SOLIDSVAC® / SOLIDS PUMPING SYSTEMS

MANSOUR GROUP

VACUUM LOADING SOLIDS PUMPS - AN OVERVIEW

A Solidsvac is a combination of a vacuum generating 100% air powered venturi combined with a 316 SS pressure vessel. These, via a set of manuals and/or automatic controls, operate a variable vacuum load, pressure discharge cycle whereby any product that can pass through the hose, can be captured and transferred. The standard SV pumps operate in two phases, Lean Phase where the material is conveyed within the air stream and Dense Phase where the material is conveyed by the airstream. This duality of function occurs in both the vacuum loading and pressure discharge modes of operation. The new CVCD Series provides virtually continuous operation in both modes.

A Solids Pump's performance with regards to a certain application or material is dependent on numerous factors not the least of which, is the operator and/or set-up. Below are several items that should be considered if you are to optimize the performance of a Solidsvac.

- **BASIC TRAINING**

Basic operator training in the function and operation of the pump is strongly advised. This is for both OH&S aspects along with the success and commercial viability of the task to be undertaken.

- **CORRECT AIR SUPPLY**

Available air (Both volume-cfm/m3 and pressure-psi/kpa) and using the correct diameter supply hose is crucial. The loss of pressure brought about by either distance or insufficient hose ID, is somewhat equivalent to that of voltage drop experienced in electrical equipment. A larger diameter supply line can act as an accumulator, often saving a significant amount of energy when employed correctly.

- **CORRECT HOSE & MINIMAL BENDS**

The length, diameter and type of hose employed has a significant effect on the achievable throughput (This applies to both suction and discharge lines) Correctly rated hoses are necessary, and preferably with a smooth bore and as few bends as the operation allows. When pneumatically conveying solids, each 90 deg bend equates to approximately 6 metres of straight `hose from an energy perspective.

- **APPECIATE THE ENERGY REQUIRED**

At 1 Sg of a material to be conveyed in every 100mm of 100mm (4") hose, equates to approximately 1Kg or 2.2lb and as such a 5 Metre (20') hose will carry around 60 Kg (130lb) of material. It is worth keeping in mind that it takes far more energy to vacuum convey a material than it does to push the same with pressure.

NB: Air volumes must be considered when operating above 3000 Metres or 10,000 Feet where the is thinner hence a greater volume is required to maintain the correct pressure.

- **KNOW YOUR MATERIAL**

The Solidsvac pumps will generally have no problem handling up to 5 Sg, material, and solids with a diameter up to 70% of that of the hose in use. That said, the heavier a product is, the more you must be conscious of the other dot points. Mining, drilling slurries and similar materials convey well, although you are best served by keeping them moving to their final destination. Solidsvac strongly advise that when undertaking a material transfer via pneumatic conveying, both prior and during operation, you strive to have as many aspects as possible of the operation working to assist that process. These aspects include unit placement, type of hose, layout, gravity, viscosity, operator knowledge, etc.

NB, Polymers, or materials with the characteristics of honey can be particularly difficult unless heated as these materials tend to absorb the energy exerted on them.

- **REALISTIC EXPECTATIONS**

High vertical suction lifts (Those lifts in excess of 10 metres/30 feet at sea level) can't be recovered via vacuum alone, they need to be pneumatically conveyed which means the material must share the suction line with a volume of air so be aware that although lifts in excess of 25 metres can be achieved, there can be a correspondingly significant drop in throughput rates.

Solidsvac Pumps are almost impossible to damage in operation, with no internal workings there is no cavitation, no wet end seal, no heat generated etc. The units can move between vacuum loading a solid stream of viscous material to pneumatically conveying a much less viscous material via the introduction of air into the convey line. This can be achieved by the operator or the unit itself can and will move between the two phases as the available energy and materials require hence, they will pump almost anything that flows and certainly several products that do not.

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CHEMICALS & COMMODITIES

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