

## Bird Machine Company

South Walpole, M.A., USA  
August 1994

### SUMMARY

A fully automatic system to let-down purified terephthalic acid (PTA) from a 10.3 bar g pressure filter to atmospheric pressure. Minimal component wear and risk of explosion to achieve an efficient and effective system for the manufacture of purified terephthalic acid.

Converts a continuous supply of materials at high pressure to a continuous supply of material at atmospheric pressure.



# CASE STUDY

## Inflatek Valve

Shrewsbury, Shropshire, ENGLAND

<b>APPLICATION FEATURE</b>	<b>CUSTOMER</b>	Bird Machinery Company
Let down of purified Terephthalic Acid from 10.3 bar g to Atmospheric Pressure	<b>LOCATION</b>	S. Walpole, MA, U.S.A.
	<b>INDUSTRY</b>	Custom designed and built machinery for liquids/solids separation problems
	<b>INSTALLATION DATE</b>	August 1994
	<b>APPLICATION</b>	Pressure let-down of Purified Terephthalic Acid (PTA) from 10.3 bar g to Atmospheric pressure.
	<b>TECHNOLOGY</b>	Pressure Let-Down Chambers
<b>SYSTEMS SUMMARY</b>		Pressurized Surge Vessel, Pressure Vessel, Screw Conveyor, and PHV Inflatek Valves®

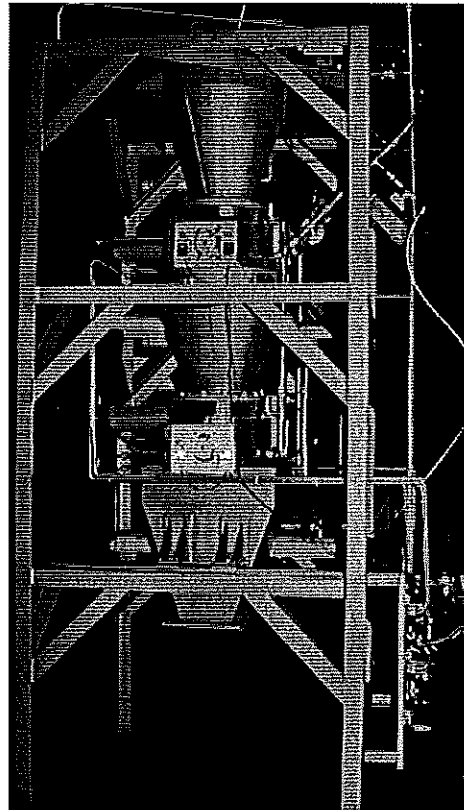
### ■ SYSTEM OBJECTIVES

System design requirements were:

- 1) Fully automated let-down of damp PTA from a pressure drum filter at 10.3 bar g to atmospheric pressure and remove via a screw conveyor.
- 2) Stainless steel construction, explosion-proof screw conveyor, inert atmosphere
- 3) Low Maintenance, negligible wear of vessels

### ■ NOTE

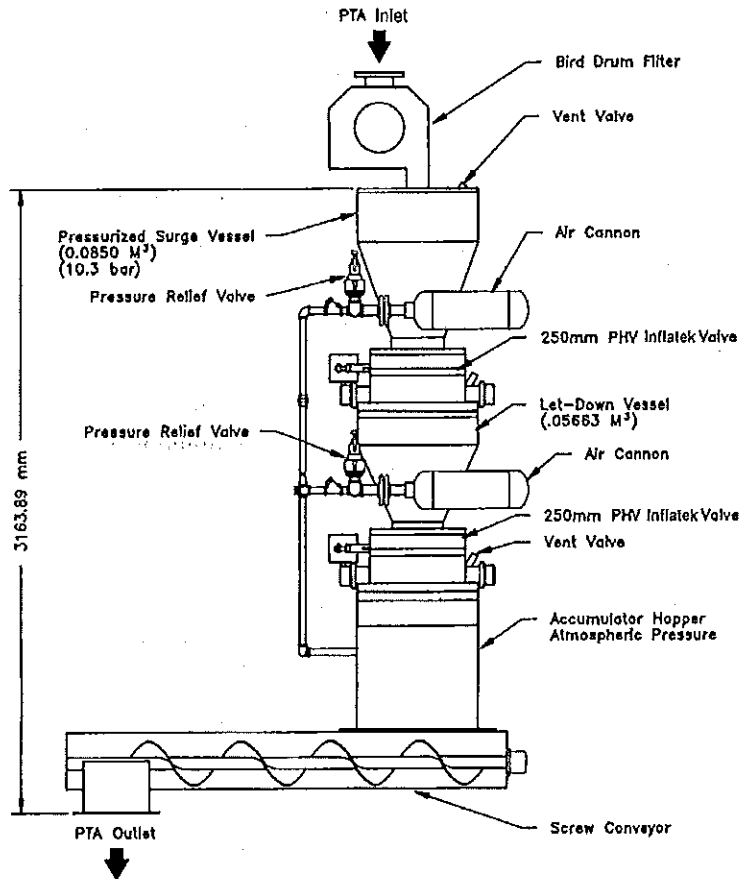
Patents applied for.



Pressure Let-down assembly utilizing two 250 mm Inflatek Valves.

## ■ MATERIAL CHARACTERISTICS

<b>Material</b>	Damp Purified Terephthalic Acid (PTA)
<b>Bulk Density</b>	801 kg/m <sup>3</sup>
<b>Particle Size</b>	100% passing 50 micron
<b>Moisture Content</b>	10% by weight maximum
<b>Temperature</b>	149°C
<b>Condition</b>	Mildly abrasive, sluggish flowing



## ■ SYSTEM DESCRIPTION

Material will continually discharge from the customer's pressure filter that is fed from the upstream processing of the purified terephthalic acid. The PTA will temporarily accumulate in the surge vessel. When the PTA reaches a level probe, the PTA is dropped through a **Inflatek Valve**<sup>®</sup> to the intermediate vessel. The vessel is depressurized to atmospheric pressure and the PTA is dropped through another **Inflatek Valve**<sup>®</sup> into an accumulator hopper onto a screw conveyor. The PTA is taken down stream from the screw conveyor for further processing.

## ■ SYSTEM PERFORMANCE

<b>Handling Rate</b>	1000 kg/hr
<b>Cycle Time</b>	2 min
<b>Average Nitrogen Consumption</b>	0.80 NM <sup>3</sup> /min at 10.3 bar g
<b>Material Degradation</b>	NIL

