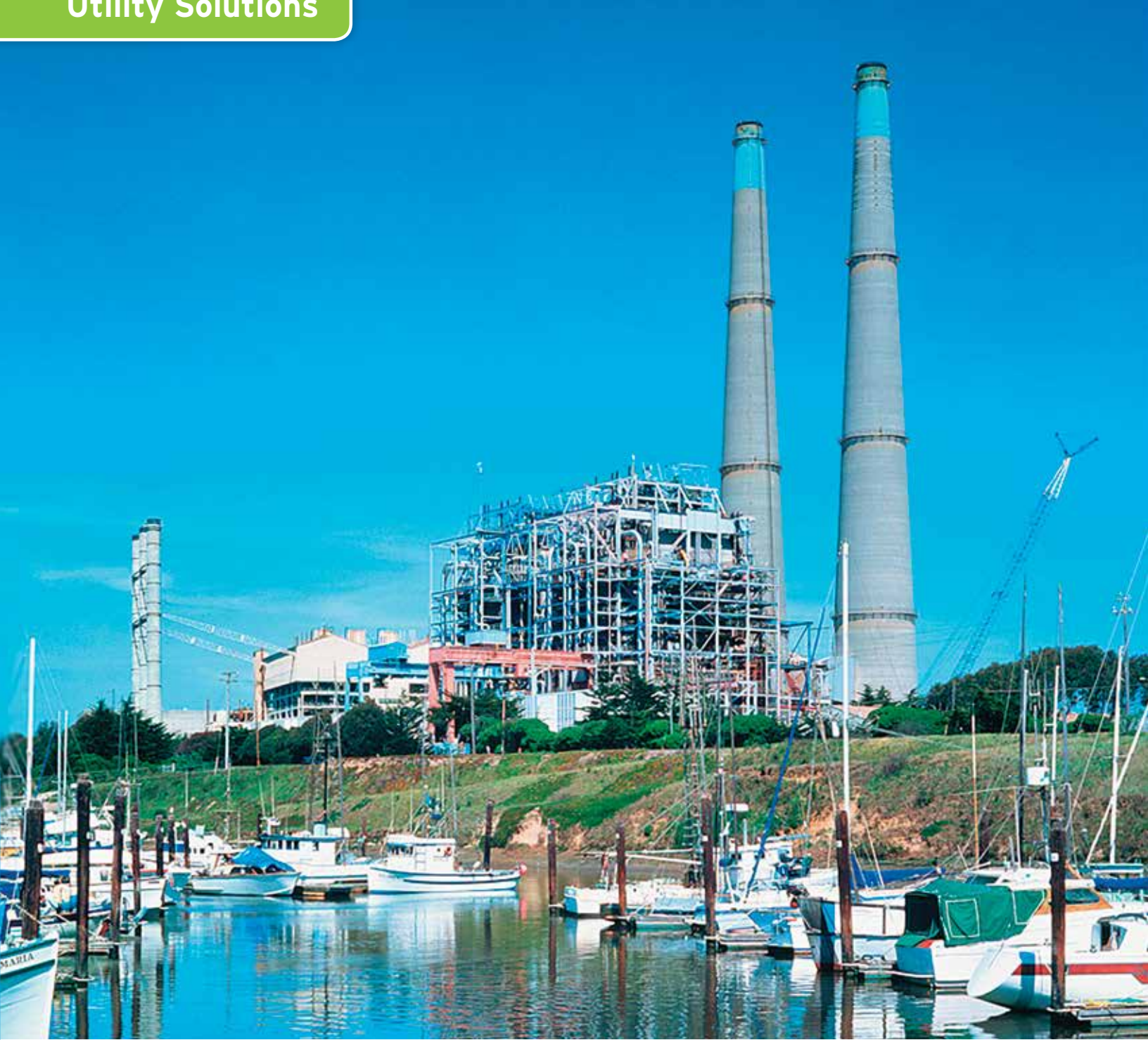


Utility Solutions



Proven Utility Solutions from John Zink Hamworthy Combustion.

For more than a century, the Coen and Hamworthy Combustion brands have stood for the most advanced science and technology in oil and gas combustion. Today, Coen and Hamworthy Combustion products are a part of John Zink Hamworthy Combustion, where we combine our technological expertise, vast resources and industry experience to provide the world's most advanced selection of innovative utility solutions. This includes burner, igniter, safety system and ancillary products, all designed to deliver optimal environmental and economic performance.

- + Safe, reliable and efficient combustion equipment
- + Engineering expertise
- + Comprehensive solutions for standard or complex applications
- + Complete package options
- + Superior customer service

Custom Engineering and Superior Support

With innovative technology solutions and extensive experience from an unrivaled installed base, our engineering experts have the resources to meet your combustion needs. From fundamental burner products to complex systems and complete package options, we develop customized solutions for your specific application and can provide turnkey installation, helping you meet even the toughest requirements. After installation, our team of dedicated in-house engineers and our network of factory-trained field technicians are available worldwide to provide immediate evaluations and service, keeping your system performing reliably and efficiently for years to come.

- + Installation supervision and start-up assistance
- + Emissions compliance pre-testing
- + Instrumentation calibration for efficiency and safety
- + Inspections and preventative maintenance
- + Emergency service and spare parts
- + Parts recommendations and equipment evaluations
- + Operator training / education



Advanced Research, Development and Testing

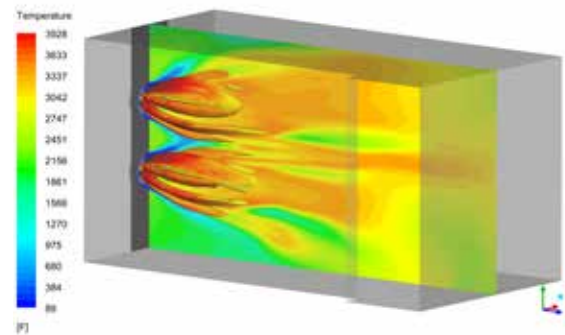
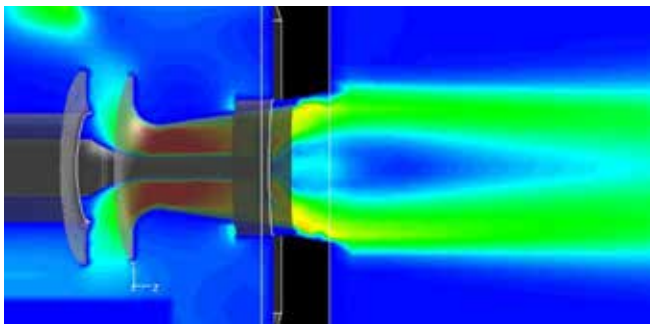
Our industry-leading design engineering and product development includes full-scale burner testing, simulation and modeling techniques, offering an in-depth analysis of current combustion systems as well as engineered solutions to maximize performance.

Research and Development

Our research and development test center is the largest and most advanced testing complex of its kind. This exclusive resource allows us to push innovation and gain expertise while measuring performance in a full-scale setting, replicating near real-world conditions.

Modeling Services

Using state-of-the-art computational fluid dynamics (CFD) modeling techniques, we can maximize your facility's operating performance and achieve your emission requirements. With CFD analysis, we can predict and improve: air distribution, flame characteristics and pollutant formation for optimal combustion.



Customers come from around the globe to our International Research and Development Test Center.



Gas and Oil Burners

- + Fuel gases
- + Waste gases
- + Light and heavy oils (mechanical, steam or air atomized)
- + Waste liquids

Our rugged and reliable gas and oil burners optimize system efficiency and emissions performance. They achieve low NO_x, CO, particulate and opacity emissions, helping keep your facility in compliance with environmental regulations. The simple design and heavy-duty construction provide reliable, low maintenance performance. Our burners are easy to maintain, resulting in less downtime; and efficient, reducing fuel and operating costs.



Dynaswirl-LN™ Burners



DFL Burners

Our Dynaswirl-LN and DFL burners are installed in many power generation boilers in power stations worldwide and in desalination plants throughout the Middle East.

Tangential Firing

- + Low emissions
- + Extended turndown
- + Reliable performance
- + Low maintenance
- + Wide range of oil and gas fuels, alone or combination firing
- + Proven designs
- + Specialty ignition and flame detection solutions



T-fired Burner Upgrade

Igniter Systems

- + Reliable operation
- + Proven installations
- + Low-cost retrofit
- + Clean flames
- + Long life



Oil Fired FyrStorm Igniters

We bring industry a full complement of high-quality ignition hardware for most types of boilers, burners and fuels.

FyrBall™ Igniter Systems

FyrBall gas or oil igniter systems for tangentially fired boilers provide practical solutions for overcoming problems such as high opacity, soot and carbon build-up in the horn, fouled flame rods, plugged ΔP tubes and unburned fuel dripping from the horn. These systems overcome oil igniter problems by modifying the fuel atomization process using our proprietary smokeless atomizing technology.

FyrBolt™ Igniter Systems

FyrBolt gas-electric igniters deliver reliable light-off and excellent flame stability without the need for augmenting or cooling air in most applications. These igniters provide a large ignition flame that is easily detected and will reliably ignite your main fuel. Available in a wide range of heat inputs for Class I, II, or III service.

FyrStorm™ Igniter Systems

FyrStorm oil and gas utility igniter systems may be installed as complete assemblies for new coal- or biomass-fired burners or as retrofit components for upgrading the performance of existing igniter equipment. These igniters are offered with retractable and nonretractable options. FyrStorm systems can be used to provide the warm-up of the furnace and for the routine light-up of the main burners.

SmartSpark™ High Energy Ignition System

Our SmartSpark High Energy Ignition Systems provide reliable ignition that automatically monitors tip wear so you can replace the igniter tip before an ignition fault occurs.

- + Built-in predictive life diagnostics
- + Unsurpassed fuel type diversity
- + Moisture seal-out designs of igniter tips and cables
- + Certified for use in hazardous area locations;
North American and ATEX ratings available

SureSpark™ High Energy Ignition Systems

Our SureSpark High Energy Ignition Systems provide reliable ignition for your toughest applications - even in high-moisture areas. This igniter can provide direct ignition of light or heavy fuel oils.

- + Built-in predictive life diagnostics
- + Unsurpassed fuel type diversity
- + Moisture seal-out designs of igniter tips and cables
- + Hazardous area rating
- + AC and DC input power options

Burner Upgrades

A burner upgrade is a cost-effective option for enhancing operating performance and reducing emissions at utility plants. Our Reduced Emissions and Advanced Combustion Hardware (REACH) technologies allow you to retain much of the existing hardware, minimizing modifications to your burner and potentially reducing installation, capital costs and downtime.

Our burner upgrades are custom-engineered to adapt to the existing fuel supply equipment and operating conditions at your specific facility. REACH can also be applied to new burners when complete burner replacement is warranted.

Gas REACH

Easily retrofitted to all types of burners, gas REACH injectors and flame stabilizers readily adapt to existing gas supply piping and pressures.

Oil REACH

Our patented oil REACH components replace oil atomizers and flame stabilizers, leaving the remainder of the burner intact. Minimize downtime by upgrading oil firing performance while simultaneously reducing NOx and particulate matter emissions.

Fluid Bed Boiler Start-up Burners

We are the preferred start-up burner supplier for major circulating fluid bed (CFB) boiler OEMs. With our start-up burners, customers can operate fewer burners to reduce operating and maintenance costs. Our burners are designed to overfire various fluid bed furnace applications with gaseous or liquid fuels for ignition, warmup and combustion stabilization, or to carry partial to full boiler load. Each application is custom-engineered to meet your specific fluid bed design and heat input.

Tens of thousands of burners and other utility solutions installed worldwide.





Our iScan2™ Flame Scanner is able to discriminate a target burner flame in even the most challenging applications for operation in utility, industrial and other combustion applications.

Safety Systems, Combustion Controls and Ancillary Products

- + Enhanced flame scanning technology
- + Pre-designed or custom control systems with operator interface
- + Standard or custom-engineered burner management system
- + Wide range of Distributive Control Systems (DCS) or Programmable Logic Controller (PLC) platforms
- + Predictive Emissions Monitoring (PEM)

Because plants often need more than a burner to solve their challenges, we also offer state-of-the-art equipment to support our burners, including burner management systems, control systems, flame scanners, valve piping skids, cooling air blower skids and combustion air fans. Each system is engineered for an individual plant's specific requirements and evaluated for fuel-firing configuration, individual burner characteristics, operation requirements and operator interface preference.



BMS and Control Panels



Fuel Piping and Blower Skids

Quality Manufacturing You Can Rely On

Our low NOx and ultra-low NOx burners are precision-built using a streamlined, ultra-efficient process in world-class manufacturing facilities. All equipment must pass stringent quality control standards and testing, ensuring your peace of mind before your products are even installed.

Exceptional Experience

Today's industrial enterprises are challenged to expand capacity while meeting ever-increasing safety, efficiency and performance standards. Through our Coen and Hamworthy Combustion brand products, John Zink Hamworthy Combustion is world-renowned for reliability, efficiency and innovation in combustion system applications and installations. We have been an innovative force in combustion systems - delivering technological expertise, design excellence, practical application and quality research and development with proven performance. Today, we continue the advancement of combustion equipment and technology to meet existing and emerging challenges in markets around the globe.



Reliable Support

Our worldwide service organization is the largest, most technically advanced team of its kind. Our experts are trained in the latest technologies to evaluate existing systems for upgrades and retrofits, to troubleshoot operations (with emergency call-out 24/7), and to help plan your next turnaround or outage. With our Preventative Maintenance (PM) program, we can also help you reduce unplanned downtime, avoid possible emergency call-outs, and ensure maximum availability and extended operating life of your equipment.

Learn more about how we can help improve the safety and performance of your operation. Contact us today.



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