



F - CLASS

AXIAL FUEL STAGING (AFS)

FOR 7F GAS TURBINES

THE POWER GENERATION INDUSTRY IS EVOLVING

The power industry is undergoing one of the most fundamental and dramatic transitions in its history. There has never been as much pressure on incumbent fuels for power generation, and there has never been as immediate and apparent a threat to our environment as climate change caused by greenhouse gas emissions. Some of the most significant issues at the heart of this evolution are:

- Deregulation
- The rise of renewables
- New competitiveness
- Impact of variable fuel quality and costs
- Changing consumer behavior
- Clean Air Act requirements

Axial fuel staging (AFS)

- AFS technology introduces gas fuel into the head end of the transition piece through a new fuel circuit.
- Axially staging combustion in two zones allows one combustor to have enhanced performance at both baseload and minimum turndown
- During low load operation the percentage split in the staged fuel system can be reduced or turned off, thereby keeping the overall combustion system in emissions compliance over a wide range of firing temperatures.
- The AFS premixers are circumferentially distributed and the exits of the injectors are flush with the liner inner wall.
- The AFS fuel system utilizes no mechanical joints inside the engine. All fuel piping joints are located outside the compressor discharge casing for increased durability.

DLN 2.6+ Flex (AFS)

VALUE	EMISSIONS RANGE	FUEL FLEXIBILITY	MAINTENANCE	CORE BENEFITS
Turndown as low as 26% GT load Reduce minimum fuel burn by up to 23%	<9 ppm NOx	+/-15% MWI	32,000 FFH 1,250 FFS	Lower Turndown Emissions Reduction Increased Op Flexibility Outage Extension Increased Utilization NOx/CO compliant TD as low as 26%

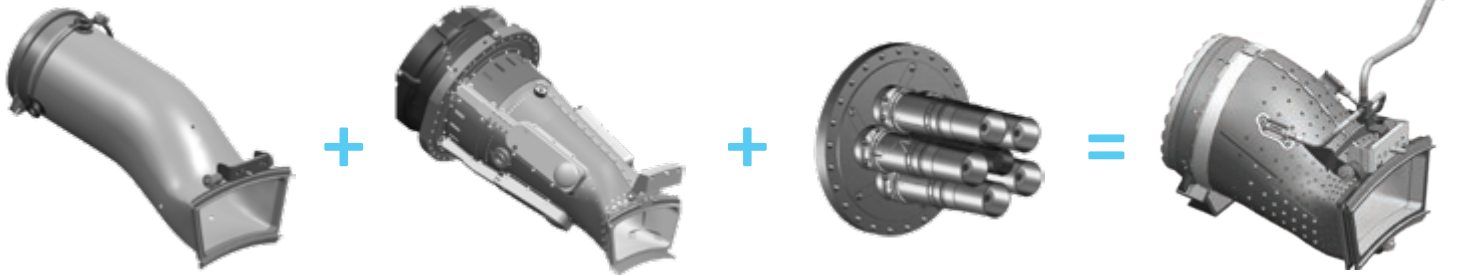
7F DLN 2.6+ AFS TECHNOLOGY AT-A-GLANCE

7EA "LATE LEAN INJECTION"

7HA DLN 2.6+ AFS

DLN 2.6+

DLN 2.6+ AFS



AFS for the 7F DLN 2.6+ combustor redefines flexibility

- **Stay online longer** – NOx/CO compliant turndown as low as 26% GT load
- **Reduce variable costs** – reduced min fuel burn by ~23%
- **Augment spinning reserve** – expand 2x1 range by ~100 MW
- **Builds on 2.6+ architecture** – < 9 ppm NOx capable, +/-15% MWI
- **Reduced start time** and fuel burn to MECL
- **Faster ramp rates** and robust responsiveness to grid transients
- **Expanded fuel flexibility** to handle shale gas, LNG, etc.
- **Complementary** to additional turndown solutions

SCOPE

DLN 2.6+ Hardware:

- Reused or modified to minimize scope
- Reuse 2.6+ fuel nozzles
- Modify transition pieces to integrate AFS injectors
- Modify accessory skid

Additional Hardware:

- AFS injectors and sealing
- Fuel delivery tubing and valving
- Additional 5th fuel circuit and manifold for AFS
- Manway covers
- Installed during extended HGPI or MI

BENEFITS

- Improved turndown
- 32,000 hours/1,250 starts CI
- Fuel flexibility: +/- 15% MWI (base +/- 10%)
- Simplified maintenance with quick disconnecting flanges
- Capable of liquid fuel emulsion and water purge

TO LEARN MORE
ABOUT THIS OFFERING, CONTACT YOUR
GE SALES REPRESENTATIVE OR VISIT
[ge.com/gas-power](https://www.ge.com/gas-power)

Information contained in this document is indicative. No representation or warranty is given or should be relied on. Information provided is subject to change without notice.

© 2023 GE. All rights reserved.

GEA35080 (01/2023)

