



In support of the G8 Plan of Action

Ammonia Sector Provides Key Lessons for Energy Efficiency Initiatives

Ammonia production uses on average 30% less energy per tonne of ammonia today than thirty years ago. This compelling success story was highlighted at a recent workshop, jointly organized by the International Energy Agency (IEA) and the International Fertilizer Industry Association (IFA). Because ammonia production is energy intensive, these gains represent a dreamed of win-win situation: lower energy consumption is good for the environment and for a company's bottom line.

Some 80-90% of total energy use in the fertilizer sector is dedicated to converting atmospheric nitrogen into ammonia. Virtually all fertilizers that contain nitrogen are derived from ammonia, so this sector is intimately linked to imperatives to meet growing demands for food and bio energy. Life cycle analyses have shown that the energy and carbon captured by the extra biomass grown thanks to fertilizer use exceed the amount that is consumed or emitted during fertilizer production several times over.

Many natural gas-fired ammonia plants around the world are approaching the theoretical minimum use of energy, but incremental improvements can still be made in other areas particularly with regards to the choice of feedstock. There is also scope for better performance at sites that have not yet invested in the best available technology.

In addition to having an impressive track record of reducing energy consumption, the ammonia sector also boasts a well-established benchmarking system through IFA. This provides essential insights into the current state of the industry and allows companies to track their performance against others and over time.

The workshop on the theme of "Energy Efficiency and CO₂ Reduction Potential in Ammonia Production" was a contribution to the G8 dialogue on climate change, clean energy and sustainable development. The venue in Vietnam emphasized the importance of emerging Asian economies in terms of ammonia production.

Speakers from around the world addressed the outlook for the ammonia sector, provided the fertilizer industry's perspective of the challenges and opportunities ahead and explored technology prospects for incremental improvement in efficiency and reduced greenhouse gas emissions. Key points included:

- In **India**, which is experiencing strong growth in fertilizer production and demand, recent plant **revamps and feedstock changeovers** have led to significant increases in industrial efficiency and reduced emissions.
- **China**, which will bring more coal-based ammonia plant capacity online in the coming years, can make similar strides with investment in **coal gasification** technology.
- **Carbon capture and storage (CCS)** for CO₂ mitigation **remains too costly** for the ammonia sector without additional financial incentives. Still the ammonia sector may pose interesting early opportunities for CCS, well ahead of the power sector.

- Discussion also **addressed how to foster investments in cleaner technology** and processes. Participants from industry and governments agreed that emissions trading schemes and similar market mechanisms are effective means of “pricing” carbon, as long as they are based on current performance standards (and not historical emissions). It is also essential that they have global coverage to avoid distorting competitive advantages. Such incentives need to be couched within a stable, long-term regulatory environment to provide the necessary visibility for ammonia producers to make sound economic decisions to invest with regard to energy efficiency and lower-emitting technology.

The IEA will incorporate the insights gained into its report on industrial energy efficiency to the G8 summit hosted by Germany in June 2007. The two organizations will continue to work together to improve sustainable energy use.

For more detailed information on the workshop discussions, please refer to the following website to access all presentations and supporting papers*:

http://www.fertilizer.org/ifa/technical_2007_hcmc/2007_tech_hcmc_papers.asp