



JUSTSEN®
Since 1959

TECHNOLOGY SUPPLIER

PRESENTATION

JUSTSEN ENERGITEKNIK A/S
CVR no. 75631812
Denmark



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Key Facts

- Original equipment manufacturer (OEM) based in Denmark
- Designing and manufacturing advanced boiler systems for all types of biomass
- All heat transmission media (including superheated steam for CHP)
- Steam boiler output range 0.5 t/h to 50 t/h
- Hot water boiler output range 0.3 MW to 20 MW
- Key system element - Justsen water-cooled grates
- Over 60 years of experience (since 1959)
- Delivered around 3,000 boiler units
- Own electrical engineering division "Justsen Elektro"
- Three subsidiaries: Justsen Pacific Ltd. (Australia), Justsen Eesti OÜ (Estonia) and Euro Therm 2019 A/S (Denmark)

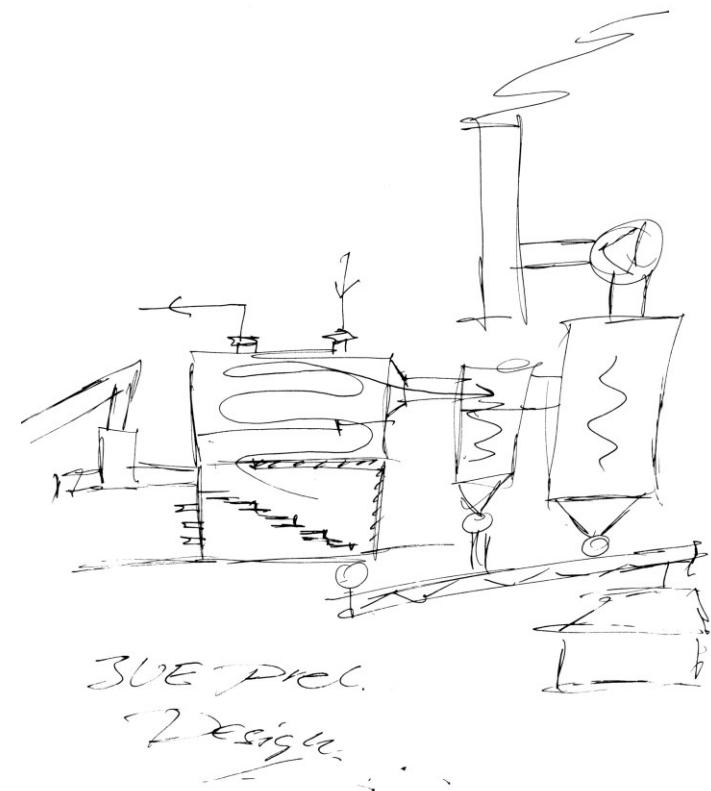


Link to the video about Justsen technology for sustainable energy goals [here](#).



Mission Statement

- Our **vision** is to be a highly specialized world leader in heating technology and maximum energy utilization from biomass.
- Our **mission** is to provide customized solutions of advanced biomass plants which last longer, require a minimum of maintenance, and offer a faster return on investment for our customers.
- Our core **values** are: environmental awareness, continuous development and innovation, loyalty and efficiency.





CEO Message



Claus Justsen, CEO since 1995

Also, a majority shareholder of Justsen Energiteknik A/S and a proud owner of the Justenborg vineyard in Denmark.

Founded in 1959, Justsen has become a top-quality biomass fueled boiler systems producer in the global market. We are convinced that a great deal of our success is based on developing partnerships the right way. Therefore, our strategy is:

- to cooperate with the best companies around the world to promote and operate our bioenergy boilers;*
- for our know-how to be recognized by all companies interested in reducing the carbon footprint;*
- to maintain long-term relations with all our customers, making sure the performance and reliability are preserved during the lifetime of the boiler.*

We are known for the best product and the best economy, calculated over the lifetime of the boiler, which proves Justsen technology to be an investment with a vision for the future.

We believe that it is our obligation to reduce the carbon footprint from industry and domestic heating by using renewable biomass. To further grow, we want to use ever more difficult biomass to reduce the waste going to landfills. We are strongly committed to protecting the forests by using only certified biomass or biowaste from production.

Going forward, Justsen will design and manufacture boilers that operate to the highest standard on emissions and efficiency, without ever compromising on quality.



Main Milestones

1959

The company founded by **Bent Justsen**

1984

Justsen Energiteknik A/S is established as a limited company

*Aktieselskabs-
10 OKT. 1984
registeret*

2005

Acquisition of the boiler manufacturing company Argusfyr Energiteknik A/S

2019

Justsen acquires and revives Euro Therm A/S as a wholly-owned subsidiary

1971

Bent's wife **Lise Justsen** takes over the management after his untimely death

1995

Claus Justsen, the eldest son of Bent and Lise Justsen, is appointed the new CEO

2017

New subsidiary in Australia, **Justsen Pacific LLC**



2020

New subsidiary in Estonia, **Justsen Eesti OÜ**

Link to the documentary about the Justsen family-owned business [here](#).



Justsen Group

In addition to our worldwide network of technical partners, we have also directly established or invested in selected companies/subsidiaries:

- Justsen Pacific Ltd. in Australia – 25% owned
- Justsen Eesti OÜ in Estonia – a wholly-owned subsidiary
- Euro Therm 2019 A/S in Denmark - a wholly-owned subsidiary



JUSTSEN EESTI OÜ



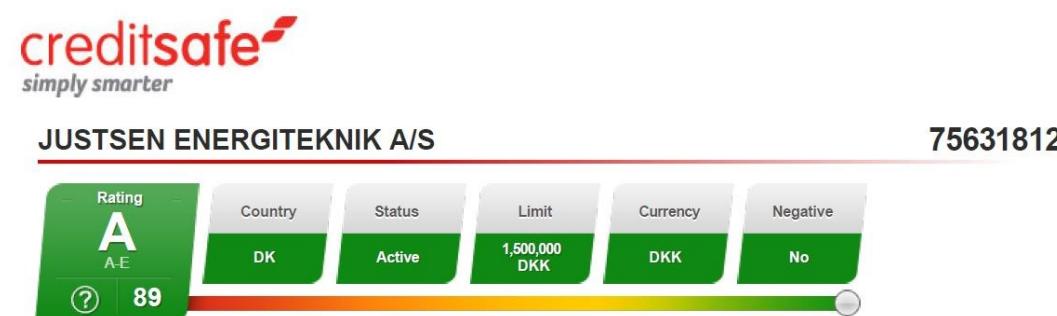
Click on the logos to visit the websites.



Creditworthiness



- In November 2020, Justsen was again awarded the AAA-diploma for highest creditworthiness based on Bisnode's system of creditworthiness.
- Credit score according to the Creditsafe was 89 or A meaning a very low risk company. Data from November 2020.



Available upon request.



Environment and Corporate Social Responsibility

We recognize that managing environmental impact is an integral part of our business activities. The **key principles** to guide our work activities:

- to comply with the relevant environmental legislation
- to identify and manage our significant environmental impacts
- to take action to prevent pollution, which may occur as a result of our operations
- to use renewable energy in our business activities and encourage our suppliers to do so too
- to monitor environmental performance and set new targets

We use renewable heat and power in the headquarters and production facility in Brabrand.

The company's website is made CO₂ neutral to neutralize the carbon emissions from both the website and the users of the website.



Click on the logo to see the certificate.



Memberships and Industry Networks

Justsen has joined several networks to actively participate and contribute to the bioenergy sector:

- Word Bioenergy Association
- Energy Supply DK
- State of Green Denmark
- AcuComm (Business Intelligence)

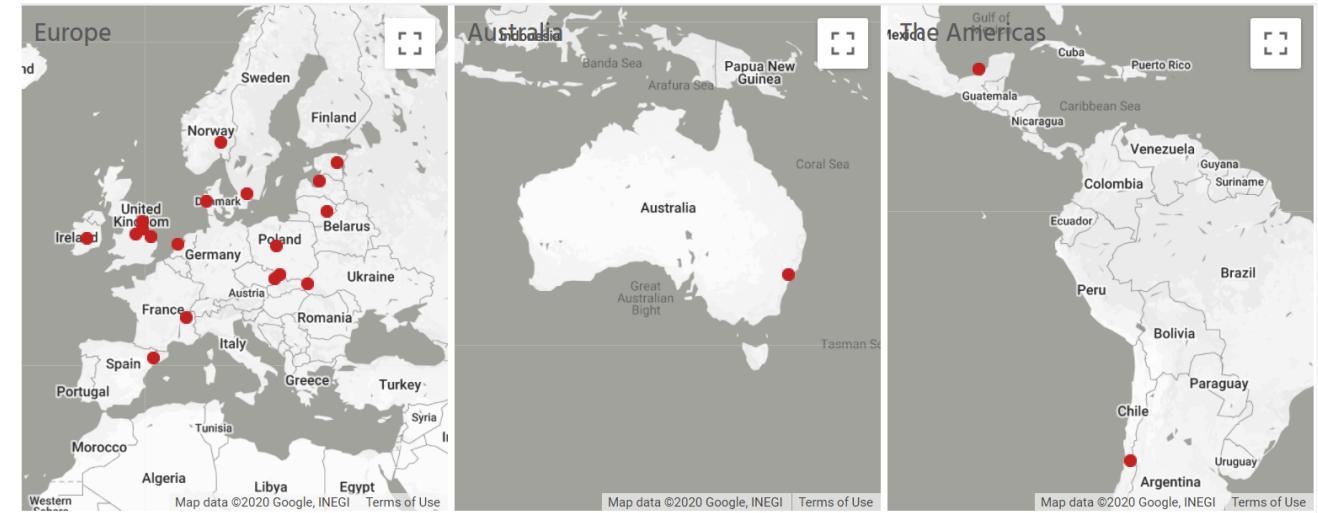


Click on the logos to see Justsen's profile/membership page.



Markets and Selected Technical Partners

- Long-lasting and successful cooperation with trustworthy and loyal companies based in Europe, Australia and the Americas.
- 20+ associated technical partners (turnkey providers) worldwide.

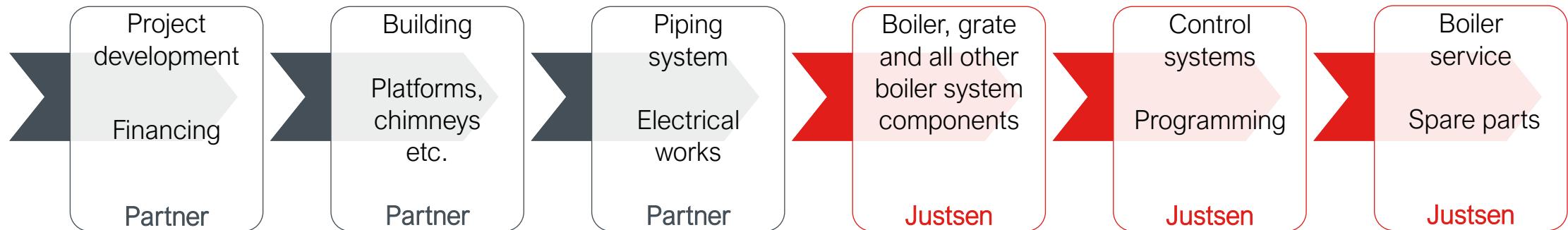


See who our partners are on: www.justsen.dk/partners



Scope of Supply

- We work through our **technical partners** (EPC contractors) in selected markets and together we can deliver complete biomass boiler plant projects (turnkey).
- Justsen scope of supply typically covers all pressurized parts, hardware, and all integral parts/components of the boiler system—moreover, supervision on mechanical installation and start-up, schooling, and tests.





Design Fuel and Technology Applications

Fuel Types:

- Wood based biomass
- Agricultural biomass (e.g., straw)
- Waste wood and treated wood (Grade A-D, RDF)
- Various – peat, spent coffee grounds and biomass mix with sludge/waste from coconut industry and African palm

Applications:

- District heating and heat & power
- Process industries (textile, food, furniture etc.)
- Woodworking industries and sawmills
- Agriculture and farming (greenhouses, poultry)
- Housing estates





Biofuel Properties and Quality

General Properties:

- Carbon neutral as biomass uses CO₂ for growth and releases the same amount when combusted
- The sum of combustible, ash and water is always 100%
- Calorific value of the combustible part depends on the content of Hydrogen (H), Carbon (C), Sulphur (S), Nitrogen (N) and Oxygen (O)
- Corrosion depends on moisture H₂O and Chlorine (Cl)
- Fouling depends on ash content and flue gas oxides K₂O and Na₂O
- Slagging depends on ash softening point

Quality Check:

- Self-inspection of fuel quality to ensure correct boiler system design parameters.
- Fuel characteristics recommended for auto control: moisture, size, and density. A small sample is taken to evaluate the fuel type.
- For determining the moisture content, Justsen uses a drying chamber (special oven) at their premises in Brabrand.
- For more detailed fuel analysis (i.e., calorific value) Justsen uses FORCE Technology, which is a government-approved chemical analysis laboratory complying with current regulations.



Boiler Types

HOT WATER
0.3 MW – 20 MW

STEAM (Saturated)
0.5 t/h – 50 t/h

CHP
Super-heated
Steam

ORC
Organic
Rankine
Cycle

WID/
IED
Renew-
ables

JUE-
FVB
 ≤ 15
MW

JUE-
GVB
 ≤ 20
MW

JUE-
HHF
 ≤ 10
MW

JUE-
VHS
 ≤ 8 MW

JUE-
MMV
 ≤ 5 MW

ARGUS

JUE-
JWB-
8.0
R&D

JUE-
TDC-F
 ≤ 50 t/h

JUE-
DHF
 ≤ 16 t/h

JUE-
MMD
 ≤ 8 t/h



FLEX
 ≤ 5.4
MW

VERTICAL
 ≤ 5 MW





Water-cooled Grates

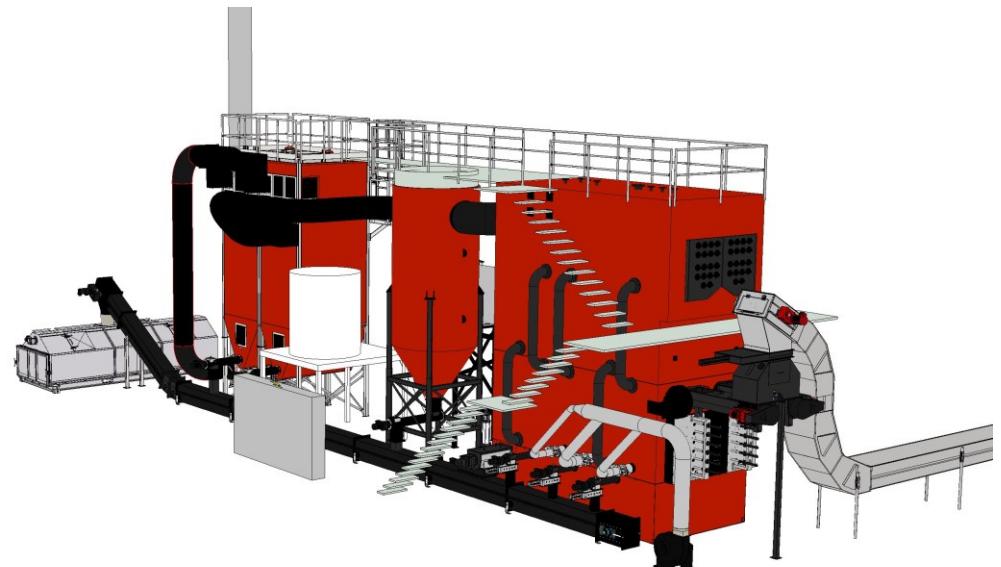
- Low maintenance costs
- Minimizing radiation loss
- Self cleaning grate
- Controlled combustion and minimized emissions
- Quick reaction to changes in fuel load
- Handling large range of biofuels with varying calorific values
- Very long life expectancy
- Easy replacement of worn out grate bars





Advantages of Justsen Boiler Systems

- Proven technology: over 60 years track record
- Build quality: design life and durability of the technology 20+ years
- Low maintenance costs minimizing operating expenditure (OPEX)
- Thermal energy cost savings
- Multiple design fuel
- Carbon neutral
- Application diversity
- Manufactured using renewable energy*
- Warranty extension for up to 10 years (conditions apply)



*Production in Brabrand powered by green energy.



Compliance in Manufacturing

Technical norms:

- Pressure parts designed and manufactured according to EN 12952 or EN 12953
- Pressure Equipment Directive 2014/68/EU (PED)
- Moving parts designed and manufactured according to EU Machinery Directive 2006/42/EC
- Electrical equipment designed and manufactured according to EN 50156

- Dimensioned layout drawings of a complete boiler system (Justsen scope of supply) are approved and signed off by the CTO and further submitted to the Production.
- Only certified welders (according to the Danish standards) are employed at the Justsen production facility in Brabrand.
- Pressurized equipment tests are carried out in Herning and documented accordingly.
- The buyer is invited to perform a Factory Inspection Test (FAT) in Brabrand and Herning before shipment.



After Sales

Our service network extends across the globe, and an experienced supervisor with the necessary parts is never far away. We offer:

- **Basic Support** - free telephone support and discounts on original Justsen spare parts sent in 1-2 business days.
- **Service Plus** includes two annual site visits.
- **Extended Warranty** extend the standard warranty by one year at a time for up to 10 years. Special conditions apply.
- **Remote Alarm Service** - notifications via SMS about any potential occurrences in the boiler room. Requires Support or Service Plus Agreement.
- **Emergency Box** contains all strategic spare parts and wear and tear parts for the boiler. Purchasing Emergency Box is possible either after 2 years of standard warranty or at any given time.





Steam Boiler Plant in Spain

- 31.5 t/h
- High pressure steam boiler
- Granulated wood waste



Link to the inauguration article [here](#).



District Heating Plant in Latvia

- 40 MW total
- Two 20 MW hot water boilers
- Wood chips





District Heating Plant in Denmark

- 5 MW
- Hot water boiler
- Straw





Bioenergy in Australia

- 7,147 kg/h
- Steam boiler
- Wood chips



Link to the Australian Renewable Energy Agency's video about the plant [here](#).



Wood Working Industry in Lithuania

- 3.75 MW total
- Two hot water boilers
- Wood waste (byproduct from production)



Link to the market's leading windows and doors manufacturer's boiler house video tour [here](#).



Customer Letters

“ Throughout the project, Justsen team performed their tasks in a professional way and demonstrated competence as well as experience from similar projects. All phases of the project (design, implementation and commissioning) were carried out according to the contract.”

Bygland Varmesentral A/S, Norway

“ The Justsen team always acted in a professional and responsible way within the project design and its implementation. Our successful cooperation ensured that all assigned work was completed on time and within agreed budget.”

Datatherm, spol. S R.o., Slovakia

“ The professionalism and expertise of the Justsen team ensured successful completion of both projects within budget and ahead of deadlines.”

Woodco Renewable Energy Ltd., Ireland

Customer Letters are available upon request.



Connect

We are here:



Justsen Energiteknik A/S

Grimhøjvej 11
8220 Brabrand, Denmark
Tel +45 86 260 500
justsen@justsen.dk
www.justsen.dk