



ULTRA-LOW NO_x BURNERS

ALZETA CSB™

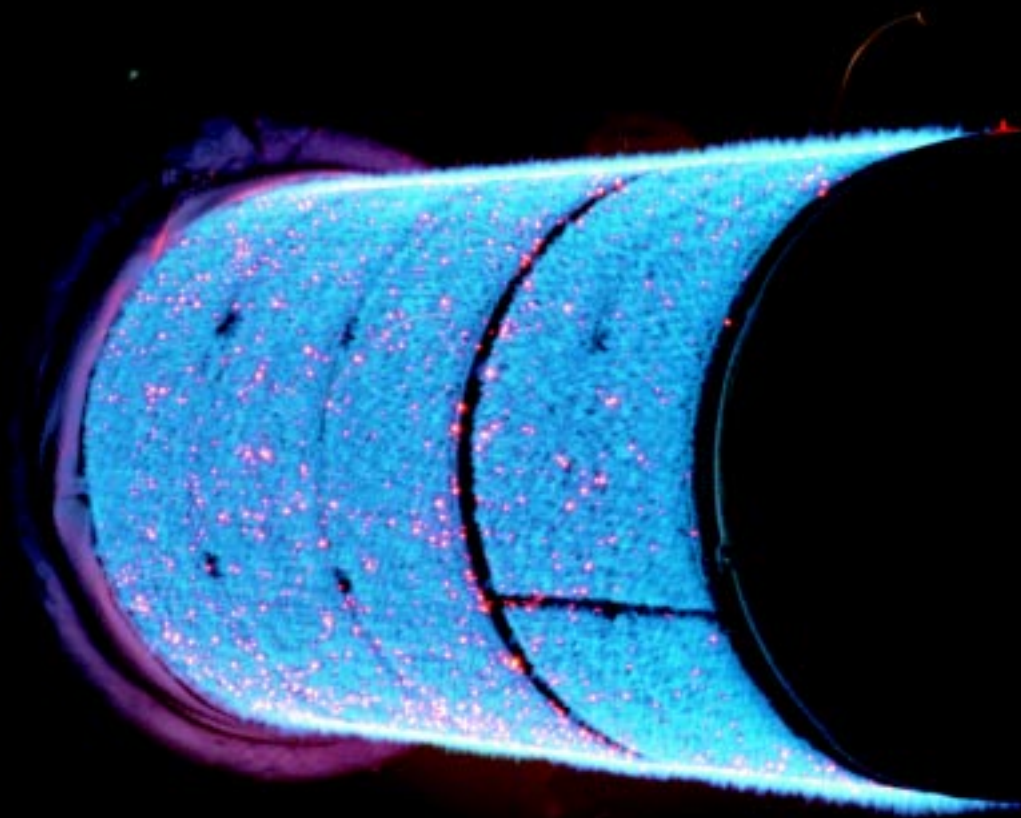
ULTRA-LOW NO_x

GAS BURNERS FOR

COMMERCIAL AND

INDUSTRIAL BOILERS

AND PROCESS HEATERS



Advanced Combustion Clean Air Solutions for Industry and Our Environment

ALZETA CSB™

ULTRA-LOW NO_x BURNERS FOR COMMERCIAL & INDUSTRIAL BOILERS AND PROCESS HEATERS



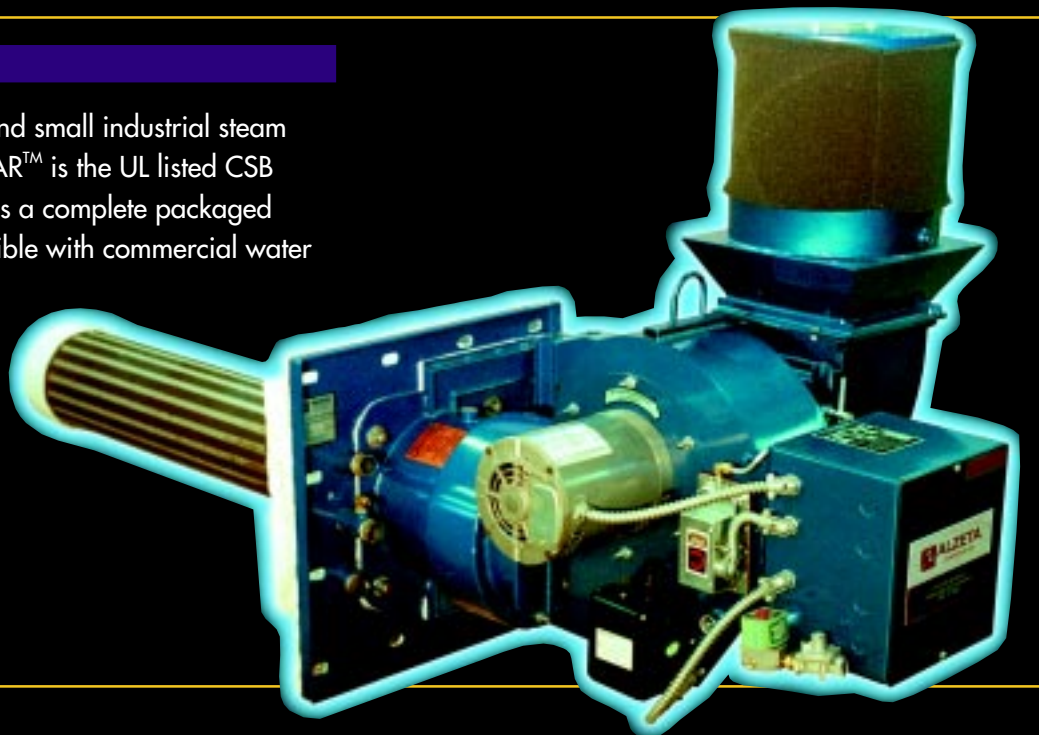
PREMIXED SURFACE-STABILIZED COMBUSTION

ALZETA CSB™ burners use patented fully-premixed surface-stabilized combustion technology to provide our customers with the simplest ultra-low NO_x solution in the industry. Premixing fuel and air assures complete combustion, with minimal generation of CO and unburned hydrocarbons. Surface stabilization guarantees reliable operation at the ultra-lean and high FGR conditions required to meet today's most stringent NO_x emissions levels. The rugged all metal construction of the CSB is ideal for use in firetube boilers, water tube boilers, and industrial process heaters.

CSB COMMERCIAL BURNER

CSB microSTAR™

For commercial heating and small industrial steam applications the CSB microSTAR™ is the UL listed CSB solution. The CSB microSTAR is a complete packaged burner solution that is compatible with commercial water tube boilers as well as small firetube boilers, oil heaters and hot-air systems. Burners span the capacity range of 2 MMBtu/hr to 14.7 MMBtu/hr firing natural gas or propane.



The ALZETA CSB provides:

- **Proven Performance** — Whether your application is a 2 MMBtu/hr hot water boiler, a 65 MMBtu/hr firetube boiler, or a 125 MMBtu/hr package watertube boiler, ALZETA provides a solution that has been proven in the field to provide reliable performance in a broad range of boiler and heater designs.
- **Guaranteed Emissions Compliance** — For ultra-low NO_x requirements of 12 ppm, 9 ppm or lower, ALZETA has a track record of successful compliance tests. CO and VOC emissions are also comfortably below regulatory limits. We guarantee a successful source test.
- **Superior Support and Service** — With a 20-year history of leading edge burner development, a staff of experienced engineers, and well trained service organizations covering areas of major sales activity, we provide around the clock support and service to our customers.



CSB INDUSTRIAL BURNER

For applications with capacities of 16.8 MMBtu/hr to 130 MMBtu/hr, the CSB industrial product provides single-digit NO_x emissions, simultaneously with ultra-low CO and unburned hydrocarbon emissions, in a broad range of industries including food processing, textiles, and chemicals. Regardless of application, the ALZETA CSB provides the end user with simple and reliable performance, cost effectively meeting all BACT emissions requirements. The CSB industrial burner has been successfully applied to:

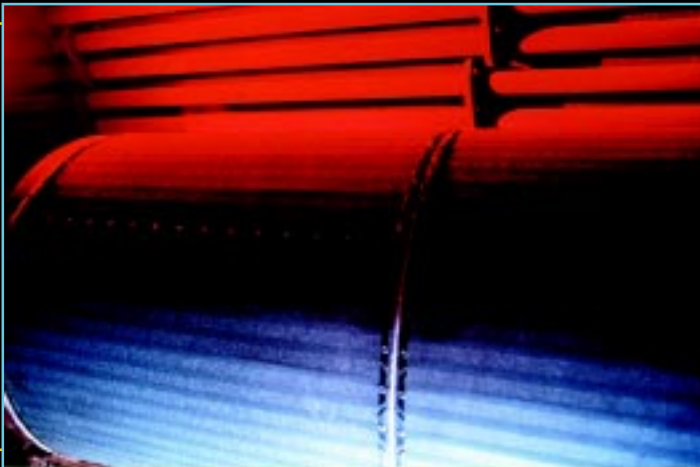


FIRETUBE BOILERS

The tight burner configuration and high volumetric heat release rate typical of firetube boilers is an ideal configuration for compact and distributed flame envelope of the ALZETA CSB. The CSB operates at single-digit emissions levels in firetube boilers from a number of major firetube boiler manufacturers, with boiler capacities ranging from 400 hp to over 1500 hp. Burner fired duty ranges from 16.8 MMBtu/hr to 70 MMBtu/hr.

PACKAGE WATERTUBE BOILERS

The CSB is a proven performer in package watertube boilers spanning the size range of 35,000 lb/hr to 150,000 lb/hr of steam, with burner fired duty ranging from 45 MMBtu/hr to 180 MMBtu/hr. The burner works well in all common package boiler configurations, reaching single-digit NO_x emissions levels in all sizes.



PROCESS HEATERS

Process applications including oil and process air heating benefit from the uniform flux and excellent flame stability of the CSB. Uniform flux is critical in sensitive-fluid heating applications, and the CSB is a proven performer in this application. Process air applications benefit from the stable operation of the CSB over a broad range of load conditions and process air temperatures.



CSB™ / CSB MICROSTAR™

ULTRA-LOW NO_x BURNERS

PERFORMANCE BENEFITS

- Ultra-low NO_x over complete product range
- Ultra-low CO and unburned hydrocarbon emissions
- Emissions levels meet all BACT requirements
- Simple design minimizes capital and startup costs
- Modular design minimizes maintenance costs

BASIC DESIGN FEATURES

- Fully premixed design
- Surface stabilization with porous burner surface
- Rugged all metal construction
- Industry standard flame safeguard and combustion controls
- Systems designed to meet UL, IRI, FM and/or NFPA.

TYPICAL APPLICATIONS

- Commercial hot water and low pressure steam boilers
- Commercial firetube and watertube boiler configurations
- Industrial steam in firetube boilers to 70 MMBtu/hr
- Industrial steam in package watertube boilers to 130 MMBtu/hr
- Temperature sensitive fluid heating
- Process air heating

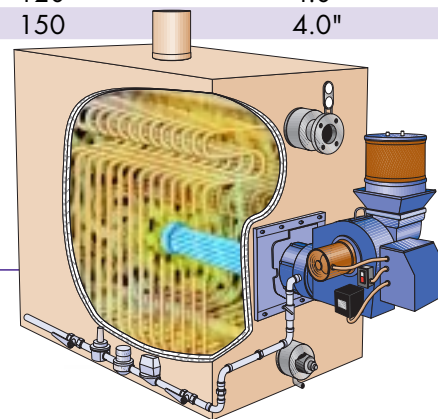
OPTIONAL FEATURES

- High performance characterizable gas valves
- Custom windbox and fan layouts
- Parallel positioning and fully metered fuel-air ratio control
- Oxygen trim feedback control
- Flue gas recirculation

CAPACITY RANGES AND DIMENSIONS

MODEL NUMBER	CAPACITY (MMBTU/HR)	CAPACITY (BHP)	BLOWER MOTOR (HP)	GAS TRAIN SIZE
CSB microSTAR (commercial):				
CSB20 - CSB35	2.0 - 3.5	48 - 83	1 - 3	2.0"
CSB50 - CSB105	5.0 - 10.5	120 - 250	5 - 10	3.0"
CSB126 - CSB147	12.6 - 14.7	300 - 350	15	3.0"
CSB (industrial):				
CSB168	16.8	400	20	3.0"
CSB210	21.0	500	25	4.0"
CSB336	33.6	800	40	4.0"
CSB440	44.0	1050	50	4.0"
CSB680	68.0	1600	75	4.0"
CSB1000	100.0	2350	120	4.0"
CSB1300	130.0	3100	150	4.0"

UL listing to 10.5 MMBtu/hr (CSB microSTAR models CSB20 through CSB105)
 Capacities listed are based on +3" w.c. furnace pressure and 1,000' altitude.
 Other capacities available, contact ALZETA for more information.



INSTALLATION AND UTILITY GUIDELINES

- Natural gas: 1-2 psig commercial, 5-10 psig industrial.
- Alternate fuels: Vaporized and air-blended propane, for other gases consult factory.
- Electrical: 460V / 3ph / 60Hz typical

