

# Soniplastics Inc. Eliminates Production Losses with the Vortisand® System



**F**ounded in 1979, Soniplastics Inc. specializes in PVC formed material for doors and windows profile extrusion. Soniplastics Inc. is also partner of Digigraph Inc. as its exclusive manufacturer for PVC concrete forms, popular for building houses worldwide.

Leader in its field, the company received several awards such as the best product designed for export (Digigraph house).

Built in 1989, the factory covers 110 000 ft<sup>2</sup>. The Production section occupies almost 70,000 ft<sup>2</sup> and has over one hundred employees.

The Production section has many divisions; one of which is configured for window frame manufacturing. In this division, there are 18 production lines equipped with "Twin Screw" extruding machinery. Soniplastics Inc. is planning to increase its production by adding eight (8) new extruders.



PVC melting and extruding are the two main manufacturing framing steps. PVC is provided in bags of fine powder.

Each production line is equipped with a set of dies and sizers. Each sizer has a pipe network to ensure cooling of the extruded PVC.

Each sizer section interior is equipped with fine grooves. During molten PVC

entry at 350°-374°F (180°-190°C), gas is removed and the vacuum effect provides a smooth product.

Sizer cooling must be done quickly. Originally, cooling was conducted with fans. Since 1996, the factory used water as a coolant (3000 gallons provide cooling with a recirculation rate of 300 gpm). Warm water returns to a cooling tower by way of an open channel (1 1/2 ft in width x 200 ft in length).

## GROOVE SEALING

Fine PVC powder regularly infiltrated the cooling water system following "spontaneous leakage" and/or human errors.

Powder on floors and frequent sweeping increased system fouling by way of the open channels.

PVC powder in cooling water blocked fine grooves inside the sizers, and prevented effective suction. Calibrated product surfaces were unacceptable. Product rejects were numerous.

Cooling water filtration was provided with 5 filter bags (50 micron filtration). During "leakage", each filter had to be replaced every 20 minutes for about 4 hours. In addition to these painstaking handling tasks, each production line had to be disassembled and cleaned one after the other. Over two hours were spent on each line. Mr. Alain Duchesne, Plant Manager, estimates that 1000 bags were used every month.

**SOLUTIONS**

Several alternatives were contemplated by plant management. One in particular was the possibility of installing filters on each production line. This option was rejected since cooling water system contamination was still possible by way of the open channels. Groove fouling was always a possibility.

Vortisand® filters were therefore a global solution. In February 1999, Sonitec Inc. supplied a system model # AWT4-30-SP to provide 400 gpm filtration at 2 microns.



Interior of sizer section

The system was oversized to allow for production growth.

The former bag system has been eliminated since the introduction of Vortisand®, filters.

**COST EFFECTIVENESS**

Investment return results mainly from production savings:

- Significant reduction in finished product losses.
- Reduction in raw material losses.
- Maintenance costs reduction related to frequent product line disassembling/cleaning - associated with PVC powder leakage in the cooling water system.
- Labor fees reduction associated with filter bag changes.
- Elimination of production stops.
- Elimination of filter bag procurement.

Mr. Duchesne estimates a 12 month period for investment return.



PVC powder



Mr. Alain Duchesne,  
Plant Manager

**SPECIFICATIONS  
Model AC4-30-SP**

- **Filtration flow** : 400 gpm
- **Media Sizing**: 2 microns
- **Number of vessels** : 4
- **Vessel diameter** : 30"
- **Vessel**: stainless steel 304 (125 psi, ASME Sec. VIII, Div.1)
- **Face piping**: PVC SCH 80
- **Pump**: Centrifugal with 7.5 HP ODP Motor
- **Control Panel**: Nema 12 enclosure with PLC including differential pressure switch, stager valve, backwash counter, main disconnect switch and pump motor starter.
- **Maximum operating pressure**: 100 psi
- **Maximum operating temperature**: 105°F
- **Space required**: 13'6"L x 6'0"H x 3'8"D

For further information regarding this and other projects, please contact us.

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