

Ammonium Sulfate (AS) FGD Technology

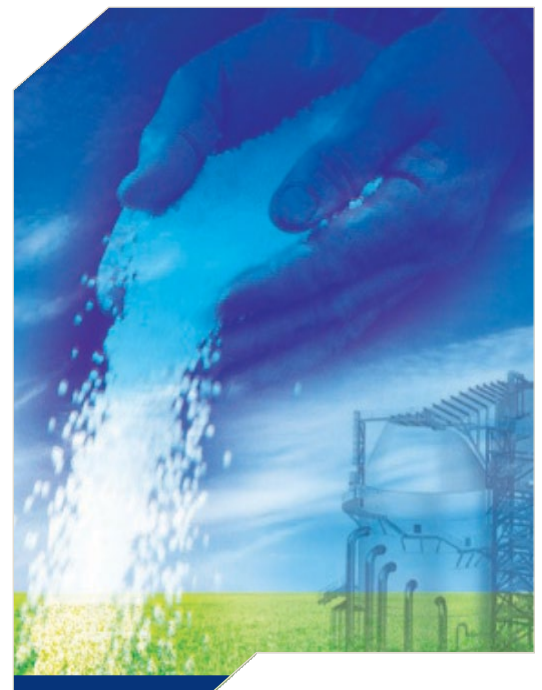
Solutions. Performance. Relationships.

Emissions Compliance and Revenue Generation

For plants with access to aqueous or anhydrous ammonia either on site or nearby, MET – Marsulex Environmental Technologies offers an innovative and profitable Wet Flue Gas Desulfurization (WFGD) alternative... AS-FGD or Ammonium-Sulfate FGD.

By using an ammonia reagent (instead of lime or limestone), SO₂ emissions are converted into a high value commercial grade crop fertilizer. This technology can actually result in revenues through the sale of the fertilizer and significant power generation cost reductions.

Developed in the early 1990's, the AS-FGD technology provides long term environmental compliance and requires no by-product waste handling. The success of this technology has been demonstrated with installations in four countries and the continued full scale operation at the original installation. This technology can be applied to most industrial facilities including coal-burning power plants, steam generating and petrochemical facilities.



Benefits

- *Revenue Stream provided by Sale of AS Fertilizer*
- *Economics are enhanced with low cost, high sulfur fuels*
- *Issues and costs for both solid and liquid waste are eliminated*
- *No CO₂ greenhouse gas emitted during the AS-FGD process*

Visit MET.net to find a representative in your area.

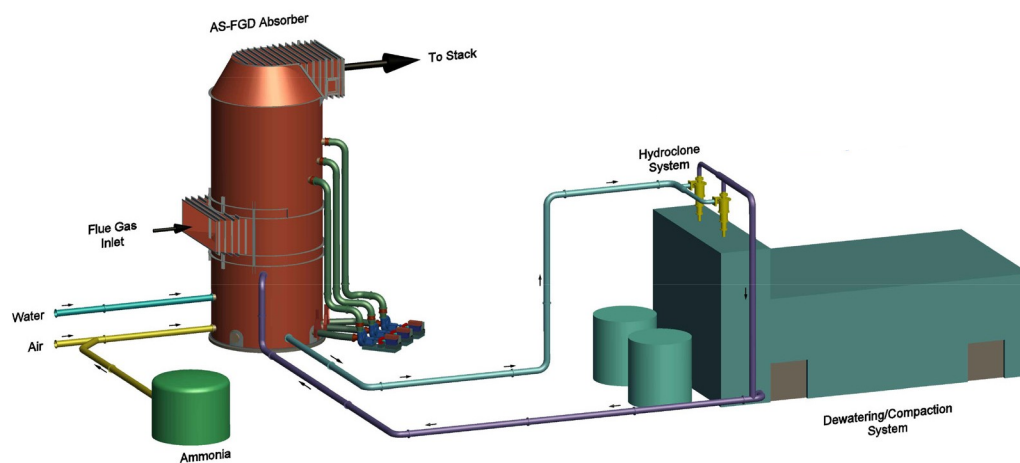
Our Unique Solutions

Realizing that every customer's needs are project specific, MET has a unique package of contracting solutions available:

- **Firm, lump sum** – competitive pricing providing identification of capital cost up-front
- **Technology licensing** – utilizing MET's technology with the client self-performing the majority of project implementation
- **Open-book, cost reimbursable with fixed fee or cost plus** – a collaborative arrangement with the customer, providing a platform and the means to deliver the project at the lowest practical cost
- **Build, Own, Operate, Maintain** – use of the technology without the customer taking on fertilizer plant capital cost or operating responsibilities. A long-term relationship in which Marsulex Environmental Technologies would provide and operate the fertilizer plant and be responsible to market the product.

Technical Information

- Designed with standard conventional critical equipment redundancy
- Water soluble chemistry prevents any internal buildup versus the scaling potential with limestone scrubbing
- Ammonia reagent more reactive than limestone, capable of achieving up to 99% removal efficiency at high sulfur content
- Greater than 99% availability and reliability
- Use of lower cost / higher sulfur fuels enhances fertilizer production and plant economics
- Unlike calcium based systems, there is no discharge to waste water treatment
- Operating costs offset through sale of AS fertilizer by-product
- Every ton of ammonia utilized generates approximately 4 tons of ammonium sulfate fertilizer
- Best opportunities to apply are Power / Petrochemical / Industrial plants with:
 - Higher sulfur fuels (2%+)
 - Proximity of navigable water or good rail access
 - Locations having regional demand for high quality crop fertilizer



MET AS-FGD Process Diagram