Recently Opened New Jersey Division for EnergyLink International Expands AQCS Capabilities to Large-Frame Gas Turbines and Coal-Fired Power Plants

Q EnergyLink International, a provider of air emissions and noise control, has recently opened an office in Warren, New Jersey. Can you tell us about this office? What is its specialty?

A The primary charter for the Warren, New Jersey, office is to support and expand capacity for EnergyLink's existing catalyst systems business, particularly for simple-cycle selective catalytic reduction (SCR) units. While EnergyLink's catalyst systems business is already well established and thriving, with 399 SCR awards for simple-cycle gas turbines since 2020, the Warren team is a perfect complement to our organization. It brings extensive experience in developing and designing SCR systems for simple-cycle gas turbines and coal-fired plants, alongside other air quality control systems (AQCS), including electrostatic precipitators (ESPs) and flue gas desulfurization (FGD) technologies. The Warren, New Jersey, team has extensive experience with large-frame gas turbine SCRs, complementing EnergyLink's existing aeroderivative SCR product line. It consists of engineering and project execution professionals with decades of relevant knowledge and experience, and operates under the leadership of Dan Harajda, who has over 20 years of direct SCR systems experience and 37 years of power industry experience.

Q In what areas of this specialization do you see growth? Where do you expect growth?

A We're seeing strong growth in orders for gas turbines and gas-fired reciprocating engines for power generation, all of which require post-combustion emissions control, and many requiring noise control systems. This growth is driven by increased electricity demand for data centers, the replacement of retiring coal plants, and backup power for intermittent renewable energy. GE Vernova's orders reflect this trend, with 20% growth between 2023–2024 but a much higher 55% increase between 2024–2025. Much of GE's recent growth is in large-frame turbines, which accounted for up to 64% of its turbine orders in 2025, compared with 44% in 2023. These large turbines and smaller aeroderivative gas turbines are primarily intended for utilities to address growing electricity demand and as backup power for renewables. Aeroderivative gas turbines are generally deployed behind the meter, providing high-reliability power through redundancy and giving operators flexibility to meet high load demand in a shorter time frame, such as for data centers. This high demand for gas-fired units is expected to continue at least over the next five years and remain important through to 2050.

Alongside rising SCR demand, we are seeing requests from power generators for higher NOx reductions, up to 98% or 99%. Today, the best available NOx control technology (BACT) limits are 2.0 parts per million by volume, dry (ppmvd), representing 92% NOx removal from a typical turbine outlet emissions level of 25 ppm when water injection is used. However, without water injection, NOx levels can spike above 300 ppm in some cases, making compliance with regulatory limits much more challenging and costly. EnergyLink has designed and is currently manufacturing high-NOx removal systems using more complex SCR systems to achieve 98+% NOx removal.

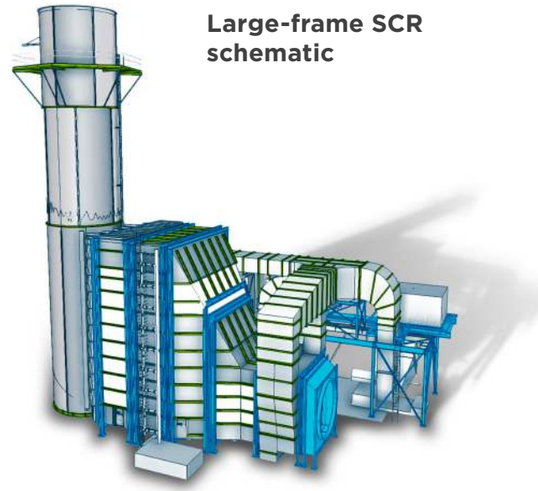
Q What are the challenges in reducing emissions from large-frame gas turbines?

A The catalyst is the primary component of any selective catalytic reduction system, regardless of its application. For the catalyst to perform as intended, certain operating parameters must be met. These include controlling exhaust flow distribution for even temperature distribution and optimized ammonia-to-NOx mixing. Larger gas turbines are generally hotter, requiring a higher tempering air-to-exhaust gas ratio to achieve the optimum temperature over the catalyst. Tempering air is required to lower the exhaust temperature from over 1,100 °F to levels compatible with proper catalyst performance, which is in the range of 800–900 °F. Designing an adequate tempering air distribution system is critical to achieving even temperature distribution at the catalyst face.

Q EnergyLink launched its Direct Injection SCR for gas turbines in 2023. What advantages does Direct Injection offer for large-frame gas turbines?

A EnergyLink's Direct Injection system injects the reducing agent—typically aqueous ammonia—into the exhaust gas stream as a liquid, rather than as a heated gas, directly at the turbine exhaust gas inlet duct entrance. Cooling air and reducing-agent liquids are fed into adjustable, retractable air-cooled injector nozzles via separate supply lines. This configuration contrasts with a conventional SCR system, in which the exhaust gas stream must travel a significant distance through a long inlet duct to reduce its velocity, and a separate, complex, and costly ammonia injection grid (AIG) is required to ensure sufficiently uniform ammonia distribution for high NOx removal. In EnergyLink's Direct Injection system, components such as the reducing agent vaporization system, heaters, blowers, ducting, injection grid, and associated pipes and valves are unnecessary. Eliminating these components reduces material, capital, and installation costs and yields a more compact SCR system footprint. Furthermore, without a large ammonia vaporization/dilution fan, parasitic loads and operating costs are also reduced.

At this point, EnergyLink has commercialized Direct Injection for aeroderivative SCR systems; however, frame machines have even higher gas turbine exit velocities, which would enhance ammonia vaporizing and mixing in EnergyLink's Direct Injection system. When our Direct Injection system is applied to a frame-size SCR system, the benefits to our customers will be significant. From a commercial standpoint, our customers will realize considerable capital and operating cost savings, and from a technical standpoint, the SCR system will be less complex.



Large-frame SCR schematic

Q What scope of work does your office cover for these large-frame gas-turbine SCRs?

A EnergyLink's Warren office was established as a self-sufficient project execution center with commercial, engineering, and project management capabilities. When combined with EnergyLink's fabrication and SCR installation capabilities, all aspects of SCR design, delivery, and construction are bundled under one company, yielding significant cost savings and excellent quality control and project oversight.

Q Are there any unique challenges when it comes to retrofitting air emissions?

A Because such retrofits typically occur in existing power plants, real estate for the new SCR system can be limited. Finding the necessary design information for an older gas turbine can also be difficult, and on-site investigations are often required. However, these challenges can be readily addressed through cooperation with our customers.

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