



ThermoEnergy ARP™ and Thermo ARP™

Ammonia Recovery Process for Sidestream Treatment of Centrate, Filtrate, or Digestate Nitrogen



45,000 GPD ARP System

ThermoEnergy's ARP™ and Thermo ARP™ are today's most cost-effective and environmentally-sustainable solutions for removing ammonia nitrogen loads in municipal, industrial and agricultural/biogas water. ThermoEnergy ARP systems utilize our patented, physical/chemical process that uses temperature and pressure separation to remove ammonia from water. ThermoEnergy's ARP systems have been extensively tested in industrial and municipal applications for over 15 years. Our newest "Thermo ARP" system is specifically designed for use with agricultural and municipal anaerobic digesters where the wastewater stream requires a simpler treatment strategy.

ThermoEnergy ARP – A Great Combination of Efficiency and Sustainability

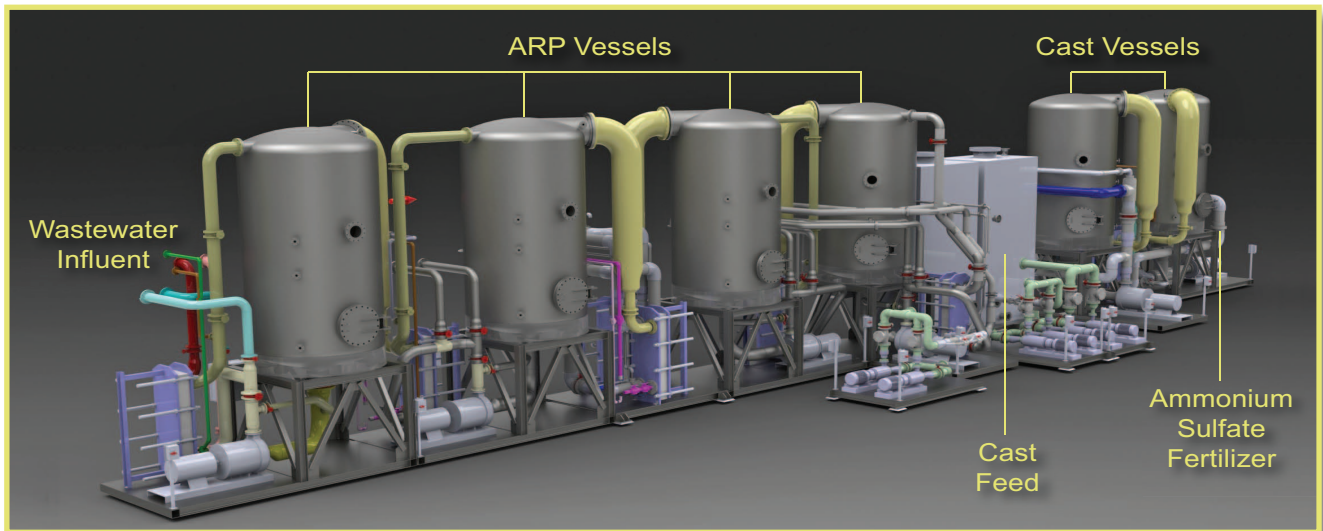
The ThermoEnergy ARP can remove 80% or more of the ammonia in your plant's centrate, filtrate, or digestate in less than 12 minutes and recycle it into Ammonium Sulfate/Nitrate, valuable fertilizers for the agricultural industry. The ThermoEnergy ARP is a sustainable solution for your water treatment facility because you not only eliminate chemical waste products by recycling ammonia into a highly-useful product, you save money at the same time. The technology is so efficient the City of New York has announced that it will use the ThermoEnergy ARP to prevent 2.4 million pounds per year of ammonia from entering Jamaica Bay. The ThermoEnergy ARP is easily retrofitted to your plant and has a very small footprint. The system can scale to any capacity requirements.

ThermoEnergy "Thermo ARP" substantially lowers cost of nitrogen removal compared to existing systems at sites with agricultural and municipal anaerobic digesters.

Based on our proprietary CAST® technology platform, Thermo ARP uniquely combines heat and flash vacuum distillation to deliver the lowest cost per pound of nitrogen removed compared with any digestate treatment technology on the market today. For agricultural and municipal high rate anaerobic digesters, Thermo ARP has a nitrogen treatment cost per pound of nitrogen removed that is materially less than that of the most efficient competing technologies.

This latest generation of our ammonia recovery process is a major breakthrough in nutrient treatment. By eliminating a chemical pre-treatment step, we have lowered the cost of nitrogen removal by as much as 50% over our original ARP system for a variety of applications. In addition, we have further reduced our already small footprint and simplified system operations. Just like our original ARP systems that will remain the standard for efficiency in many applications, Thermo ARP recovers nitrogen in the form of fertilizer that can be reused or sold to create additional revenue opportunities."

Both ARP and Thermo ARP have the economic and environmental advantage of recovering nitrogen as a fertilizer. By recovering ammonia and not releasing it into the atmosphere, revenue from the sale of fertilizer can provide fast payback on the equipment investment.



ThermoEnergy's controlled atmosphere separation technology (CAST)

Thermo Energy ARP and Thermo ARP systems offer huge advantages over other ammonia-removal processes:

- Easy to operate and maintain
- Has a small footprint
- Cost of operation per pound of Ammonia removed is the lowest in the industry
- Uses less energy than competing technologies
- Produces significantly less greenhouse gases than biological systems
- Creates valuable fertilizer

Take Advantage of Our Great Pilot Programs

ThermoEnergy understands the importance and the utility of pilot programs. That's why we've developed pilot systems that meet or exceed the demands of our diverse client base.

Our Worcester, Massachusetts Research and Development facility can replicate your operating environment and provide quick reliable results at no cost to the client. On-site pilot testing is also available. Each on-site pilot unit is self-contained and mounted on a corrosion resistant portable skid, pre-wired, pre-piped and configured for easy installation. It can be operated individually or interconnected with multiple units to simulate a specific treatment train.

A Tradition of Service and Support

ThermoEnergy's commitment does not end at system startup. We offer a broad range of services to ensure peace of mind that your system is always operating at optimum performance levels. ThermoEnergy's field-support group stands ready to assist you with: extended warranty programs; preventative maintenance programs; repair services; spare parts; retrofits, upgrades and rebuilds; and used equipment consignment sales.



Learn more why the ThermoEnergy ARP and Thermo ARP are your best choice for ammonia removal. You will find more information on ThermoEnergy ARP in our technical library at www.thermoenergy.com, including a BioWin analysis, greenhouse gases analysis, and pilot study reports. You can also email us at info@thermoenergy.com or call 1-508-854-1628, ext. 302.