

# Enhanced Processing Methods for Plastics Designer and Manufacturer

Helped Accelerate Innovative Product Launch



**P**roVent Systems, a leading designer and manufacturer of polyvinyl chloride (PVC) products, was launching an innovative PVC plumbing system with revolutionary benefits for commercial high-rise builders when the company hit several roadblocks during early testing. Problems surfaced with resin formulation and welding inconsistencies that threatened to stall the program's rollout.

Historically made of cast iron, the drain-waste-vent product would be the first-ever, solvent-type fitting made of PVC, promising to be more durable, more sound resistant and less expensive to install than previous systems. The new patented Single Stack® fitting would need to be molded in two pieces and then welded together with an exacting flush-fit to ensure leak-proof performance.

Despite careful engineering and investment in specialized molding processes and welding equipment, the finished PVC parts were failing, forcing the customer to send repair technicians to each high-rise installation to replace each failed part — floor by floor and location by location. With reservations mounting for the highly anticipated product almost as fast as escalating repair costs, the company needed immediate help to diagnose the problems and get the product launch back on track.

Nexeo Plastics first addressed the PVC compound itself, working with a supplier to develop and test a resin formulation with the unique flow and impact properties the application required. Our experts recommended a resin with a higher impact resistance and more uniform pellets to promote better melting, resulting in the development of a specialized resin called ProTuff-42® PVC.

## PROJECT AT-A-GLANCE

### Recorded Benefits

- Eliminated time-consuming and costly repairs associated with a PVC welding failure
- Realized new process efficiencies with gains in quality assurance
- Successfully moved high-demand product to market faster

### Challenge

ProVent Systems needed help resolving numerous design and process issues that threatened to derail a highly anticipated product launch.

### Solution

Nexeo Plastics addressed each technical challenge, debottlenecking the processing issues leading to the welding fracture and improving overall process quality.

### Result

Nexeo Plastics' step change eliminated the part failure, improved overall processing and ultimately helped ProVent Systems bring the high-demand application to market.

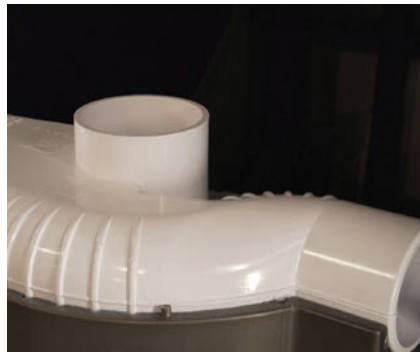
Next, the design aspects of the stack vent were addressed to ensure a good flush-fit of all the complicated interior partitions. Thermal imaging was utilized on both the molded parts and the welding machine to optimize processing conditions and improve heat dispersion. Upon review, Nexeo Plastics recommended a parts cooling table with clamps to control the cooling rate, prevent warping and further secure the seal.

Further assistance was provided in developing a robust quality assurance process before packaging to ensure the equipment and testing methodology was accurate and repeatable. Each seal was inspected through a rigorous combination of impact testing, pressure testing and thermal imaging to confirm ProVent Systems was shipping a premier product.

Nexeo Plastics addressed each technical challenge to overcome the welding failure, tested and proposed key process changes to improve the end product and helped develop a sustainable and repeatable quality control process to keep the customer's production line working at optimal efficiency. The improvements were a resounding success, giving ProVent Systems a robust material, improved production and quality control processes to meet the high market demand.

With Nexeo Plastics' help, ProVent Systems successfully constructed a single-stack system that holds up under pressure, eliminating both the time and expense of parts failures and restoring industry confidence in the product as it was gaining acceptance in the marketplace.

**Discover how Nexeo Plastics can help you overcome your material, process, and application challenges.**



ProVent Systems created the first PVC single-stack drainage system by overcoming design and production challenges, working closely with Nexeo Plastics technical experts specializing in material specification and manufacturing.



As part of the quality control process, Nexeo Plastics recommended adding thermal imaging to inspect the weld along the entire seam of the vent and ensure a water-tight fit.

1.833.446.3936 | [nexeoplastics.com](https://www.nexeoplastics.com)



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