

Siemens Energy, Inc.,

SGT6-5000F with Dilution SCR

January 2026

Table of Contents

D-SCR System Feature Capabilities 2

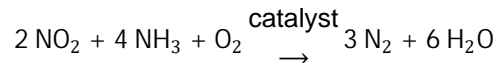
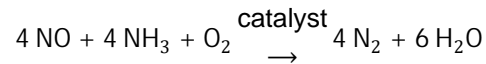
Scope of Supply/ Division of Responsibility 3

Material of Construction 7

Instruments & Controls 8

D-SCR System Feature Capabilities

SCR systems are designed to control the NO_x emissions from Gas Turbines utilizing natural gas fuel and/or low sulfur fuel oil. These systems use aqueous ammonia or NH₄OH injection and catalysts to reduce the NO_x to nitrogen and water vapor as follows:



The Dilution SCR system sometimes may also include an oxidative catalyst to reduce the Carbon Monoxide (CO) content of the GT exhaust gas down to guaranteed levels, if so required. An alternative solution entails a combined SCR and CO catalyst may also be offered.

The figure below shows a schematic diagram of a generic SCR system.

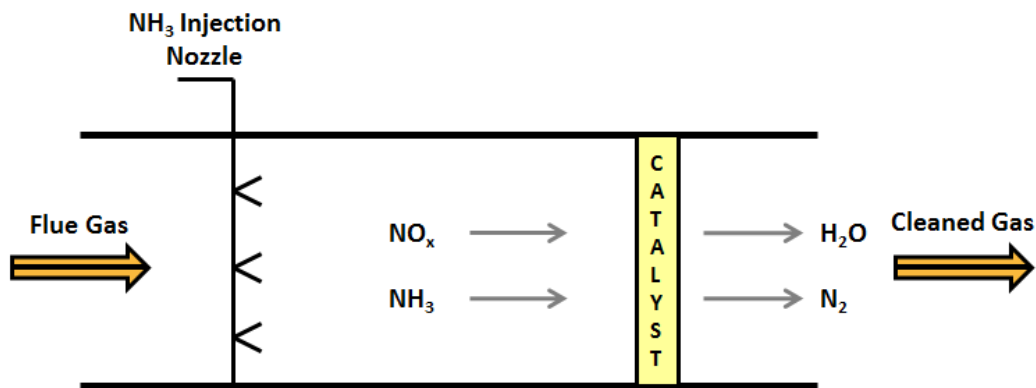


Figure 1: Schematic Diagram of a Generic SCR System

An ammonia-air mixture is injected into the exhaust gases containing NO_x. The gases mix thoroughly in a turbulent zone, and then passes through the catalyst where the NO_x is reduced. Several different catalysts are available for different applications and operating conditions. Base metal catalysts containing titanium, vanadium, molybdenum, tungsten, and other elements are most widely used. Higher temperatures require either a Dilution SCR system to lower temperatures to appropriate levels, or high temperature catalysts.

Based on lifecycle costs, a Dilution SCR system is more economical than using high temperature catalysts due to the following factors:

- The life of high temperature catalysts is shorter than more typical catalysts.
- NH₃ decomposes at high temperatures.
- SO₂ converts to SO₃ at high temperatures.

The system consists of a reaction chamber with a catalyst bed composed of catalyst modules, an ammonia handling system, and an ammonia injection system. SCR systems can be designed for a NO_x removal efficiency as required per the project.

Scope of Supply/ Division of Responsibility

DESCRIPTION		Furnished by SEI	Not Furnished by SEI
EXHAUST SYSTEM			
1.	Inlet duct expansion joint	X	
2.	Square to rectangular adapter spool piece between the GT and the DSCR	X	
3.	Rectangular to rectangle transition piece that connects the above spool piece to the DSCR	X	
4.	DSCR duct	X	
5.	Access doors located on the sidewalls of the DSCR system for inspection	X	
6.	Bottom casing duct drains	X	
7.	140' tall x 24' diameter stack with CEMS/EPA ports	X	
8.	CEMS port at outlet of GT exhaust	X	
9.	Stack drainage with manual valve	X	
10.	Duct and/or stack silencer section	X	
11.	Stainless steel internal liners and internal insulation in the DSCR and stack	X	
12.	Instrumentation to control and for a safe operation of the DSCR system	X	
13.	Ladders with rest platforms per OSHA standards for accessing 360 ° CEMS/EPA platform on stack. All external steel for	X	

	ladders, handrails and platform grating to be galvanized per ASTM A123			
14.	Reinforced Concrete foundation for DSCR system			X
15.	Sole plate, shear keys, anchor bolts to attach DSCR system to foundation			X
16.	Stack anchor bolt template	X		
17.	Supply of inter-connecting piping, ducting, associated supports between the equipment supplied by Siemens	X		
18.	Stack jib crane with electric hoist on DSCR stack above CEMS/EPA platform	X		
19.	Internal insulation and lining, acoustic baffles	X		
20.	External thermal insulation for personnel protection at grade level of stack and EPA access platform			X
21.	Expansion joint between the SCR duct and stack breach	X		
22.	Monorail with electric hoist for loading SCR Catalyst	Option		
	SCR CATALYST SYSTEM			
1.	Internal support structure and frame for catalyst	X		
2.	Catalyst blocks with design life 2 years/ 15,500 operating hours since first fire (whichever occurs first) without requiring regeneration or replacement	X		
3.	Ammonia (NH ₃) unloading station			X
4.	Ammonia storage tank			X
5.	Ammonia delivery system (transfer pumps)			X
6.	Piping between SCR ammonia flow control skid (with dilution blower and vaporizer) and AIG	X		
7.	Ambient ammonia detectors at AFCU skid for monitoring including local visual and audible alarms	X		
8.	Flue Gas Recirculation System for vaporizing ammonia during normal operation	X		
9.	Ammonia Injection Grid (AIG) made of SS with expansion joints, flow control valves	X		
10.	Drain piping (and the associated pipe support) in the ammonia flow control unit (AFCU) skid	X		

11.	Thermal insulation and lagging for all interconnecting piping between AFCU skid and AIG			X
CO CATALYST SYSTEM				
1.	Catalyst housing including inlet and outlet transition ducts, as required per design	X		
2.	Catalyst blocks with a minimum design life of 2 years/ 15,500 operating hours since first fire (whichever occurs first) without requiring regeneration or replacement	X		
DILUTION AIR SYSTEM				
1.	2 x 50% tempering air fans, associated 4,160 V MV motors, couplings, silencer.	X		
2.	Inlet filter	X		
3.	Weather hood and bird screen	X		
4.	Δp instrumentation for filter housing and transition duct	X		
5.	Access door, drainage for filter house	X		
6.	Vibration switches for tempering air fans	X		
7.	Vibration instruments for tempering fans and motors	X		
8.	Wind-box, flow distribution plenum, flow distribution system	X		
9.	Outlet isolation dampers with sealing system	X		
10.	Inlet dampers to modulate flow	X		
11.	Wiring for instrumentation for dilution air system			X
12.	Space air heaters for the fan motors	X		
AFCU SKID				
1.	AFCU Skid with NH ₃ vaporizers and 2 x 100% fans with associated 480V LV motors.	X		
2.	All instrumentation and associated valves, fittings, junction boxes to control AFCU skid	X		
3.	Space air heaters for the AFCU skid motors	X		
4.	NH ₃ Analyzer Duct Connection	X		
OTHER				
1.	Electrical cable up to the DSCR tempering air fans, the AFCU skid, the stack			X

2.	Electrical conduit/ cable tray to the DSCR tempering air fans, the AFCU skid, the stack			X
3.	Instrument cable			X
4.	Instrument conduit/ cable tray			X
5.	Digital local output indicators and in US customary engineering units on all transmitters	X		
6.	Wiring within the AFCU skid provided by SEI	X		
7.	Grounding under-ground system			X
8.	Boss for grounding system included in equipment	X		
9.	Stack FAA lighting			X
10.	Stack lighting			X
11.	Local lighting			X
12.	Motor starters			X
13.	Motor Control Center			X
14.	Heat tracing			X
15.	Anchor bolt design			X
16.	Foundation embedment			X
17.	Aqueous NH ₃ storage and delivery system (pumps) and associated instruments			X
18.	Inter-connecting piping between NH ₃ storage system and AFCU skid			X
19.	Design and specification of internal and external thermal insulation	X		
20.	Design and specification of external acoustic insulation	X		
21.	Supply internal thermal insulation and liners, and installation except at field joints	X		
22.	Installation of internal thermal insulation and liners at field joints			X
23.	Supply and installation of external thermal insulation			X
24.	Supply of external acoustic insulation and/or shrouds	X		
25.	Installation of external acoustic insulation and/or shrouds			X
26.	Unloading at site, storage and erection of all DSCR elements			X
27.	PE reviewed, approved, signed and stamped structural drawings and calculations	X		
28.	Civil, concrete foundation			X

29.	Prime painting of DSCR panels and stack, and final painting of AFCU skid		X		
30.	Finish painting, except AFCU skid, and all touchup for primer/finish paint/galvanizing				X
31.	Access ladders for ammonia distribution headers, if so necessary		X		
32.	Special tools for erection/ assembly as necessary		X		
33.	Commissioning spare-parts		X		
34.	KKS tagging		X		
35.	CEMS Instrumentation for GT exhaust and stack emissions				X
36.	Erection of DSCR equipment				X
	SOFT WARE				
1.	P&IDs for DSCR system		X		
2.	Inspection and Test Plan with clearly defined witness and hold points		X		
3.	Various lists (like line list, valve list, set-point list, I/O list, electrical load list, control logic diagrams, utility consumption list, mechanical inter-face list etc.		X		
4.	3D model of the entire DSCR system		X		
5.	Control narrative, control logic diagrams to operate DSCR system Control logic diagrams		X		
6.	Erection Manual		X		
7.	Commissioning, Operation and Maintenance Manual		X		
8.	Spare parts list for 2 year operation		X		
9.	Spare parts list for major maintenance		X		
10.	Emissions and acoustic testing				X

Material of Construction

The DSCR liners, acoustic baffles and vibration supports will be designed for the maximum combustion turbine exhaust gas temperature.

The ducts will be fabricated of A36 carbon steel plate, lined with SS:-

The ducts and stack would be blast cleaned and will be painted with one coat of primer.

Instruments & Controls

The estimated I/O count for signal exchange required for proper control and monitoring of the D-SCR assembly is shown in Table 1.

Table 1. Estimated I/O Signal Exchange Count

Description	Total Signal Count	Notes
Analog Input (AI)	150	
Analog Output (AO)	5	
Digital Input (DI)	90	
Digital Output (DO)	50	