Design-Build Soda Ash Crystallization Plant
Chemical / Soda Ash Industry | Case Study

The Client’s Perspective
American Soda – Parachute, CO USA

“**Instrumental in this project was Veolia’s pilot testing in their research facilities and the subsequent supply of the HPD monohydrate and bicarbonate crystallizers that serve as the heart of the production process.**”

- Charles Yates
  COO & VP, Operations
  American Soda, L.L.P.

Project Description
Through innovative process development and results-oriented pilot testing, Veolia Water Technologies helped American Soda reach their goal to produce exceptional high-quality soda ash and high-purity sodium bicarbonate from natural nacholite deposits. An HPD® sodium carbonate monohydrate crystallization system and a unique HPD sodium bicarbonate crystallization system were the first of several commercial production systems that Veolia would design and supply to the soda ash producer.

The Client’s Needs
American Soda set high expectations for their new $300 million Parachute, Colorado facility. They wanted to be the world’s most efficient and lowest cost producer of soda ash and sodium bicarbonate while producing these products in an environmentally responsible way.

To reach these objectives, American Soda needed efficient crystallization systems specifically designed to produce soda ash and sodium bicarbonate from a natural nacholite deposit, unlike the conventional trona method.
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Technology Solutions

Sodium Carbonate Monohydrate Crystallizers
- The two, 32-foot diameter HPD sodium monohydrate crystallizers are the heart of the plant’s production.
- Production capabilities exceed the required capacity of one million tons of dense soda ash (DSA) annually.
- Pilot testing in the crystallization research center demonstrated that the product quality would meet or exceed the market’s needs.

Sodium Bicarbonate Crystallizer
- The innovative HPD cooling style crystallizer was pilot demonstrated to validate the new process.
- The commercial system has shown exceptional performance with annual production capacity of 150,000 tons of sodium bicarbonate.
- The unique design has greatly extended clean out frequencies from normal industry practice.

Sodium Carbonate Decahydrate Recovery System
- American Soda requested suggestions for management of a monohydrate purge stream for an alternative to external disposal. Veolia recommended and installed an HPD sodium carbonate decahydrate crystallizer for additional product recovery.
- The decahydrate system operates at a low temperature to provide alkali recovery from the purge with capacity up to 260,000 tons annually.

Sodium Bicarbonate Solids Handling Improvements
- Ongoing evaluations helped identify another area of opportunity for American Soda. Veolia provided a bicarbonate curing system, which enhanced product quality and opened new markets for American Soda by providing additional grades of product.

Results
American Soda has experienced reliable production of soda ash and sodium bicarbonate at exceptional product purity. Each system and equipment enhancement supplied by Veolia Water Technologies was smoothly integrated into the facility and met the local environmental requirements.

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