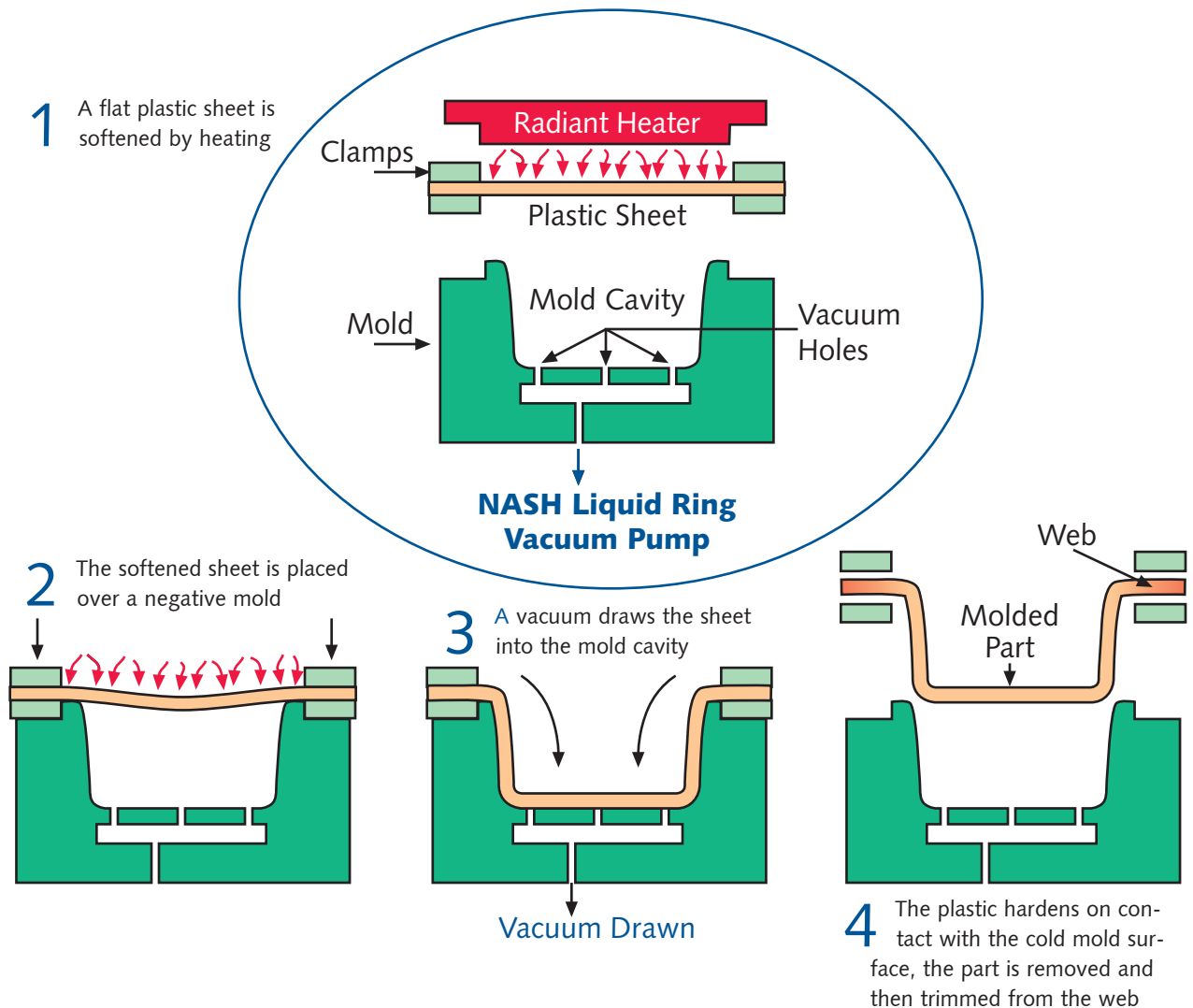


NASH Vacuum Pumps for Thermoforming

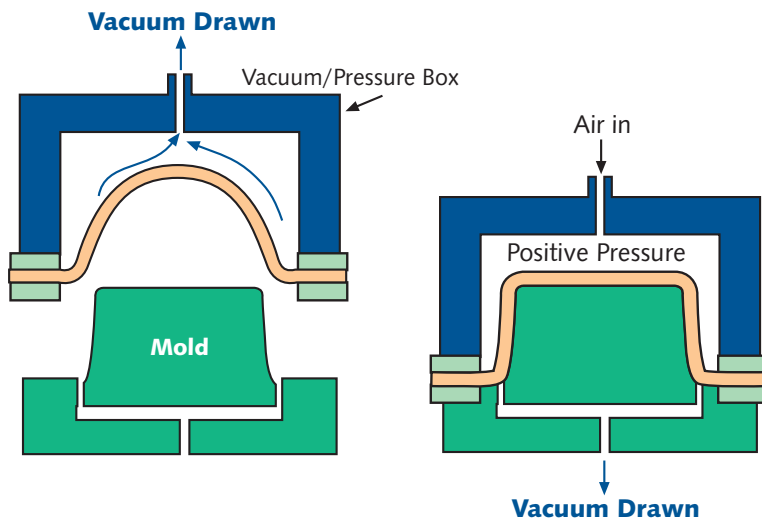


Vacuum thermoforming has lower cost tooling and shorter lead times than injection molding. The parts are lightweight and they have excellent structural integrity with high-impact strength.

Vacuum Thermoforming (also called Vacuum Forming) has four steps, as seen in the diagram below.



Nash liquid ring vacuum pumps are ideal for this application, because of their ability to handle plastic resin carryover. Add these to over a century of high reliability and engineered excellence, and Nash liquid ring vacuum pumps are the perfect choice for your vacuum thermoforming process.

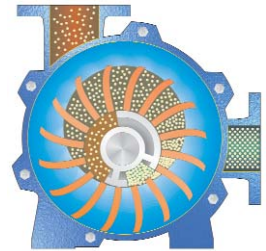


Pressure thermoforming, also known as pre-draw thermoforming and blow forming, is a more advanced method of thermoforming. It is a variation on the basic process described above. The difference is that while vacuum is being drawn to pull the sheet into the mold cavity, air is being blown in from above. The combination of positive pressure from above and vacuum from below exerts pressures much greater than those of vacuum alone.

Thermoforming can be done with either negative (concave) or positive (convex) molds. The side of the plastic sheet that comes into contact with the mold will have the exact surface contour of that mold. Thus, a concave mold will give an exact exterior surface and a positive mold will give an inside surface that is identical to a positive mold.

Mold types will also affect the thinning of the plastic sheet. As the sheet is stretched over the mold, it thins. So, the first area of the sheet to touch the mold will be the thickest. This can be largely eliminated by pre-stretching the sheet uniformly and then drawing it over the mold.

Vacuum thermoforming has lower cost tooling and shorter lead times than injection molding. The parts are lightweight, with excellent structural integrity and high-impact strength.



NASH Features	User Benefits
Ability to handle process carryover or recycled gases	Increased operating efficiency and reduced operating costs
Long design life	Highest reliability
No internal lubrication required	Less maintenance required; less downtime
No metal-to-metal contact	Simple operation; wear-free performance
Cool Running	Incoming vapor is condensed. Smaller, less costly equipment can be selected
Only one moving part	Simple and trouble-free operation
Proven energy efficient design	Lower operating costs, year after year
Over a century of engineering and application experience	Peace of mind

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