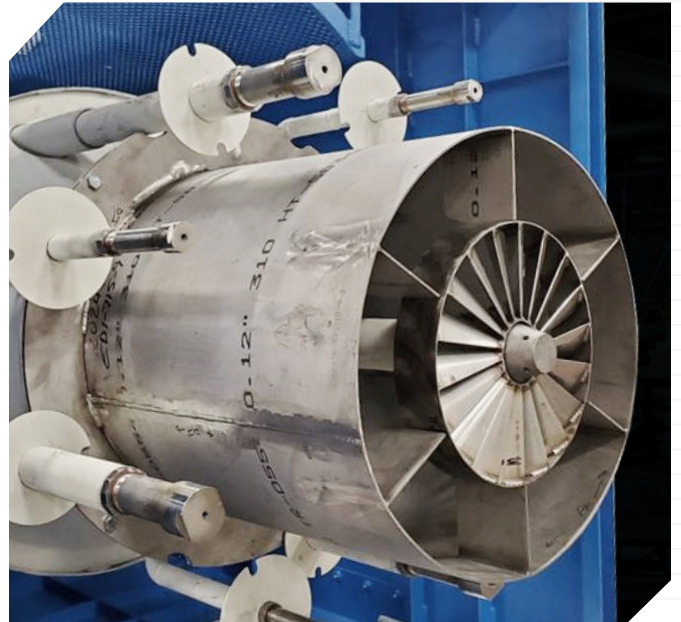


ECOJET® EDGE+

The Next Evolution in Ultra-Low NOx Combustion — Now as Low as 15 ppm Without FGR

Building on the proven success of the ECOjet® and ECOjet® Edge platforms, the ECOjet® Edge+ represents the flagship of John Zink's ultra-low NOx boiler burner technology. With more than 350 ECOjet family installations worldwide, it carries forward the reliability and partnership customers expect from John Zink, backed by lifecycle support that ensures performance well beyond installation.

Designed to anticipate regulatory shifts and evolving operating demands, ECOjet Edge+ is capable of achieving as low as 15 ppm NOx without FGR while maintaining the stability, turndown, and durability that make ECOjet burners trusted worldwide. It is more than future-ready. It is hydrogen proven, with active installations firing 100% natural gas to 100% hydrogen.



WHY IT MATTERS TO YOU

- **Compliance without Complexity:** Easily meets NOx limits without FGR, with the flexibility to go even lower when needed, all while avoiding the extra cost and complexity competitors require.
- **Proven Reliability:** Built on decades of ECOjet field performance with stable flames, low CO emissions, and long-term durability.
- **Lower Total Lifetime Cost:** Eliminates added ducting, larger fans, and SCR. Less parasitic power, faster commissioning, and reduced maintenance.
- **Simpler, Faster Installation:** All-metal throat design outlasts refractory throats, improving durability while reducing installation complexity and operational cost.
- **Future-Proof Investment:** Proven hydrogen firing performance supports decarbonization and sustainability goals.
- **Robust Configurable Design:** Configuration options to optimize burner performance for customers' furnaces, and the ability to simplify design for customers.
- **Greater Furnace Compatibility:** Tunable design fits more boiler and furnace types, reducing the need for multiple burners and extending retrofit options.

Compliance Made Simple

- ✓ **U.S. Markets:** Meets <30 ppm NOx — no FGR required
- ✓ **Europe:** Meets <80–100 mg/Nm³ (≈40–50 ppm) — no FGR required
- ✓ **Middle East:** Meets <27 g/GJ (≈52 ppm / 107 mg/Nm³) — no FGR required
- ✓ **Global (select applications):** Achieves <9 ppm (<18 mg/Nm³) with *less FGR than conventional burners*

Technology Highlights

- **Ultra-Low NOx:** Achieves as low as 15 ppm in select applications without FGR.
- **Stable Center-Fire Design:** Anchors the flame, reducing CO emissions and ensuring reliability across turndown.
- **Hydrogen-Proven:** Demonstrated 100% hydrogen firing in real-world applications.
- **Fuel Flexibility:** Including refinery gases, heavy liquids, and waste gas streams; gas and oil co-firing allowing end users to optimize fuel usage according to needs.
- **Retrofit-Ready:** For ECOjet, ECOjet Edge, and many competitor burners with minimal modification.
- **Simple to Operate:** Self-cleaning high-energy spark ignition, reliable pilots, and rumble-free design.
- **Streamlined Operation:** Simple controls philosophy with fewer valves and moving parts than legacy or competitor systems, reducing failure points and lowering lifecycle costs.
- **Durable, Maintainable Injectors:** Lower tip count with removable access delivers robust performance and easier maintenance without costly furnace entry.
- **All-Metal Throat:** Simplifies installation and outlasts refractory throats.



Applications

- Petrochemical and refining facilities
- Package, industrial, and utility boilers
- Air heaters and dryers
- Retrofit and revamp projects

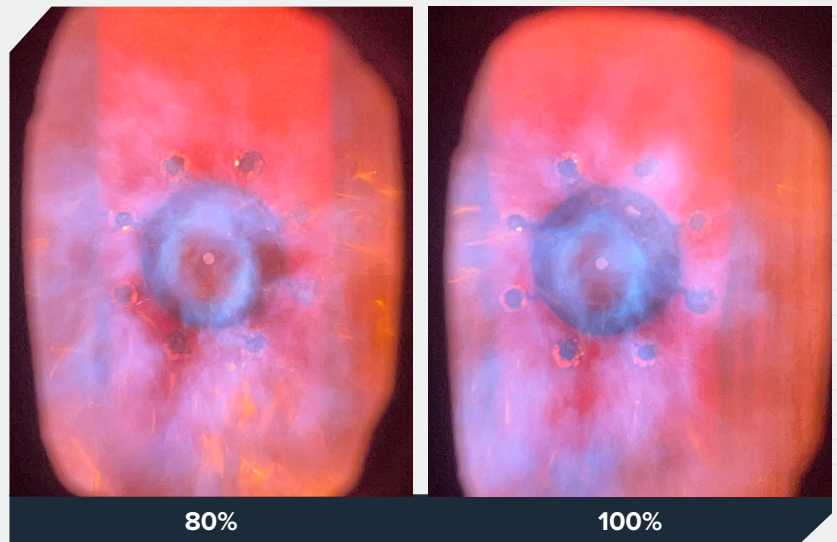
At A Glance

- Proven Technology: >350 Burner installs
- Emissions: 15 ppm without FGR, <9 ppm with FGR*
- Turndown: 10:1 standard, up to 20:1 with staged isolation
- Capacity: 12–400+ MMBtu/hr (3.5–117+ MW)
- Hydrogen: 100% firing capability proven

*Performance may vary by fuel type, furnace geometry, and operating conditions.

How ECOjet Edge+ Compares

ECOjet Edge+ builds on the proven reliability of the ECOjet family while delivering a new step-change in performance. Many burners on the market rely on complex staged systems and refractory components that can introduce durability challenges, higher fan power requirements, or costly retrofit modifications. ECOjet Edge+ was engineered to solve these pain points while raising the bar for ultra-low NOx performance.



Category	John Zink ECOjet® Edge+	Conventional Burners
Durability	Metal throat, durable and reliable	Refractory tile prone to failures
Emissions	Achieves as low as 15 ppm NOx without FGR (<9 ppm in select cases) with stable CO	<30 ppm NOx typically with heavy FGR; CO instability at turndown
Reliability	Proven design reduces downtime and lowers lifetime maintenance costs	Greater maintenance needs, component failures more common
Hydrogen	Hydrogen-proven: 100% firing	“Hydrogen-ready” claims
Flame Fit	Removable staged injectors → tunable flame length/shape	Limited flexibility, long flames
Retrofit	Retrofit ECOjet, Edge, or competitor burners with minimal mods	Costly front-wall modifications
Operations	Simple, rumble-free, stable CO across turndown	Complex controls, more moving parts, rumble and CO issues at turndown

Your Partner Every Step of the Way

At John Zink, we know a burner alone may not solve every challenge. That's why we deliver complete life cycle support to keep your operations efficient, reliable, and compliant long after installation. Our global team combines nearly a century of combustion expertise with responsive service, ensuring you get solutions that work seamlessly with your existing equipment.

Our support includes:

- Combustion control systems
- Fuel valve trains
- Burner flame detection systems
- Burner ignition systems
- Post combustion systems
- Turnkey installation services
- Startup and commissioning services
- Operator training
- Preventive maintenance programs
- Aftermarket support



Ready for Today. Proven for Tomorrow.

ECOjet Edge+ is the flagship of the ECOjet family, delivering proven reliability, next-level emissions performance, and the flexibility to meet today's needs while preparing for tomorrow.

