

# Ammonium Sulfate Crystallizers for Fertilizer Production

Fertilizer and Chemical Industries | Case Studies



- **Project:** Petrobras FAFEN, Brazil
- **Start-up:** 2013
- **Production Capacity:** 875 mtpd
- **Feed:** Ammonia ( $\text{NH}_3$ ) and sulfuric acid ( $\text{H}_2\text{SO}_4$ ). Surplus ammonia is a by-product from the onsite urea production plant. An option exists to use sulfuric acid produced by several nearby refineries.
- **Technologies:** Veolia's HPD® PIC™ (draft tube baffle) crystallizer, 2-stage pusher centrifuges, drying, screening, packaging, and storage are included in this project.
- **Scope:** Design and supply of the fully integrated system
- **Advantages:** No external heat was required. The heat needed for evaporation, fines destruction and drying is generated by the reaction between sulfuric acid and ammonia. Large crystals are produced, increasing the value of ammonium sulphate product.



- **Project:** Murrin Murrin - Anaconda Nickel, Australia
- **Start-up:** 1998
- **Production Capacity:** 96 mtpd
- **Feed:** Ammonium Sulfate feed; purge from Nickel/Cobalt mine extraction facility
- **Technologies:** The purge pretreatment included demineralization, clarification, filtration, and reverse osmosis system. An HPD® MSMPR (Mixed Suspension Mixed Product Removal) Crystallizer system is used. This is a triple effect forced circulation crystallizer.
- **Scope:** Turnkey project
- **Advantages:** The Forced Circulation configuration is a robust design resulting in easy operation and long operating cycles.



- **Project:** J.R. Simplot, USA
- **Start-up:** 1996
- **Production Capacity:** 500 mtpd
- **Feed:** Ammonia ( $\text{NH}_3$ ) and sulfuric acid ( $\text{H}_2\text{SO}_4$ )
- **Technologies:** Veolia's HPD® Growth Crystallizer is used in a reactive crystallization configuration.
- **Scope:** Equipment Supply
- **Advantages:** No external heat is required. Very large product crystal size is achieved using a fluidized crystal bed suspended in supersaturated brine.

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