm x H 2,250 mm x 1,715 mm (L 103" x H 89" x W 68") 5,000 kg (11,000 lb)
Impeller material	Carbon composite or cast titanium
Blower body	Coated mild steel
Bearings	Ceramic ball bearing with oil lubrication unit
Motor cooling air (EUS)	1.2 m ³ /s, +30 °C, 3,5 kPa (2,500 cfm, 90 °F)
Frequency converter	Built to customer specifications
Voltage	400/690 V
Other features	Compact design, easy maintenance and installation

Unique offering portfolio guarantees optimal solution for all mills

With a unique offering portfolio for paper machine dewatering and vacuum systems and extensive papermaking knowhow, Ingersoll Rand brands Runtech Systems and Nash can provide optimal solution for all paper mills, from service and rebuilds to completely new papermaking lines.

We are the only company in the world that can supply both liquid ring pumps and dry vacuum

systems, or a combination of them, for a so-called hybrid system. With this unique portfolio, we can always find a perfect fit for our customer's demands, needs and budget. The combination of doctors, save-all and vacuum system equipment topped with papermaking knowhow enables us to provide a holistic view over the paper machine dewatering and energy efficiency.

Nash 2BE3-4 Liquid Ring Pump



- Accepts carryover
- Cool & quiet operation
- Constant operation for any vacuum level
- Easy maintenance
- Longer pump life



Our impellers for EP Turbo, available in titanium, provide many benefits:

- High aero-dynamical efficiency
- Smooth surface reduces build-up potential
- Maximized durability in harsh conditions with a special Teflon coating



Case study



Stora Enso Skoghall BM8

Vacuum system rebuild in Sweden fulfills its energy saving target

"In total, 7 liquid ring pumps were replaced by 1 Runtech Turbo and 2 EP blowers. Power saving in the vacuum system alone is 16.6 GWh per year. We have also achieved a significant savings in water and a reduction in maintenance costs," says Mill Supervisor Pehr Mithander.

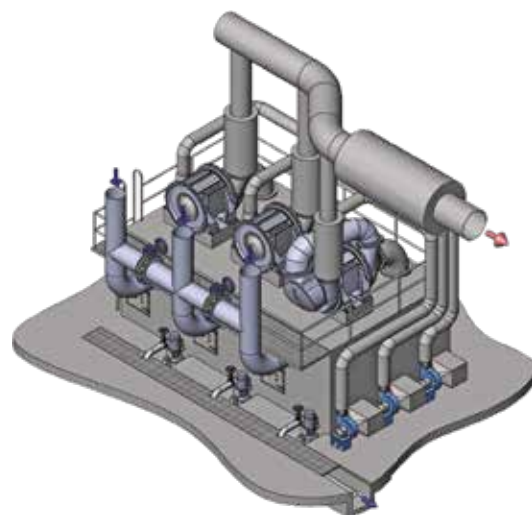
Stora Enso Skoghall BM8 is the biggest primary fibre board machine in Europe with a width of 8.1 m and annual capacity of 450,000 tons.



EcoDrop water separators

Concrete EcoDrop water separators

- 4 stage water separation
- Compact design saves civil and piping costs
- Eliminates the need for additional blower foundations
- Extremely effective noise isolation
- Easily removable EcoDrop filters
- Concrete separator for EP Turbo blowers
L 12,100 mm x H 3,000 mm x W 5,000 mm
(L 480" x H 120" x W 200")



Water separators are very important in paper making. They recover fiber and thermal energy back to the process. They also prevent aggressive process water / solids flow into blowers or liquid ring pumps.

EcoDrop separator together with EP Turbo are very compact installation saving space and piping costs.



Steel EcoDrop water separators

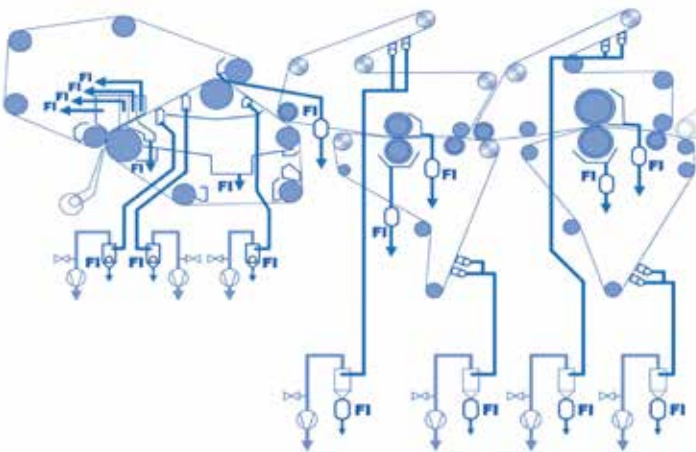
- 4 stage water separation
- Unique dual filter system separates the smallest drops and fibres carried by air
- Flexible process connections
- Easily removable EcoDrop filters
- Removable sight glasses
- Standard sizes
Diameter 1,600 mm / inlet 500 mm (63" / inlet 20")
Diameter 2,000 mm / inlet 600 mm (79" / inlet 24")
- Extraction pump connection
- Material: AISI316
- Dry weight: 2,000 kg (4,400 lb)



“Maximized sheet dryness after the press section, improved machine runnability and maximum energy efficiency”

EcoFlow dewatering measurement system

- EcoFlow online dewatering measurement system for the wire and press sections
- Optimizes dewatering and vacuum levels
- Minimizes start-up time of the new felts
- Improves machine runnability
- Maximizes felt life and optimizes felt type
- Easy and inexpensive installation reduces downtime and start-up time
- Allows full optimization benefit of EP Turbo blowers
- Over 4,000 units installed to date



Runtech Audits

Routine service and system audits are an important part of keeping any process running smoothly. Comprehensive, on-site machine audits can help identify inconsistencies in performance, as well as evaluate the potential for failure. In addition to extending the life of a machine, audits can also play a vital role in helping operators identify opportunities to improve both process, energy, and machine efficiency.

Trust the experts, contact us today to schedule a system audit tailored to your unique needs.



Case study

Lee & Man Tissue PM9, PM10, PM11 and PM12

Vacuum systems to the new tissue lines

Lee & Man tissue starts up new tissue lines PM9, 10, 11 and 12. All these machines are 5.6 meter-wide tissue machines with a top speed of 2,000 m/min. Delivery included two EP Turbos and full EcoFlow system for each machine. If needed, all machines can be operated with one turbo.

Machines are already running normal speeds >1900 m/min and vacuum system power consumption is at a very good level of 300 - 350 kW. For example, TM9 SEC is one of the best in the world 45 kWh/t. Just as a comparison, older L&M TM8 (-01/2017) uses liquid ring pumps and power consumption is over 650 kW.





Engineered Solutions

for Pulp and Paper Industry



Runtech - Your Reliable Partner

Runtech is a global provider of engineered systems tailored to the pulp and paper industries. Runtech works with customers to better understand and control their operational conditions to maximize efficiency and cost effectiveness.

Runtech's patented solutions include vacuum system and heat recovery optimization, runnability optimization with web stabilizers, press and forming section dewatering and doctoring optimization, forming and dryer section cleanliness systems, as well as ropeless tail threading.

Our customers are paper mills and paper machine suppliers globally:

Arjowiggins, Asia Pulp & Paper, Belmer, Burgo, Domtar, DS Smith, Hamburger Recycling Group, Holmen Paper, Kruger, Lee & Man Paper Manufacturing, M-Real, Metsä Board, Mondi, Mpact, Nine Dragons Paper, Norske Skog, PMP Group, Pratt Industries, Sappi, SCA, Smurfit Kappa, Stora Enso, Valmet, Voith and many more references in all different grades.



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For additional information please contact
Runtech or your local representative.

Specifications subject to change without notice.

