



Prodigy[®] HDLV[®]

Process Control For Powder Coating





Process Control

Prodigy delivers the lowest cost per painted part with the highest quality



Gun Pump

At the heart of Prodigy technology is the unique dense phase gun pump. Pneumatically operated, it dispenses powder to the gun at a constant rate over time as it doesn't use any wearing venturis. Designed to self purge and colour change in only 20 seconds without disassembly, the pump ensures process control, at the lowest operating cost.



Spray Gun Range

The Prodigy HDLV gun range consists of a high efficiency dense phase manual gun, a straight-through powder path short version for robot applications and also a longer automatic gun for extended reach inside the booth. Prodigys' advanced nozzle technology produces unbeatable first pass transfer efficiency and consistent film build.



High Capacity Pump

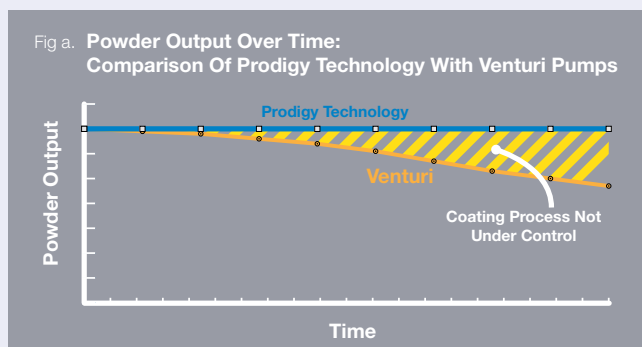
Designed for automatic ultra-fast colour change without disassembly, the High Capacity Prodigy pump is suitable for bulk feeding or recycling. Less compressed air used to propel the powder results in more efficient powder handling. The pump is capable of transporting powder at 4kg/minute over large distances or heights, without using venturis.

Prodigy HDLV products are designed specifically for quick colour change and the highest transfer efficiency at the lowest operating cost. Assembled together **process control is achieved.**

Prodigy HDLV from Nordson is the pioneering and original dense phase powder coating technology. HDLV, meaning 'High Density Low Velocity' powder transport, has a high concentration of powder but very little air. Central to the system operation is the Prodigy HDLV gun pump. It consists of two side-by-side chambers each with an upper and lower section working sequentially to provide precise and controlled powder delivery.



Traditional venturi pumps use high velocity air and due to the abrasive nature of powder they wear internally over time and at different rates dependent upon which powder is being sprayed. This wear makes frequent adjustments to gun settings necessary to ensure the same consistent output from each gun over time. Prodigy HDLV pumps operate without any venturis and so powder output is consistent over time, providing process control. In *Figure a.* the effect of wearing venturis can be seen, using Prodigy removes the uncontrolled variable from the coating process.



Additionally, the pumps meter powder to the gun using less air to propel it, 4 times slower, which results in better charging and transfer efficiency as the aerodynamic forces are secondary to the electrostatic forces and as a result a "softer" and more thoroughly charged powder cloud is achieved. This optimised electrostatic time results in the ability to penetrate into more difficult recesses normally prone to faraday cage issues.

Using a smaller volume of air has a number of benefits for powder coaters;

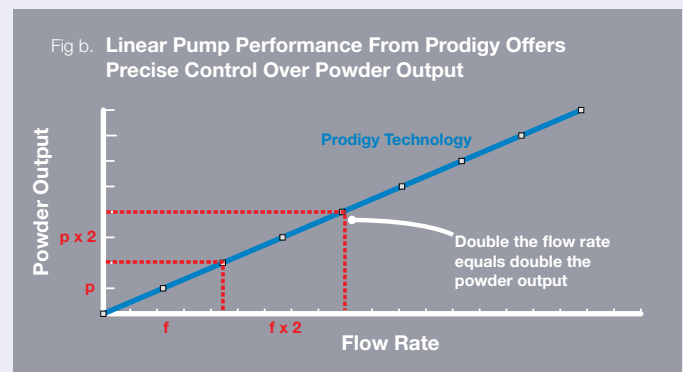
- Lower velocity powder means significantly reduced wear on powder contact surfaces and no impact fusion, which promotes reliable colour changes.
- Small diameter powder delivery tubing is effectively cleaned with lower air volumes. The smaller cross sectional area makes for faster colour changes with the highest quality.
- Powder hose sizes can be reduced, Prodigy hoses are typically 6mm ID compared to 12mm ID on traditional systems.



Gun Pump

In a traditional venturi powder pump both the atomising and the flow rate air interact with each other producing non-linear output. This is difficult to control and can lead to inconsistent results. Prodigy HDLV technology offers simple and linear output control, significantly simplifying equipment set-up and adjustments.

Figure B. demonstrates that the linear and proportional output of a Prodigy pump removes the guesswork and variables in repeatability and uniformity of a powder coating system.



- **Constant powder output over time offers full process control and improvement for coaters.**
- **Pumps self clean without disassembly - no manual intervention required.**
- **Low velocity, softer spray improves first pass transfer efficiency and penetration.**



By using Prodigy HDLV coating technology powder coaters enjoy numerous benefits;

- **Increased transfer efficiency** and coating penetration due to softer spray, and optimised electrostatic powder cloud.
- **Process control;** as Prodigy doesn't use wearing venturis within the pump, consistent, reliable and linear powder output over time is ensured. With this reliable output, high quality coating results are predictable. Furthermore, process improvement can be achieved by utilising the linear nature of Prodigy powder output, digitally adjusting the film thickness.
- **Minimal wear items;** The unique design of Prodigy means that it has the lowest running costs of any powder coating system.
- **Consistent film build;** constant powder output from each gun reduces variances in cured film thickness, improving the appearance of the product and reduces overall powder consumption.
- **Faster colour change** with the highest quality. Prodigy pumps self clean automatically without disassembly in just 20 seconds.
- **Lowest cost per painted part;** Process control, improved quality and coating efficiencies often result in the lowest cost per painted part with Prodigy.