



2023 CASE STUDY

Solvent Recovery for The World's Lightest Solid: Aerogel

Industry: Aerogel Production

Unit Installed: SSBP-110 Solvent Saver Batch Premium System
(110-gallon capacity)

The Challenge

- Aerogel is known as the lightest solid in the world, with exceptional thermal insulation and flame resistance. However, its production involves a complex solvent mix of tert-butyl alcohol, NMP, and water, which must be recovered safely and efficiently.
- The company needed a high-performance solvent recovery system that could handle multiple solvents, prevent freezing of tert-butyl alcohol, and operate safely in a hazardous environment. Traditional systems lacked the flexibility and safety certifications required for this cutting-edge application.

The Solution

Maratek installed the **SSBP-110 Solvent Saver Batch Premium System**, a 110-gallon unit tailored to the client's unique process. Key features included:

- **Thermal Oil Jacket Heating:** Provided precise temperature control across a wide range (50°C–200°C).
- **Water-Cooled Copper Condenser:** Efficient recovery of volatile solvents.
- **Mist Eliminator:** Removed entrained droplets for high-purity distillate.
- **Dual Drum Fill & Collection:** Enabled continuous operation with minimal operator intervention.
- **Tilting Frame:** Allowed easy sludge discharge and cleaning access.
- **Remote Ethernet PLC:** Enabled real-time support and software updates.
- **Class I Division I Group D Certification:** Guaranteed safe operation in flammable environments.

Optional upgrades included a 10-ton water chiller to prevent freezing of tert-butyl alcohol, a jacketed mixing vessel for molecular sieve dehydration, and jacketed storage totes with spill sensors.

The Result

- **Safe Recovery of Complex Solvent Mix:** Tert-butyl alcohol, NMP, and water recovered efficiently without freezing.
- **Process Reliability:** Automated filling, remote support, and spill sensors reduced downtime.
- **Compliance & Safety:** C1D1 certification and food-grade construction met stringent safety standards.
- **Scalable Innovation:** Enabled Aerogel Technologies to advance fireproof textile development with confidence.

Why Maratek?

With over 50 years of experience and 1,500+ systems installed, Maratek is trusted for its custom engineering, automation, and compliance expertise. For Aerogel Technologies, Maratek delivered a solution that supported cutting-edge innovation while ensuring safety, reliability, and performance.

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