Selective Non Catalytic Reduction System - SNCR
Selective Non-Catalytic Reduction Systems are used to remove harmful nitrogen oxides from hot flue gases by reaction with Urea or Ammonia solutions injected inside combustion chamber outlet with balanced flow rates and dispositions and are used in power plants that burn biomass, coal or waste.

Is important to introduce the solution within temperature ranges of 900 - 1000 °C, in order to guarantee the best possible reaction and reduce at minimum the residual ammonia slip. Moreover, is important to choose the correct combustion chamber elevations where the lances will be installed, also for guarantee a proper permanence time.

Urea is easier to handle and less dangerous than ammonia; the principal reactions involved in the process are the following:

\[ \text{NH}_2\text{CONH}_2 + \text{H}_2\text{O} \rightarrow 2\text{NH}_3 + \text{CO} \]
\[ 4\text{NO} + 4\text{NH}_3 + \text{O}_2 \rightarrow 4\text{N}_2 + 6\text{H}_2\text{O} \]

B.C.E. can supply complete SNCR system designed to reach a good NO\textsubscript{x} reduction with NO\textsubscript{x} conversion up to 60 - 70%. As usual, our products are made on job by job basis, according to Client’s specific requirement, and therefore we could provide systems suitable both for small or big plants.

Usually our SNCR systems are composed by the following items:

- no. 1 skid which include recirculation pumps from/to solution tank, solution dosing pumps from tank to lances skid and demineralized water dosing pumps from utilities network to lances skid for correct atomization and lances cooling. The skid include all the necessary valves and instrumentation, basket filters, mixer and so on.
- no. 1 (or more if any) skid for solution distribution to lances complete with atomizing air feeding and all the necessary valves and instrumentation
- no. 1 skid for cooling air distribution to lances usually composed by no. 2 blowers, valves and instrumentation
- A set of injection lances designed for solution injection/atomization by compressed air with tip and plug
We can also provide to the supply of solution tank which include the necessary flanged connections for tanker loading, internal cleaning, vent and instrumentation, electrical resistance to avoid urea crystallization at low temperature (if any), support structures, ladders and platforms. Each item will be designed and supply according to specific codes & standards.

B.C.E. can also supply, before the final assembly, several test on piping i.e. pressure test, welding test (WPS/PQR, LP, PMI), painting test and issue to Client the relative certificates.

Finally, we can supply a cabinet suitable for DeNOx control and management complete with panel showing the signals comes from field, alarms and so on, push buttons for start-up/shut-down and lamps. Inside the cabinet will be located the necessary contactors, relays, power units and all the other components required to realize the correct control logics.

With the mechanical supply, we usually provide skids, tank and cabinet lay-out drawing, I/O lists, electrical schemes and cabinet schemes, valves and instrumentation, blowers and pumps datasheets, material certificates, quality control plan and operating and maintenance manuals.

**TYPICAL BCE SUPPLY**

- Urea or Ammonia recirculation/dosing/distribution skids completely assembled with mechanical, electrical and pneumatic connection, complete with all the relevant items suitable to guarantee the correct and safe operating of the system
- Detailed P&ID of the whole system
- Datasheets of all instrumentation installed
- Electrical connection, schemes and logics (if any)
- Tests and procedures with relative certificate made on Code & Standards basis or on Client’s request (if applicable)
- Assembly and maintenance manuals
SOME REFERENCE

IDROBLINS - Crova (Italy) 1 complete SNCR system for Neoterm boiler burning rice husks, 32 MW
STC - DISTER, Faenza (Italy) 1 complete SNCR system for Pensotti FCL boiler burning biomass, 24 MW
STC - CO.LA.RI., Malagrotta (Italy) 1 complete SNCR system for Neoterm boiler burning syngas, 45.7 MW

For any further information please contact:
BCE S.r.l.
Via S. Margherita, 450
21042 - Caronno Pertusella (VA) - Italy
Phone: +39 02 9657788
Fax: +39 02 9657303
E-mail: info@bceitalia.com
Web site: www.bceitalia.com