

EV Group

Superior technology to improve wet end efficiency

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EV Group has an online cleaning system to improve forming section and stock preparation cleanliness and efficiency in paper and board machines. EV Online Cleaning System solves forming section hygiene and cleanliness problems. The system operates during normal run and reaches also inner or manually unreachable areas.

Constantly high forming section hygiene prevents hygiene problems like accumulations of fibres, bacteria growth and slime, and saves production time and chemicals. This leads to better process efficiency, paper quality, runability, savings and working conditions.

Insufficient cleaning of different forming section parts leads to many problems that limit production. In the beginning of paper making process, microbes get easily to the process in air, process water and fillers. When fresh water is used in paper making process, it contains a lot of microbes. Cleanliness of the process is destroyed at the very beginning. Poor forming section hygiene causes accumulation of fibres and bacteria growth. Fibre accumulations and lumps on wire section create holes, spots and other defects.

Accumulations in channels may even cause blocking. Tanks and towers are sensitive to build up slime. Slime causes unhealthy and even dangerous conditions on open areas and surfaces. It risks safety in the mill because surfaces are slippery.



Tanks and towers: slime and bacteria growth above the surface



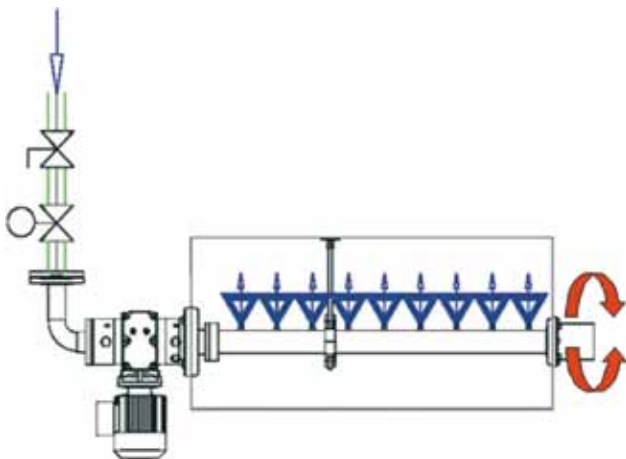
Open areas and surfaces: slime cause unhealthy and even dangerous conditions

Generally, paper makers are using chemicals and biocides to eliminate microbes. Chemical usage is easy but also an expensive way to maintain cleanliness. Often costs of the chemicals are higher than the investment costs. Furthermore, microbes get used to chemicals rapidly leading to the fact that chemicals need to be changed very often. Paper making process is disturbed during the change of chemicals leading to runability problems and production time loss.

Breaks are caused mostly in the wet end because of cleanliness and hygiene problems. Breaks naturally cause loss of production time. A dirty forming section also creates quality problems. Forming section problems mentioned above mean decreased efficiency rate. Manual cleaning during breaks is not enough to keep the entire section clean. Manual cleaning cannot reach many positions like tanks, towers or channels. This leads to wasted production time and chemicals.

Clean forming section improves efficiency

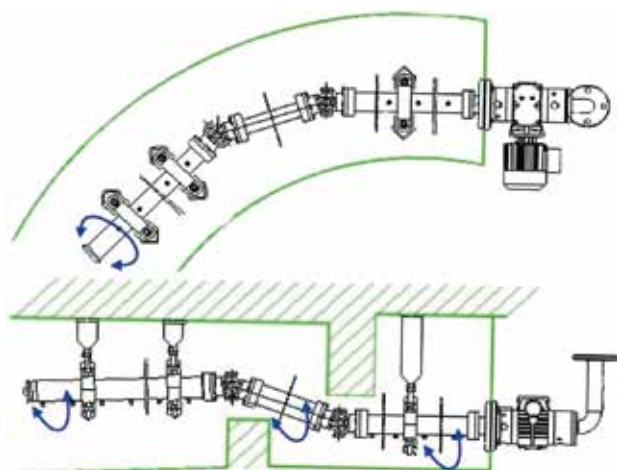
It is good to start with a proper survey for good diagnosis of the forming section. Profound survey gives information which forming section positions should stay clean and how to take care of efficient cleaning in all the positions. Secondly, it is recommended to clean online. With online cleaning mills have remarkably less need for washing stops and usage of chemicals. Constantly high wet end hygiene means better process efficiency and quality.



Washing bar of the online system rotates 360 degrees in both directions

Cleaning the area completely in every required position is important. Cleaning sequence should always remove all accumulations from the area, not only remove from one place to another. Online cleaning with washing bars rotating (360 degrees or at the smaller limited sector) ensure accumulations are completely removed.

Manual cleaning typically cleans only outer areas, while inner or unreachable areas stay contaminated. Also the inner areas should be cleaned online. EV Online Cleaning System keeps all forming section and stock preparation areas clean. These areas are channels, towers, tanks, bow screens, disc filters, water plates, surface of open areas and thickeners. The system operates during normal run.



Unique type of connection between washing bars ensures flexibility to reach all areas

Washing bar of the channels and towers rotates 360 degrees in both directions (number of units depends on area to be kept clean.) A unique type of connection between washing bars ensures flexibility to reach all areas.



2-stage driving unit

The main idea is not to add usage of fresh water. Normally the cleaning system operates with 10 to 12 bar pressure and super clear filtrate.

Efficient online cleaning prevents fibre accumulations, bacteria growth and slime in different forming section and stock preparation positions. This results in fewer breaks, paper defects and safer working conditions. No time or chemicals are required for manual cleaning during breaks. All this mean better efficiency rate for paper machine.



Forming section forming roll before and after cleaning system installed

Some mills have problems with contaminated internals of the head boxes. The EV Online Cleaning System can be installed for those old type head boxes as well. Also press section suction roll or pick up roll save all can be equipped with Online Cleaning shower. The shower will take care of cleanliness of the save all during production (limited cleaning sector), and even clean suction roll during the web break (2nd cleaning section).

Case study

Mill experience shows that this online cleaning system is a good investment: Process cleanliness is highly important at Metsä Board Kyro PM 1, Finland. The mill produces boxboard for beauty care and pharmaceutical industry. Its final product has to meet high hygiene and quality requirements.

The mill had cleanliness problems at the forming section as fibres, process water and additives created accumulations to the process. Bacteria growth and slime formation got stronger worsening the final product.

Metsä Board Kyro had a target to improve board quality, shorten washing stops and increase working safety. The target has been fulfilled with 45 online cleaning units. The mill had washing stops every week before the investment. Nowadays, the mill needs a washing stop only every fifth week. Also the quality of the board has improved remarkably.

Forming section and stock preparation tanks, towers, channels and open areas are cleaned with over 850 on-line cleaning units in more than 50 mills worldwide. ■