

**New York State  
Environmental Investment Program  
Research Project Summary**

**R3 Fusion, Inc.**

**Project Background**

Losurdo Foods, Inc. is a family-owned business that makes and distributes fine Italian cheeses throughout the US. Until 2002, Losurdo's Heuvelton Village plant in St. Lawrence Co. was competitively manufacturing several varieties of cheeses, including Mozzarella, Provolone, Ricotta and Ricottone. However, in 2003, new restrictions placed on the village's wastewater treatment facility began limiting production at the local Losurdo plant. Until the amount of byproduct being generated could be reduced, or some alternative waste management system implemented, the Heuvelton Village operation would be unable to meet existing demand for products or grow. By 2007, production was limited to specialty Fresh Mozzarella, Whole Milk Ricotta and whey Ricottone, and employment had dropped from over 100 FTEs down to 37. Milk purchased from local dairies was reduced from about three million lbs/week to 750,000 lbs/week. The threat of closure was looming.

**Project Description**

During his tenure with Clarkson University, Dr. Roshan Jachuck, who was affiliated with the school's Center for Advanced Materials Processing, had devised several new "Process Intensification" technologies that offered less expensive, more compact alternatives to large-scale batch processing, with the potential to quickly and cost-effectively separate the water from Losurdo's byproduct and potentially allow for its reuse on site and for the sale of the drier waste. This project would allow Dr. Jachuck's newly formed company, R3 Fusion, Inc., to demonstrate the benefits of its Rotating Module Reactor (RTR) technology at Losurdo's Heuvelton facility and to assess the market potential for its whey byproduct.

A rotating tube module was designed specifically to perform laboratory pilot scale testing at Losurdo. Based on the initial lab scale studies, an improved design and configuration of the novel water recovery system was fabricated and retrofit to accomplish full-scale trials at Losurdo.

**Project Results**

The demonstration at Losurdo proved that the RTR technology can cost-effectively separate clean water from the whey byproduct. The water can be reused in non-contact applications like cooling, or as make-up water for the plant's boilers. The drier solids could be marketed to the animal feed industry.

To date, based on related reductions in wastewater generated, make-up water needed, chemicals purchased, and heat transfer, the financial benefit to the plant is already in excess of \$160,000/year. At least 37 jobs have been retained, with an additional 13 full-time employees added.

R3 Fusion's research team continues to test another, alternative microwave technology that has the potential to further convert the concentrated whey byproduct into a more valuable dry powder. The next step will be to build a commercial scale system at Losurdo that is estimated to reduce waste management costs at the plant by 50%.

This demonstration project also showed that the R3 Fusion technologies tested would offer similar benefits for any food processing plant where wastewater is generated.

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<b>Contractor:</b>	R3 Fusion, Inc.	<b>NYS EIP Investment:</b>	\$200,000
<b>County:</b>	St. Lawrence Co.	<b>Contractor Match:</b>	\$ 76,954
<b>ESD Region:</b>	North Country	<b>Total:</b>	\$276,954
<b>ESD Contact:</b>	518/292-5340	<b>Completion Date:</b>	January, 2012