Plastics

Tuthill Vacuum & Blower Systems has vacuum pumps and blowers for several applications within the Plastics Industry. Manufactured in Springfield, Missouri USA in our ISO 9001 manufacturing facility our products are ideal for various plastics applications. Typical vacuum requirements range from 18 to 28” Hg; typical blower requirements range from 17” Hg vac (-575 mbar g) to 15 PSIG (1.01 bar g).

Extruder Degassing

By mixing and melting at high temperatures, various gases distribute uniformly from plastics. Tuthill A series vacuum pumps pull vacuum from extruder vents to enhance devolatilization efficiencies. A series pumps can be offered as water sealed or oil sealed. Tuthill also offers KVA series rotary vane pumps for this application. Typical vacuum requirement for extruder degassing is 23 to 26” Hg.

Vacuum Sizing Tank (Calibration Table)

After the extruder, plastic pipes/profiles pass to a vacuum sizing tank also known as a calibration table. Water is used continuously in a vacuum sizing tank for cooling and lubrication of the plastic profiles. Vacuum is used to improve the shape/profile of the plastics. A vacuum pump used in this step of the process must be capable of handling slugs of water. Tuthill’s axial flow design A series liquid ring vacuum pump is proven in this application due to the following benefits:

• Reduced stress on motor shaft & bearing with the axial flow design
• The shrouded rotor does not leave blades exposed and allows the pump to start flooded
• Discharge port on the port cylinder has a much larger opening than the flat plate design, this enables it to handle slugs of water and reduces the chance of air to be trapped in the pump once the mass flow drops.
• Axial flow design eliminates valves or balls on the discharge side for ease of maintenance.

Typical vacuum requirement is 18 to 22” Hg.

Vacuum Thermoforming

Thermoforming is a manufacturing process where a plastic sheet is heated to a malleable forming temperature. The sheet or “film” is heated to a high enough temperature that it can be stretched into or onto a mold using a vacuum. Tuthill offers our A or KLRC series water sealed or oil sealed liquid ring vacuum pumps and KVA series rotary vane vacuum pumps for this application. Typical vacuum requirement is 21 to 24” Hg.

Plastic Resins and Compounds Productions

Vacuum pumps are used to pull the pressure off the reactors. This allows the plastic to expand in the vessel. The majority of what is being pulled off is water with some plasticizer. Some products require good vacuum to reach quality requirements. Our KLRC series liquid ring vacuum pumps have been used successfully in this application for many years. Our two-stage design achieves deeper vacuum and there are options available for partial once-through recovery for this application. Typical vacuum requirement is 24 to 28” Hg.
Wire Coating
Rubber or nylon material in solid form fed into the extruder, it melts and flows into the crossheads where metal wire is continuously traveling. Tuthill A series vacuum pumps are used to draw the air in the crossheads so the plastic or rubber melt can create a tight jacket around the wire. Typical vacuum requirement is 23 to 26" Hg.

Corrugated Pipe Manufacturing
The large diameter corrugated pipe manufactured in an extruder is called corrugators. Vacuum is used in this process primarily to hold the melted plastic in the corrugated mould in order to give the desired shape of the pipe. A vacuum pump also extracts the fumes or gases released from the melt. Oil sealed liquid ring vacuum pumps or rotary vane vacuum pumps are often used in this application. Tuthill offers both in our KLRC series and our KVA series vacuum pumps. Typical vacuum requirement is 21 to 24" Hg.

Pneumatic Conveying
Pneumatic conveying is achieved by creating a pressure differential along a pipeline and using the air that moves toward the area of lower pressure to move bulk material. This process can be performed with a vacuum inducer or by injecting compressed air into one end of a pipeline. Like other air moving technologies, Tuthill’s rotary positive displacement design provides constant flow irrespective of pressure. Our blowers have been successful in these applications for over 60 years. Tuthill rotary positive displacement blowers are used to move plastic pellets, flakes or chips in either vacuum or pressure dilute phase pneumatic conveying in ranges from 17” Hg vac (-575 mbar g) to 15 PSIG (1.01 bar g).

Target Customers
Original Equipment Manufacturer (OEM) of:
• Extruders
• Vacuum sizing tanks (calibration table, downstream equipment)
• Vacuum thermoforming machines

End Users:
• Plastic pipe, profile, wire & cable manufacturers
• Corrugated pipe manufacturers
• Vacuum thermoforming parts manufacturers
• Thermoplastic resins manufacturers