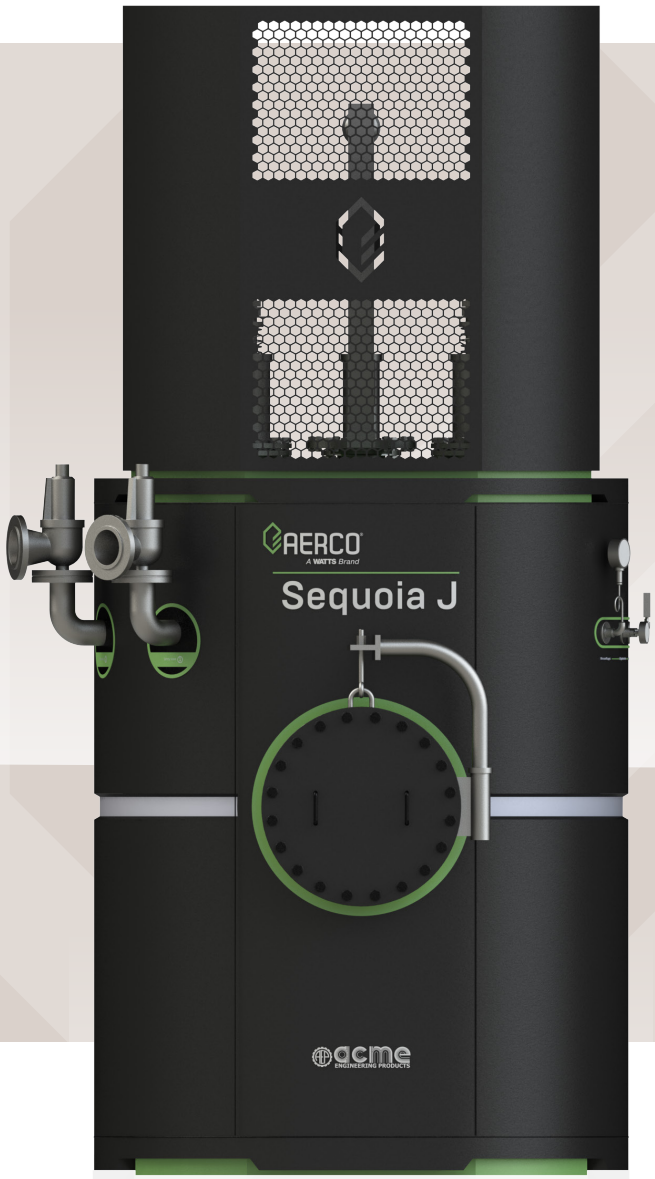
# Sequoia® J

## High Voltage Jet Type Electrode Steam Boiler

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# Advanced Steam Solutions for Demanding Applications

The Sequoia J is AERCO's high voltage jet type electrode steam boiler for large commercial and industrial applications. Sequoia J delivers rapid, reliable steam at pressures up to 500 psig and capacities up to 270,000 lb/hr. Its compact vertical design and advanced electrode jet technology ensure powerful performance in a smaller footprint.

Operating at up to 99.9% efficiency, Sequoia J connects directly to high-voltage distribution without step-down transformers, reducing installation cost and complexity. With fast ramp-up times, minimal maintenance, and safe, combustion-free operation, Sequoia J is a future-ready solution for clean energy transition.


**Zero combustion, Zero emissions**

**Low water protection built in**

**High power output, small footprint**

**Rapid steam response**

**99.9% efficiency**

**No burner or Fuel handling equipment**

**Up to 270,000 lb/hr steam capacity**

**Minimal maintenance**

**Operates on distribution voltage (up to 25kV)**

# Clean, Reliable Steam for Demanding Applications

## Meets Environmental and Efficiency Goals

The Sequoia J boiler converts nearly 100% of electrical energy into steam with zero combustion emissions, helping facilities meet strict environmental standards. Its clean operation reduces the carbon footprint and aligns with sustainability initiatives.

## Lower Operating Costs

By eliminating fuel storage, combustion equipment, and complex pollution controls, the Sequoia J significantly reduces both capital and ongoing maintenance expenses. Automated controls also minimize operator intervention, cutting labor costs.

## Simplified Installation

Sequoia J is designed to require minimal supporting infrastructure—no fuel lines, no emissions equipment—resulting in faster, more cost-effective installations. Electrical connections are streamlined with standard high voltage feeds.

## Safe and Easy Operation

No flames, fumes, or combustible fuels ensure a safer working environment. The boiler's built-in safety features prevent low water conditions and thermal shock, and the automatic load controls maintain stable steam output effortlessly.

## Straightforward Maintenance and Reliable Operation

With fewer components and no fuel residues, maintenance is reduced and simplified. Durable electrode design prevents burnout, while robust control systems ensure long-term reliable operation with minimal downtime.

## Many Applications

Ideal for applications with a need for high-pressure steam, process heat, or facility heating at scale.

District energy plants

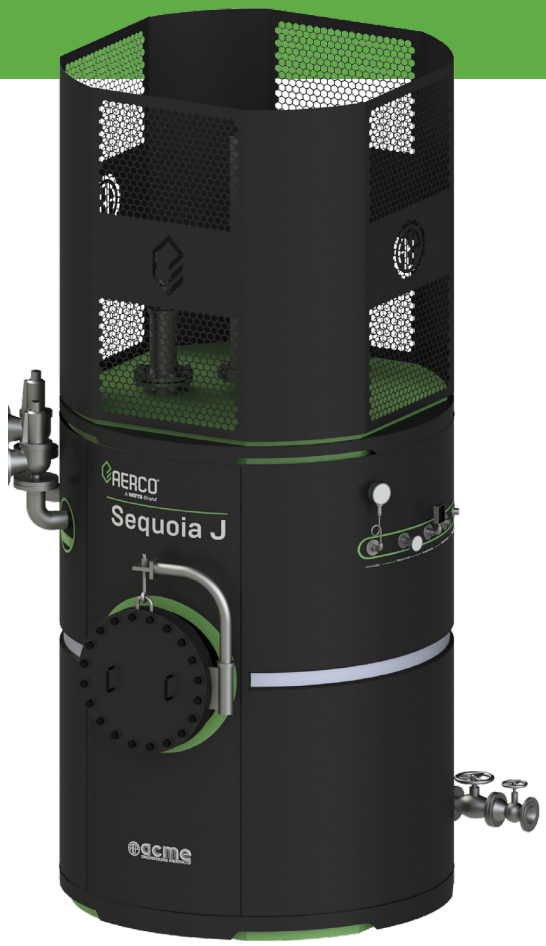
Heavy industrial manufacturing

Pharmaceutical production

Food & beverage processing

Institutional campuses

# Compact Power with Proven Design




## Key Features

- Available from 6 MW to 70 MW
- Output: Up to 270,000 lb/hr steam
- Pressure range: 75 to 500 psig (5 to 35 bar)
- Operates at 4.16 to 25kV (no step-down required)
- Up to 99.9% electrical-to-steam efficiency
- Jet-type electrode design for space-saving performance
- Fully ASME Section VIII Div 1 compliant
- Integrated recirculation pump and motorized control system
- Designed for high conductivity operation to minimize blowdown
- Standard safety cage and insulation
- Optional: superheater, separators, water treatment systems

## Controls

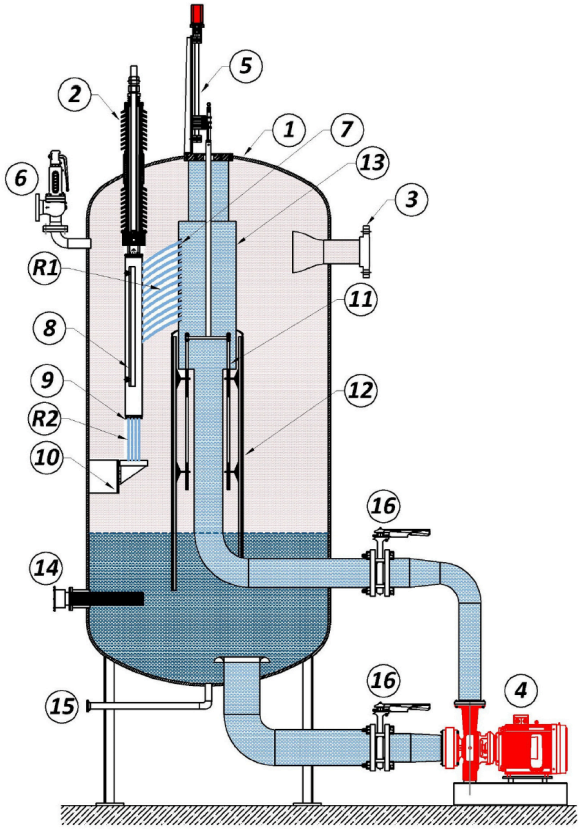
Sequoia J features automatic demand control, proportional feedwater regulation, and a simple HMI with real-time pressure/load monitoring. Control sleeve and electrode jet modulation enable 0–100% turndown.

## How it Works

The jet type industrial boiler uses the conductive and resistive properties of water to generate steam. Water is circulated through jet nozzles that strike electrode target plates, creating a current path that heats the water directly. A second current path completes the circuit via the counter electrode. Output is modulated by adjusting a motorized control sleeve that diverts water flow. Because current cannot flow without water, low-water safety is inherently built in. The system reaches full output rapidly and maintains steam pressure automatically to match load requirements.

# Inside Sequoia J – Built for Safety, Power, and Longevity

Sequoia J features an ASME Section VIII Div. 1 certified pressure vessel **(1)** designed for safe containment of high-pressure steam. Electrical current is delivered through insulated power passages **(2)** rated for up to 25 kV, ensuring reliable and efficient energy transfer to the electrodes. Saturated steam is supplied to the system via the steam outlet **(3)**, maintaining the selected pressure rating for optimal performance.




A recirculation pump **(4)** continuously moves water from the bottom of the vessel up to the jets, providing consistent coverage over the electrodes. The motorized drive system **(5)** adjusts the position of the control sleeve **(11)**, which modulates steam output by diverting or exposing water jets to regulate capacity anywhere from zero to full load. This sleeve is mechanically connected to the drive motor through a precise control linkage **(12)**, enabling responsive and accurate modulation.

Water is directed by the collection pipe **(13)** from the vessel base up to the nozzle stock **(7)**, which focuses high-pressure jets toward the electrode target plate **(8)** to initiate the first electrical current path. The remaining water flows through the nozzle plate **(9)** to strike the counter electrode **(10)**, completing the circuit and generating heat directly in the water. For safety, a pressure safety valve **(6)** automatically releases excess pressure, while isolating valves **(16)** allow for safe maintenance and shutdown by controlling water flow.

To maintain efficiency during idle periods, a standby heater **(14)** keeps the water temperature steady for quicker startups. Finally, the bottom blowdown drain **(15)** facilitates the removal of sediment and scale buildup, helping to preserve boiler longevity and performance.

1. Pressure Vessel
2. Power Passages
3. Steam Outlet
4. Recirculation Pump
5. Motorized Drive System
6. Pressure Safety Valve
7. Nozzle Stock
8. Electrode Target Plate
9. Nozzle Plate
10. Counter Electrode
11. Control Sleeve
12. Control Linkage
13. Collection Pipe
14. Standby Heater
15. Bottom Blowdown Drain
16. Isolating Valves

# Designed for Seamless Integration and Installation

## Electrical Compatibility For Reduced Infrastructure Costs

The Sequoia J boiler operates directly at distribution voltages between 4.16 and 25 kV, eliminating the need for step-down transformers and associated switchgear. This high-voltage compatibility translates to significant savings in material, labor, and space requirements. Power connections include high-quality quartz tubing and insulators rated for 25kV, ensuring safety and long-term durability across all voltage ranges.

- Accepts 3-phase, 4-wire supply
- Eliminates step-down transformer in most cases
- Reduces cable runs and transformer heat losses
- Helps futureproof system architecture

## Fast, Cost-Effective Installation

Unlike fossil-fuel systems, Sequoia J requires no fuel lines, storage tanks, flues, or emission control equipment. This means faster installs, easier placement indoors, and less coordination across trades. Optional modules like water treatment skids, superheaters, and separators are designed for plug-and-play compatibility.

- No venting or stack required
- Compact footprint for high-output steam
- No flameproof rooms or special hazard zoning
- Compatible with common industrial piping layouts

## Integration Options for Modern Facilities

Whether replacing a legacy boiler or adding electric steam to a multi-fuel plant, Sequoia J adapts to the configuration. Control systems can integrate via standard analog or digital protocols, and optional interfaces support SCADA, DCS, or building automation systems.

- Easy-to-integrate controls and monitoring
- Load balancing and peak-shaving options
- Ideal for microgrid and hybrid energy systems

## Warranty

All our immersed electrode boilers are conditionally warranted for the lesser of one year in operation or 18 months after shipment against defects in workmanship and material. Consult AERCO's standard published limited warranty terms and conditions for complete warranty information.

# Specifications and Dimensions

| Model | Max. kW at 125 psig | | | Lbs/hr based on feed water at 212 °F | | |
|---|---|---|---|---|---|---|
| | 6.9 kV | 13.8 kV | 25 kV | 6.9 kV | 13.8 kV | 25 kV |
| 600 | 1,500 | 6,000 | 7,500 | 5,050 | 20,400 | 25,500 |
| 900 | 2,250 | 9,000 | 9,400 | 7,550 | 30,600 | 32,000 |
| 1,200 | 3,000 | 12,000 | 12,400 | 10,100 | 40,800 | 42,160 |
| 1,800 | 4,500 | 18,000 | 18,800 | 15,100 | 61,200 | 64,000 |
| 2,400 | 6,000 | 24,000 | 28,800 | 20,150 | 81,600 | 96,000 |
| 3,000 | 7,500 | 30,000 | 32,000 | 25,200 | 102,000 | 108,800 |
| 3,600 | 9,000 | 36,000 | 37,600 | 30,200 | 122,400 | 127,900 |
| 4,200 | 10,000 | 42,000 | 47,000 | 35,300 | 142,800 | 160,000 |
| 5,000 | - | - | 53,000 | - | - | 180,200 |

Other voltages are available on request.

## Other Sequoia Models

### Sequioa

**Immersed Electrode Hot Water Boiler**

- **Zero Emissions & 100% Efficiency:** Ideal for eco-conscious operations and regulatory compliance
- **10:1 Turndown Ratio:** Seamless modulation from 10% to 100% output for demand flexibility
- **Fast Response Time:** Reaches full output in about one minute from hot standby
- **Compact & Scalable:** Available in 8 sizes from 2.5 MW to 68 MW with minimal footprint
- **Low Maintenance Design:** Long-life electrodes and fewer components reduce upkeep and downtime

### Sequoia S

**Immersed Electrode Steam Boiler**

- **Up to 99.5% Efficiency:** Converts nearly all electrical input into usable steam
- **10:1 Turndown Ratio:** Electronically modulated output for precise demand matching
- **Zero Onsite Emissions:** No combustion, fuel, or flue systems required
- **Fast Steam Availability:** Full output in 30–40 minutes from cold, 1 minute from hot start
- **Direct-to-Distribution Voltage:** Operates at 4.16–25 kV without step-down transformers
- **Wide-range Capacities:** From 2 MW to 70 MW and up to 300 psi steam output
- **Reduced install costs:** Eliminates need for combustion systems, fuel storage, or flue infrastructure

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