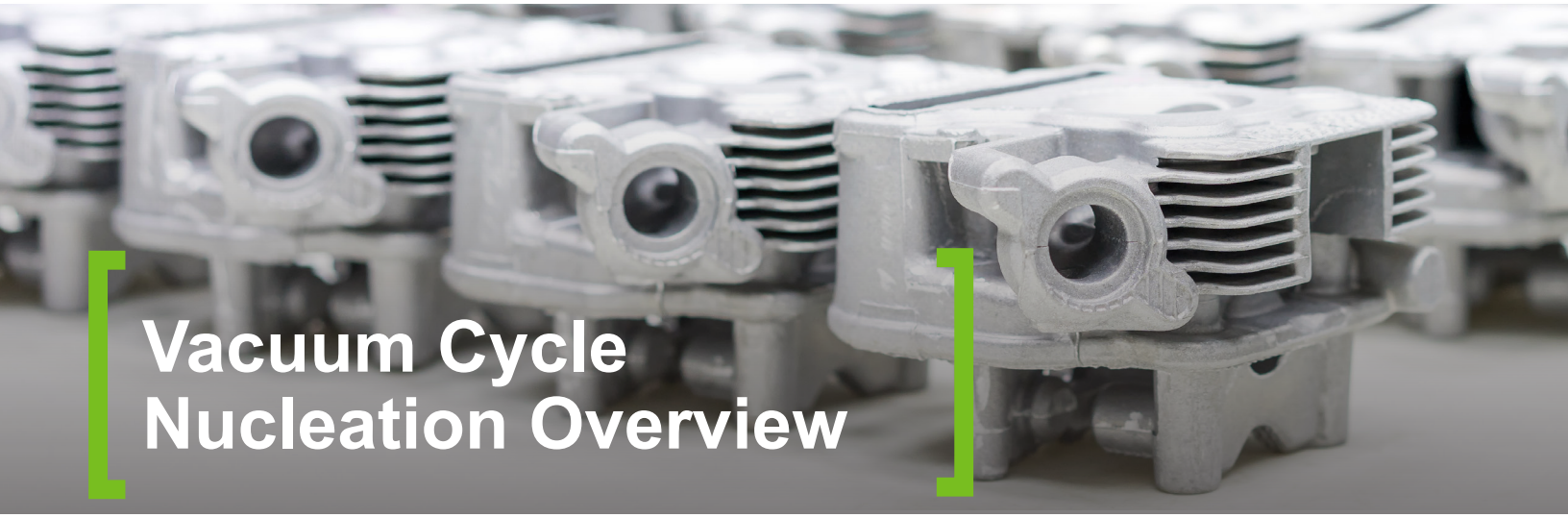
New York State
Pollution Prevention Institute



Vacuum Cycle Nucleation Overview

New York State Pollution Prevention Institute (NYSP2I), at Rochester Institute of Technology (RIT), is looking to work with precision parts manufacturers in New York State to evaluate and possibly implement a new technology called Vacuum Cycle Nucleation (VCN).

How does VCN work?

VCN utilizes surface bubble nucleation under pulsating pressure conditions using aqueous-based solutions to lift contaminants off part surfaces, even those with irregular shapes. Other applications require high concentrations of hazardous and toxic chemicals to achieve desired cleanliness - VCN can achieve the same cleanliness levels with much lower amounts of chemicals.

- Parts are immersed in a water-based solution that contains low concentrations of cleaning chemicals like hydrogen peroxide or surfactants.
- The cleaning chamber is heated to temperatures from 120 to 150 degrees Fahrenheit.
- A vacuum is applied to lower the boiling point so bubbles form on the parts and help to achieve enhanced mass transfer of fluid.
- VCN can often clean parts that could otherwise only be cleaned using toxic and hazardous chemicals.

Who should use VCN?

Any sector that utilizes precision parts cleaning, such as:

- Metal finishers
- Medical device manufacturers
- Microelectronics

Why use VCN?

Saves money - costs associated with chemical purchases are reduced, regulatory compliance requirements are minimized, and productivity can increase.

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What does VCN do?

Cleans complex parts - precision cleaning using aqueous solutions; effectively cleans parts with irregular geometries such as tight recesses and small openings.

Reduces toxic chemicals needed to effectively clean precision parts. Chemicals such as halogenated solvents (e.g. trichloroethylene) and high concentrations of acids or caustics can be reduced or eliminated altogether.

About NYSP2I

NYSP2I is a partnership between the New York State Department of Environmental Conservation, Rochester Institute of Technology and the university's Golisano Institute for Sustainability, Binghamton University, Clarkson University, Cornell University and Rensselaer Polytechnic Institute, with a statewide reach. NYSP2I also works with the state's Manufacturing Extension Partnership to help disseminate data and strategy.

Learn more about NYSP2I.

http://www.rit.edu/affiliate/nysp2i/