

EcoFlow - a window to the process

An efficient and eco-friendly vacuum system is built on three principles. The removal of water needs to be carried out effectively and reliably. This requires speed-controllable turbo blowers to create the needed optimal vacuum level, robust dewatering equipment such as save-alls and doctoring and means to measure all this reliably to get the feedback for the energy-efficient control of the system. EcoFlow dewatering measurement provides a window to the process.

The primary function of a wire- and press section in a paper machine is to remove water from the paper sheet. Each vacuum element in the machine, such as a suction box or a suction roll, requires a certain amount of air flow to operate at an ideal vacuum level i.e. at the minimum to maximize the energy efficiency while maintaining the runnability and dewatering capacity. The needed capacity is dependent e.g. on felt life and type, paper grade, basis weight, machine speed etc.

In order to understand the effectiveness of individual elements (such as save-all pans and suction boxes)

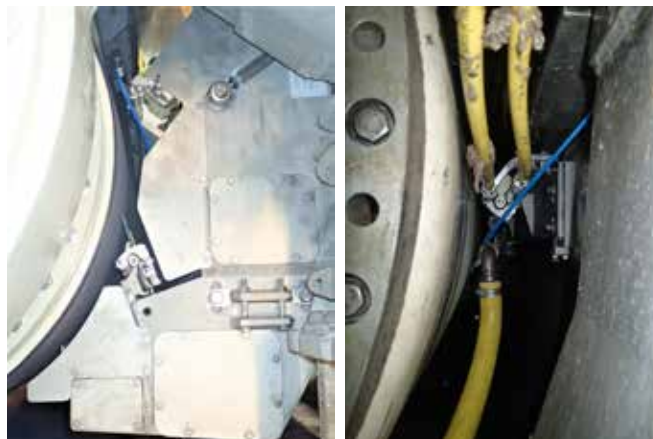
of a wire- and press section, the dewatering rate must be measured. Without this, critical air flow (i.e. vacuum level) review and consequent optimization cannot be successfully carried out. Water removed from the paper sheet contains air, and is often subject to foaming. Traditional magnetic liquid flow meters demand a homogenous flow and will not be able to provide accurate data. Runtech's Ecoflow dewatering meters are designed to measure water flow across a mechanical restriction and are not sensitive to entrained air or foaming. These devices are used both under vacuum (in a separator drop leg) and in atmospheric conditions.



EcoFlow is designed to optimize dewatering and vacuum levels in the forming and press sections. EcoFlows also give you a unique window into the dewatering process.

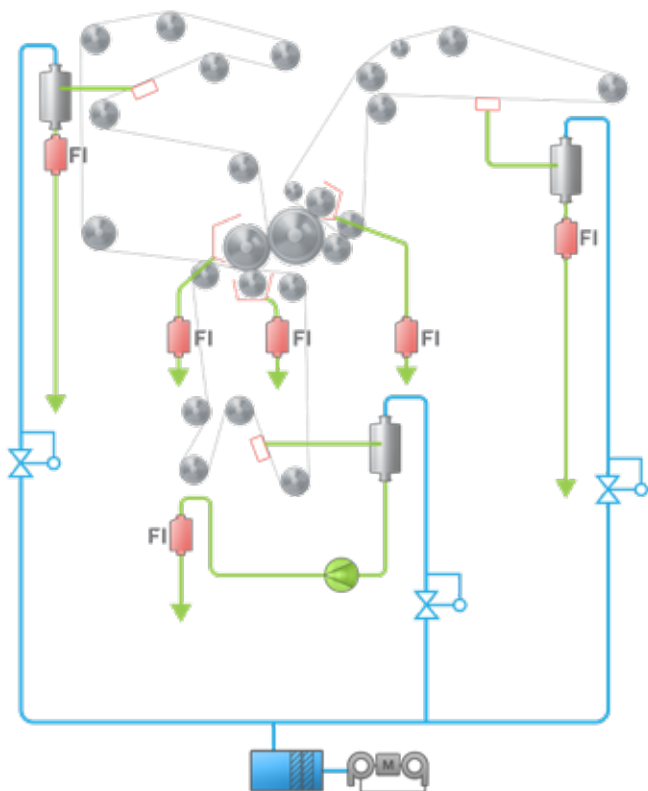
EcoFlow dewatering measurement system optimizes dewatering and vacuum levels in the forming and press sections. EcoFlow provides maximized sheet dryness after the press section, improved machine runnability and maximum energy efficiency, while providing papermakers with accurate real-time feedback about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

EcoFlows are designed to work with doctoring to gain maximum energy efficiency. Dewatering and doctoring are not only related to energy consumption, but they also have big effect on whole machine runnability, efficiency and profitability, as well as paper profiles. A well-designed and operated dewatering and doctoring system is one of the key issues to a well-performing and energy-efficient machine. A lot of paper machines have them, but they are not effective and do not have the adjustability that is needed to optimize them effectively. To get the full benefits from increased dewatering, online dewatering monitoring, efficient water discharge and rewet prevention are necessary. Runtech EcoFlow, save-alls and double doctors can perfectly match these needs.



Runtech is one of the leading suppliers for improved dewatering and doctoring solutions for all kinds of pulp, paper, board and tissue machines. In many cases, Runtech's solutions have led to a 1-3% increase in dryness after the press section, which saves considerable amount of energy in the dryer section (4-12% less steam).

Over 600 paper machines are equipped with EcoFlow. At Smurfit Kappa Ania PM2 & PM3, Italy, dewatering and doctoring optimization resulted in total energy savings of 9 GWh/year in the vacuum system.



Press section EcoFlows	Uhle boxes	Save-alls	Total
Pick-up	170 l/min	720 l/min	890 l/min
	19.1%	80.9%	47%
1 st press	564 l/min	122 l/min	686 l/min
	82.2%	17.8%	37%
3 rd press	13 l/min	290 l/min	303 l/min
	4.3%	95.7%	16%
Press water removal rate			1879 l/min

A typical EcoFlow system in a three-nip press section. Based on the data, it is very easy to compare different felts and adjust water removal.