



dust collection & trim handling systems **VELOCITY**

# **VELOCITY-VAC**

## **Trim Handling System**

### **System Operating Characteristics**



### Vacuum system with wet trim separator

The product range of different manufacturers includes a number of wet systems for the separation of various kinds of trim.

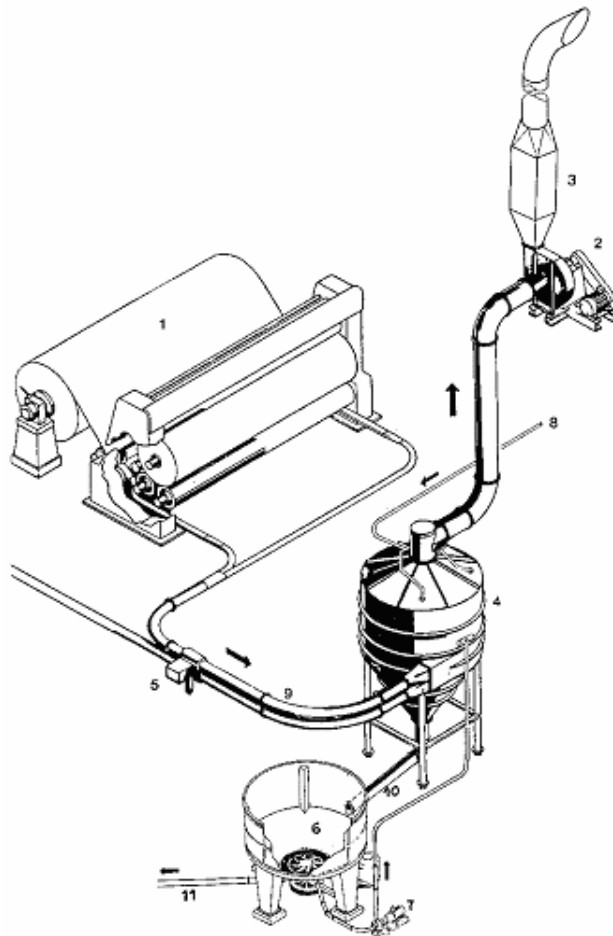
Wet collection of paper trim was tested in many systems. In Finland, for example, such systems were used for collecting the dust produced by tube saws. The result was a vacuum system with a wet separator. HSB installed over fifty systems in North America while this technology was under patent.

### Operational description of the Velocity-Vac System

The name of the system describes the most important point:

Vac = Vacuum, from the trim cutter to the separator.

The arrangement and operation of the system are shown below:



1. Winder
2. Fan
3. Silencer
4. Velocity-Vac separator
5. Airflow Control Unit
6. Pulper
7. Stock circulation pump
8. Dilution water
9. Ductwork
10. Pulper return
11. Stock Chest return



### **Description of operation**

By means of a fan (2) negative pressure is produced in the Velocity-Vac separator (4) and the suction duct (9). The trim is captured directly at the trim cutting source (1).

The continuous trim arrives in the separator (4) and settles there, due to speed reduction. The speed reduction is assisted by a certain quantity of pulp, which is pumped by a circulation pump (7) from the pulper (6). The pulp jet takes the trim through the down pipe (10) into the pulper. The down pipe (10) is introduced below the fluid level of the pulper. Due to this arrangement, a hydraulic seal is created which acts as a seal for the vacuum.

In addition, fresh (or white) water (8) is sprayed in the upper part of the separator to absorb dirt and dust from the air stream and at the same time to clean the separator sides from sticky trim or pulp.

In order to reduce noise, sound absorbers (3) are mounted at the suction and pressure sides in order to obtain the desired or necessary values. The main origin of noise is the fan and, therefore, it can and should be installed at a distance from the place of work.

Another important system component, which increases the performance and decreases noise, is the airflow control device (5). With this device, the velocity can be controlled automatically or manually for optimization.

Thus, smooth conveying of the trim is achieved which acts favourably for sound reduction during low unwinding velocities.

### **Systems produced and installed**

One or more slitters can be connected to a Velocity-Vac system. Systems with up to twelve slitters and one separator have been produced and installed with a length of over 500 m from the slitter to the separator.

In these systems, each suction duct has its own airflow regulator and, in addition, is equipped with a pneumatic gate valve, which is installed at the separator inlet. Only the required air volume is extracted, therefore, saving energy.

About 150 systems have been installed worldwide and they have all met expectations in solving trim problems and reducing costs. This is the best system available for the highest unwinding speeds.



Especially for installations where chopper or injector systems were replaced by vacuum systems, the big advantages have proven themselves.

### **Advantages of the Velocity-Vac system**

- high availability of the system
- reliability of operation
- no clogging
- saves energy
- noise reduction at the work place
- waste disposal without dust problems
- no intermediate storage required
- no pressure in the pulper
- low maintenance
- adaptable to the highest unwinding speeds
- optimal recycling

The advantages are achieved by an efficient and appropriate layout of the system.

### **Basic data requirement for layout**

The following basic data is necessary for the dimensioning of each trim extraction system:

- |    |                            |                     |
|----|----------------------------|---------------------|
| a) | unwind velocity            | m/min               |
| b) | width of trim              | in mm for each side |
| c) | basis weight of paper      | g/m <sup>2</sup>    |
| d) | cutting output for cutters | g/m <sup>2</sup>    |
| e) | paper quality              | LWC, etc.           |
| f) | length of duct             | m                   |
| g) | quantity of tube bends     | pieces              |
| h) | machine                    | make and type       |

### **Final remark**

The vacuum systems, whether operated wet or dry, provide many benefits to the papermaking and converting industries due to their high efficiency and operating safety.

Research and development is constantly being carried out in order to achieve even better results. This is the challenge of the specialist working in the field of air technology.



Equipment Pictures



Trim Separator on Mezzanine



Ductwork with Airflow Control Valve over Folio Sheeter



Trim Effluent Line Entering Pulper



Ductwork in Trusses