

## ICS Series:

ICS-30

**30 HP**

Vertical Tubeless Steam Boiler



Fulton's Classic ICS boiler has been a reliable choice for steam applications for more than 70 years. The ICS features a highly efficient 2-pass design, which uses a downward cyclonic flame. The high velocity flue gases travel over a cylindrical grid of heat convection fins, transferring additional heat evenly to the water in the vessel. This contributes to high efficiencies while still maintaining a durable pressure vessel design, making the ICS a dependable boiler for a variety of applications.

### STANDARD FEATURES:

- Vertical heat exchanger
- Thick wall construction
- Never needs re-tubing
- 150 PSIG maximum allowable working pressure
- Can be trimmed 15-150 PSIG
- Compact footprint
- Integral on/off burner
- Fuels available: natural gas, propane, #2 oil
- Full factory fire test and control programming
- Operating and high pressure limit switches
- Two (2) low water cut off probes,
  - (1) with auto reset,
  - (1) with manual reset
- NEMA 1 enclosure with locking electrical panel
- CSD-1/CSA gas train
- Emergency-stop contacts
- 5 year pressure vessel warranty expandable up to 10 years\*\*
- 1 year burner warranty
- Single phase feed pump motor starter (Single phase boilers only)

### OPTIONS:

- Stainless steel jacket
- Conductivity based surface blowdown
- Timer based bottom blowdown
- Control panel with non-fused disconnect
- High water overflow protection
- Reflex type sight glass
- Boiler alarm package
- Boiler gauge kit
- Remote E-stop
- MM-150 ALWCO
- MM-157 PWLCO and pump control
- MM-193-7B PWLCO modulating level control
- On/off motorized FW valve & 3-valve bypass
- On/off FW solenoid valve
- Differential pressure level control
- Modbus integration gateway
- BACnet integration gateway
- Low NOx emissions (<20ppm)
- Fully modulating 2:1 turndown burner
- Night setback/low pressure control
- FM compliant fuel train components
- High pressure gas train
- Up to 300 psig design pressure
- 3-phase supply power
- 3-phase pump motor starter

### PROJECT DETAILS:

|                       |  |
|-----------------------|--|
| Project Name          |  |
| Date Submitted        |  |
| Fulton Representative |  |

|                        |  |
|------------------------|--|
| City, State (Province) |  |
| Engineer of Record     |  |
| Contractor             |  |

### LISTINGS & COMPLIANCE:

- ASME Section I
- UL approved to UL-795 (Gas) or UL-726 (#2 Oil)
- CSD-1 and CSA Controls and Fuel Train
- GAPS Compliant; Supersedes IRI

### TRIM KIT ITEMS:

- ASME Safety Relief Valve
- Pressure Gauge
- Installation, Operation and Maintenance Manual
- Gauge Glass and Protector Rods
- Touch-up Spray Paint

### NOTE:

Information provided in this document is based on standard boiler configurations only. Custom configurations may result in deviations.

\*\* With engineering system per Fulton Warranty Statement

**CAPACITIES: STANDARD NATURAL GAS: APPLIES TO ELEVATIONS UP TO 2,000 FT**

| ICS   |               | ICS-30           |
|---|---------------|------------------|
| Rated Input at High Fire  | <b>BTU/hr</b> | <b>1,211,000</b> |
|   | <i>kWh</i>    | 355              |
| Rated Output<br>(At 0 psig operating pressure and 212F feedwater temperature) | <b>BTU/hr</b> | <b>1,005,000</b> |
|   | Boiler HP     | 30               |
|   | lbs/hr        | 1,035            |
|   | kg/hr         | 470              |
|   | <i>kWh</i>    | 294              |

**CONNECTION SIZES:**

| ICS   |               | ICS-30           |
|---|---------------|------------------|
| Steam Outlet<br>Operating at >75 psig       | <b>inches</b> | <b>2</b>         |
|   | <i>mm</i>     | 51               |
| Steam Outlet<br>Operating at ≤75 psig       | <b>inches</b> | <b>3</b>         |
|   | <i>mm</i>     | 76               |
| Feedwater Inlet                             | <b>inches</b> | <b>1</b>         |
|   | <i>mm</i>     | 25               |
| Bottom Blowdown                             | <b>inches</b> | <b>1 1/4</b>     |
|   | <i>mm</i>     | 32               |
| High Water Protection                       | <b>inches</b> | <b>3/4</b>       |
|   | <i>mm</i>     | 19               |
| Natural Gas Train Inlet                     | <b>inches</b> | <b>1 1/2</b>     |
|   | <i>mm</i>     | 38               |
| Stack Connection                            | <b>inches</b> | <b>12</b>        |
|   | <i>mm</i>     | 305              |
| Water Column Drain                          | <b>inches</b> | <b>1</b>         |
|   | <i>mm</i>     | 25               |
| Surface Blowdown                            | <b>inches</b> | <b>3/4</b>       |
|   | <i>mm</i>     | 19               |
| Sight Glass Drain                           | <b>inches</b> | <b>1/4</b>       |
|   | <i>mm</i>     | 6                |
| Safety Valve Inlet x Outlet<br>15 psi trim  | <b>inches</b> | <b>1 1/2 x 2</b> |
|   | <i>mm</i>     | 38 x 51          |
| Safety Valve Inlet x Outlet<br>150 psi trim | <b>inches</b> | <b>3/4 x 1</b>   |
|   | <i>mm</i>     | 19 x 25          |

**FUEL REQUIREMENTS: PRESSURE REQUIREMENTS AT RATED INPUT**

| ICS                                      |  | ICS-30               |
|--|--|----------------------|
| Fuel Usage at Rated Input (Natural Gas)* | <b>SCFH</b><br><i>m<sup>3</sup>/hr</i> | <b>1,211</b><br>34.3 |
| Fuel Usage at Rated Input (Propane)**    | <b>SCFH</b><br><i>m<sup>3</sup>/hr</i> | <b>484</b><br>13.7   |
| Fuel Usage at Rated Input (#2 Oil)***    | <b>GPH</b><br><i>lph</i>               | <b>9</b><br>34.1     |
| Maximum Gas Pressure Propane             | <b>in W.C.</b><br><i>kPa</i>           | <b>13.8</b><br>3.4   |
| Minimum Gas Pressure Propane             | <b>in W.C.</b><br><i>kPa</i>           | <b>11</b><br>2.7     |
| Maximum Gas Pressure Natural Gas         | <b>in W.C.</b><br><i>kPa</i>           | <b>13.8</b><br>3.4   |
| Minimum Gas Pressure Natural Gas         | <b>in W.C.</b><br><i>kPa</i>           | <b>7</b><br>1.7      |

\*SCFH based on 1,000 BTU/ft<sup>3</sup>\*\*SCFH based on 2,500 BTU/ft<sup>3</sup>

\*\*\*GPH based on 140,000 BTU/gallon

**ELECTRICAL REQUIREMENTS GAS: APPLIES TO STANDARD BLOWER MOTOR AND CONTROL OPTION \* Does not include feed pump starter \***

| ICS                          |              | ICS-30       |              |              |              |              |              |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Electrical Supply            | <b>Volts</b> | <b>120</b>   | <b>240</b>   | <b>208</b>   | <b>240</b>   | <b>480</b>   | <b>575</b>   |
|                              | Ø            | 1            | 1            | 3            | 3            | 3            | 3            |
|                              | Hz           | 60           | 60           | 60           | 60           | 60           | 60           |
| Short Circuit Current Rating | <b>Amps</b>  | <b>5,000</b> | <b>5,000</b> | <b>5,000</b> | <b>5,000</b> | <b>5,000</b> | <b>5,000</b> |
| NEMA Rating                  |              | <b>1</b>     | <b>1</b>     | <b>1</b>     | <b>1</b>     | <b>1</b>     | <b>1</b>     |
| Full Load Amps (FLA)         | <b>Amps</b>  | <b>19.8</b>  | <b>12.9</b>  | <b>8.3</b>   | <b>6.5</b>   | <b>3.2</b>   | <b>2.6</b>   |

**ELECTRICAL REQUIREMENTS OIL: APPLIES TO STANDARD BLOWER MOTOR AND CONTROL OPTION \* Does not include feed pump starter \***

| ICS                          |              | ICS-30       |              |              |              |              |              |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Electrical Supply            | <b>Volts</b> | <b>120</b>   | <b>240</b>   | <b>208</b>   | <b>240</b>   | <b>480</b>   | <b>575</b>   |
|                              | Ø            | 1            | 1            | 3            | 3            | 3            | 3            |
|                              | Hz           | 60           | 60           | 60           | 60           | 60           | 60           |
| Short Circuit Current Rating | <b>Amps</b>  | <b>5,000</b> | <b>5,000</b> | <b>5,000</b> | <b>5,000</b> | <b>5,000</b> | <b>5,000</b> |
| NEMA Rating                  |              | <b>1</b>     | <b>1</b>     | <b>1</b>     | <b>1</b>     | <b>1</b>     | <b>1</b>     |
| Full Load Amps (FLA)         | <b>Amps</b>  | <b>19.8</b>  | <b>12.9</b>  | <b>8.3</b>   | <b>6.5</b>   | <b>3.2</b>   | <b>2.6</b>   |

**WEIGHTS AND VOLUMES:**

| ICS                                      |                | ICS-30       |
|--|----------------|--------------|
| Dry Weight                               | <b>lbs</b>     | <b>5,450</b> |
|  | <i>kg</i>      | <i>2,472</i> |
| Operating Weight at Normal Working Level | <b>lbs</b>     | <b>6,868</b> |
|  | <i>kg</i>      | <i>3,115</i> |
| Water Volume at Normal Working Level     | <b>gallons</b> | <b>170</b>   |
|  | <i>liters</i>  | <i>643.5</i> |

**VENTING REQUIREMENTS:**

| ICS                                     |                         | ICS-30        |
|---|-------------------------|---------------|
| Typical Combustion Air Intake Flow Rate | <b>SCFM</b>             | <b>237</b>    |
|   | <i>m<sup>3</sup>/hr</i> | <i>403</i>    |
| Flue Gas Exhaust Flow Rate              | <b>SCFM</b>             | <b>257</b>    |
|   | <i>m<sup>3</sup>/hr</i> | <i>437</i>    |
| Minimum Allowable Draft Pressure        | <b>in W.C.</b>          | <b>-0.04</b>  |
|   | <i>kPa</i>              | <i>-0.01</i>  |
| Maximum Allowable Draft Pressure        | <b>in W.C.</b>          | <b>-0.02</b>  |
|   | <i>kPa</i>              | <i>-0.005</i> |

**MINIMUM CLEARANCES: LOCAL CODES MAY SUPERSEDE FULTON REQUIREMENTS**

| ICS   |           | ICS-30       |
|---|-----------|--------------|
| Side Clearance from Boiler Jacket:                  | <b>in</b> | <b>24</b>    |
|   | <i>mm</i> | <i>609</i>   |
| Total Installed Height Required for Burner Removal: | <b>in</b> | <b>106</b>   |
|   | <i>mm</i> | <i>2,692</i> |

**SOUND DATA: MEASUREMENTS TAKEN FROM FIVE FOOT FROM THE FRONT OF THE BOILER**

| ICS                      |            | ICS-30    |
|--------------------------|------------|-----------|
| Sound Level at High Fire | <b>dBa</b> | <b>71</b> |

**DIMENSIONS:**

Refer to the Product Data Submittal Drawing for dimensions.