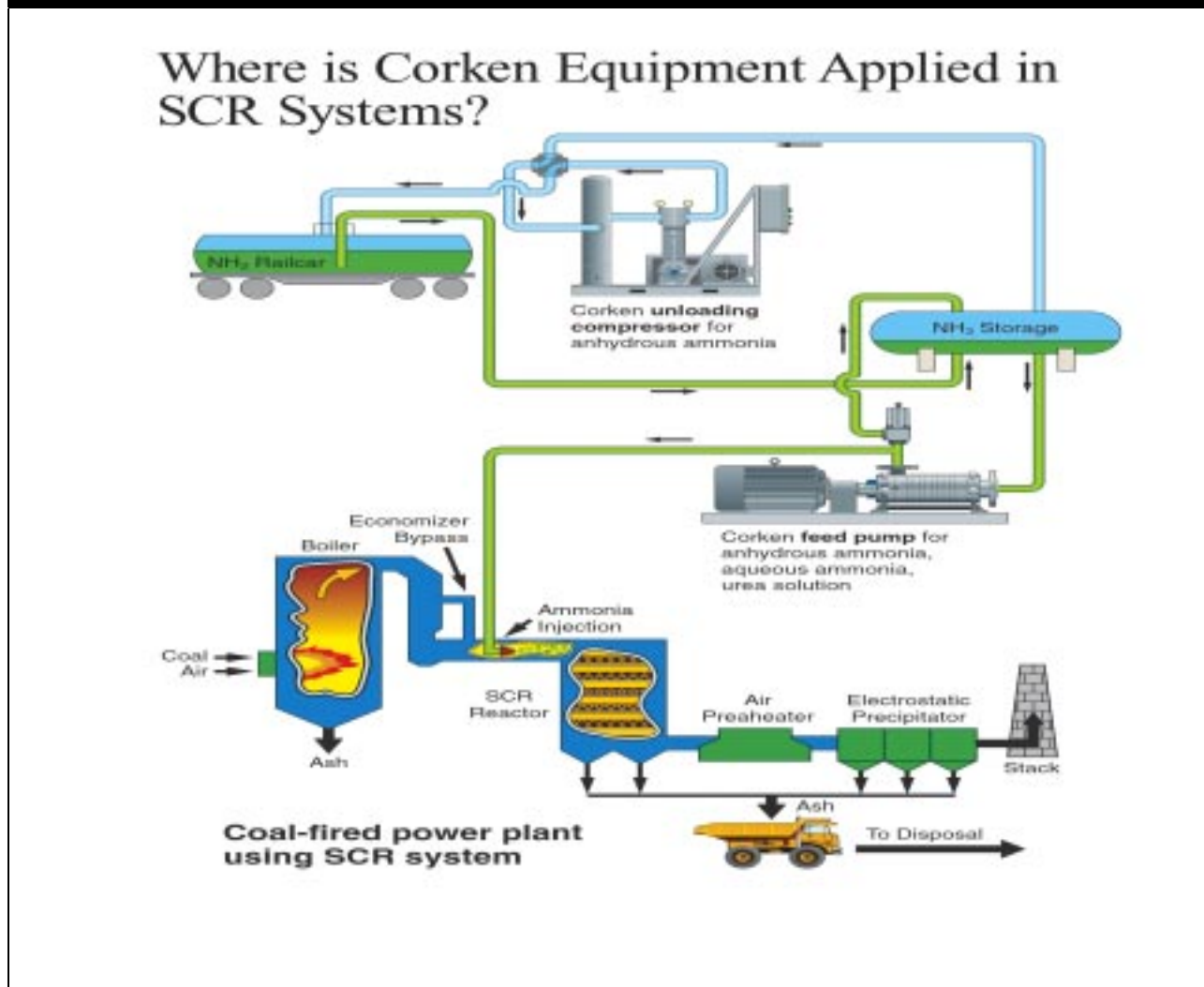


PROCESS SHEET

For NOX Reduction and Selective Catalytic Reduction (SCR)

Application	Business Sector
<ul style="list-style-type: none"> • NOX • SCR 	<ul style="list-style-type: none"> • Refineries • Power Plants

Installation



Process Description

EPA regulations are generating demands to reduce nitrogen oxide (NOX) emissions from the combustion of fossil fuels found at industrial boilers. Selective Catalytic Reduction (SCR) is the reduction of NOX emissions released from firing these fossil fuels. Coal, oil, and natural gas fuels have uncontrolled releases on NOX, which is a major contributor to acid rain, smog, and air pollution.

SCR is a post-combustion NOX reduction technology in which ammonia is added to the flue gas, which then passes through layers of a catalyst. The NH₃ and NOX react on the surface of the catalyst, forming harmless nitrogen and water.

Mediums

- Anhydrous Ammonia
- Aqueous Ammonia
- Urea

Equipment used in this process

Side Channel Pumps for anhydrous ammonia, aqueous ammonia, and urea.

- Exceptional in light liquid transfer.
- Capable of pumping liquids containing up to 50% gas.
- Enclosed centrifugal impeller provides improved NPSH capabilities.
- Able to develop high pressures without pulsations.
- There is no metal-to-metal contact, so wear is minimized.
- Designed for continuous duty.
- Available in sealless magnetic drive design for leak proof integrity.

Compressors for anhydrous ammonia.

- Extremely reliable. Corken has been the standard in ammonia transfer for 50 years.
- Available with single or double distance pieces specifically designed for hazardous gases.
- Optional ANSI/DIN flanges connections.

**One stop shopping.
Only Corken offers the range of SCR ammonia pump
and compressor system capability.**

Design Considerations

1. **ANHYDROUS AMMONIA:** The most economical NOX reducing agent used. This medium may incur high compliance costs and create safety concerns related to the transportation, storing, and handling of the product. It is considered hazardous and toxic.
2. **AQUEOUS AMMONIA:** Used in lieu of anhydrous ammonia because of its lower NH3 concentration, lower storage pressures and permitting issues. When diluted to at least a 19% solution it is not classified as a toxic chemical.
3. **UREA:** A non-toxic solid form, usually resembling small pellets, which can be converted to ammonia with a water solution or degradation through extreme heat. This technology is gaining interest due to its minimal safety concerns.

Technology Acceptance

- SCR is well accepted by the EPA as the best available control technology that can achieve the highest NOX reduction levels.
- SCR systems have proven to reduce NOX emissions 80-98%.
- Ammonia is currently considered the most effective NOX reducing agent used with SCR systems.
- This technology has been used successfully in Europe since the 1980's.