
# High Voltage Electrode Boiler

Steam and Hot water

PARAT



# From renewable POWER to HEAT with PARAT electrode boiler

From minimum to full load in under 30 seconds.

## PARAT; boilers since 1920

Our electrode boiler has been designed and developed by our in-house engineers and manufactured in our workshop in Norway for more than 20 years.

Our boiler history goes all the way back to 1920. Since we started we have delivered more than 7000 boilers to the Norwegian market alone. Today we are the largest supplier of boiler systems in Norway.

## Electrical grid regulation

Increasing power generation from wind and solar systems have created a demand for fast frequency regulation of the electrical power grids. The PARAT electrode boiler can be used for primary regulation with less than 30 seconds response time from minimum to full load.

Converting electrical power to heat makes it possible to accumulate renewable energy in periods of overproduction. Our partner AS:SCAN in Denmark has installed more than 7 PARAT electrode boilers in the Danish grid.

## Steam and hot water

The electrode boiler is delivered both in a steam and hot water version with maximum pressure of 30 barg.

- **From cold to full load in less than 15 minutes**
- **30 seconds from minimum to full load**
- **Minimum load is below 2%**
- **No earth current**
- **Compact design - up to 50MW in one unit**
- **No low voltage transformer required**
- **No Electrode wear**
- **Minimum maintenance required**

PARAT IEH: High Voltage Electrode Boiler

# Technical data


## Area of use:

- Steam and Hot water production when electricity is cheap
- Grid regulation
- Backup boiler with fast startup time
- Load balancing in gas turbine systems
- Extremely compact for large power loads

## Design codes

We deliver the boiler CE marked according to PED/97/23/EC with boiler code EN12953 or ASME stamp. The IEH is also available in EX version for installation in zone 2 hazardous areas.

## Marine version available

PARAT has developed a patented system for marine installation and application. The PARAT electrode boiler is in full operation on the deck of the FPSO BW Pioneer in the US Gulf of Mexico.

## Control system

We have used our experience to develope a modern and robust boiler control system which is easy to use. The boiler is also available with PARAT remote monitoring system. This enables web-based remote monitoring of the boiler plant from anywhere in the world. This also includes online troubleshooting and upgrades of the control software from the PARAT Halvorsen AS service centre in Norway.

| | | | | | |
|---|---|---|---|---|---|
| Capacity (MW) | 0-10 | 11-15 | 16-20 | 21-30 | 31-45 |
| Capacity (T/h) | 0-15 | 16-22,5 | 23-30 | 31-45 | 46-67 |
| D (mm) | 2100 | 2100 | 2550 | 3000 | 3400 |
| H (mm) | 5099 | 5099 | 5255 | 5635 | 6000 |
| Transport weight (kg) | 4500 | 5000 | 6500 | 7000 | 14000 |
| Operating weight (kg) | 7000 | 7500 | 10500 | 14000 | 23000 |
| Test weight (kg) | 12000 | 12500 | 19000 | 27000 | 44000 |

Boiler outer dimensions including insulation mantle. Design pressure 16 barg.
We reserve the right to make changes.

Dovre Sertifisering AS

NORSK AKKREDITERING MSYS 003

NS-EN ISO 9001
CERTIFIED COMPANY

PARAT



**Parat Halvorsen AS** P.O. Box 173 NO-4402 Flekkefjord Norway
Tel +47 99 48 55 00 Fax +47 38 32 44 71 office@parat.no