

# **NXU SERIES– Two Stage Modulating**

## **ARCHITECTURAL/ENGINEERING SHORT FORM SPECIFICATIONS**

Gas-fired infrared space heaters shall be furnished and installed in accordance with governing codes and as shown per building drawing(s) as described below:

Heaters shall be SPACE-RAY **ForceRED** NXU series tube heaters, model number(s) as shown on schedule, and manufactured by Gas-Fired Products, Inc., Charlotte, North Carolina, or approved equal.

The heaters shall utilize highly efficient aluminum reflectors with a reflectivity of 97%. Other reflector materials (e.g. polished stainless steel or aluminized steel) with lower reflectivity rating shall not be accepted. The heater shall be specially designed for double reflector U-tube heaters. The tube body and u-bend shall be totally enclosed with asymmetric individual reflectors to maximize emitter temperature. In addition, the reflector ends shall be enclosed for maximum radiant heat output and minimum convection losses. The secondary outer reflector design shall cover the asymmetric individual reflectors (firing and exhaust legs) as well as the entire u-bend. U-tube configuration made of straight tubes with individual reflectors covering the firing and exhaust legs shall not be accepted.

To assure a high degree of safety and increased radiant efficiency, the heaters shall operate under negative pressure (pull through system) at all times during operation to preclude the escape of combustion gases inside the building. Heaters that operate under positive pressure (push through system) will not be accepted. The heater exhaust assembly shall include a 120-volt draft inducer. The draft inducer shall be equipped with a permanently lubricated, totally enclosed, shielded, fan cooled and heavy-duty ball bearing motor. The motor shall not require maintenance or lubrication for the life of the unit. The draft inducer assembly shall be capable of rotating 90° for vertical or horizontal venting.

The emitter tube length shall be optimized for the maximum BTU/Hr. input and maximum radiant output per tube length. The heater's emitter tube shall operate at an average surface temperature of 800°F and shall be made of 4" O.D.16-gauge calorized titanium alloy Alumi-Therm steel (first 10' foot) and calorized aluminized steel (the remaining emitter tubes). The emitter tubes shall be calorized for longevity, corrosion resistance, and high radiant efficiency for use in high humidity and harsh environment installations (waste water treatment plants, outdoor covered patios, golf driving ranges, and dairy barns etc.) The measured surface emissivity shall be 0.80-0.82 at operating temperature. The calorization process shall produce an emitter tube that is highly radiant absorptive on the interior (0.95) and highly radiant emissive (0.80-0.82) on the exterior. The emitter tube shall be equipped with a number of turbulators at the firing leg as well as the exhaust leg. Heaters that utilize hot rolled emitter tubes will not be accepted. The system shall have an infrared factor (IF) of 13 or better as defined by AHRI Standard 1330P "Performance Rating for Radiant Output of Gas Fired Infrared Heaters". Heaters that do not have a published IR factor will not be accepted.

Heaters shall be equipped with a step opening and modulating two stage gas controls for negative pressure operation. The heaters shall be controlled by a digital thermostat with adjustable set points contained in a locked metal box. The 24V thermostat connection shall be external to the control box with quick slip on terminal connection for high/low operation. Modulating two stage control systems operating under positive pressure will not be accepted..

Heaters shall be equipped with a 24-volt direct spark ignition with automatic 100% shutoff system. Power supplied to each heater shall be 120 VAC, 60 Hz. The heater controls shall include a pressure switch designed to provide complete unit shutoff in the event of combustion air or flue blockage. The heaters shall be equipped with an on-line diagnosis monitoring light system. The three lights shall monitor the power to the heater, insufficient airflow, the spark ignition and the combination gas valve operation.

The heaters shall not require any field wiring or adjustments to assure maximum performance and safety.

The heater's burner shall consist of a heavy-duty cast iron atmospheric burner. The flame characteristics shall be highly luminous for maximum radiant heat transfer through the emitter tube wall. The manufacturer shall include a 36" long, 5/8" OD heavy-duty stainless steel (powder painted in yellow color) flexible gas connector as part of the heater.

The heaters shall be CSA design certified for vertical or horizontal venting, maximum 25 feet horizontal sidewall venting and for 25 feet outside combustion inlet duct. There shall be no draft hoods. The combustion chamber shall be totally enclosed.

Heaters shall be installed horizontally only not to sacrifice the radiant output and minimize the convection losses. Heaters shall be suitable for direct venting/indirect venting applications. Heaters shall be designed to operate on natural or propane gas.

Heaters shall be design certified by the Canadian Standards Association (CSA) to American National Standard Z83.20/CSA2.34. The manufacturer shall provide a written limited warranty covering the heavy one-piece cast iron burner for a period of ten (10) years, the emitter tube for a period of five (5) years, and all components utilized in the heater's control assembly for a period of one (1) year.