

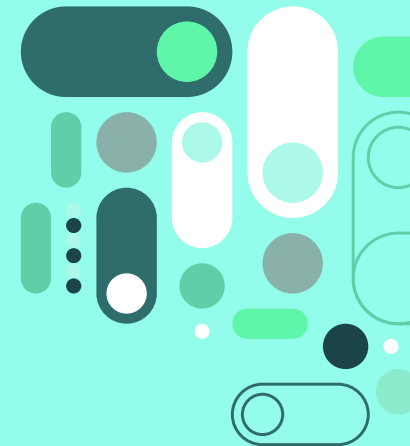


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# Steam production for Food Industry, using sustainable bioenergy

Anuga Foodtec Fair 2024

Gustav Melin / Business Development, Senior Advisor, BK Tech Group AB  
Frank Hörstensmeyer / Head of Sales Germany, BK Tech Energy AB



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# Presentation of Gustav Melin

- Bioenergy Expert at BK Tech
- Former President of Bioenergy Europe and CEO of SVEBIO, the Swedish Bioenergy Association
- MSc in Agriculture
- More than three decades in Bioenergy Business also of producing and trading biomass and pellets



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# OUR APPLICATIONS WITH GREEN STEAM



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# Current BK Tech process steam applications in food industry

- Pasteurization
- Sterilization
- Drying
- Cooking
- Cutting meat
- Smoking meat
- Peeling potatoes
- Frying potato chips
- Brewing
- Distilling spirits
- Roasting coffee beans
- And many more...



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# Process steam – What are the requirements?

## Typical requirements in food industry

- Compact solutions to fit into available space
- Steam temperatures up to about 200 °C / 16 Bar
- 1 – 30 ton steam per hour (0,7 – 20 MW)
- Fast increase/decrease of output/temperature
- Easy operation and high degree of automation

## General requirements

- Low cost of energy
- Stable and secure supply of energy
- Preferably a green source of energy

Wood pellets:  
**The ideal ingredient**

for decarbonizing all steam  
generation in the food industry



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# Drivers for sustainable and renewable industrial process heat

- To get a climate neutral food production
- To market food production as sustainable and environmentally good
- To avoid high carbon fees in ETS2 from 2027\*
- To reduce political risk
- Sign longer supply contracts to avoid volatile prices and secure supply

3MW steam from wood pellets  
at Guldfågeln since 2023



Guldfågeln does  
not chicken out  
on becoming  
sustainable



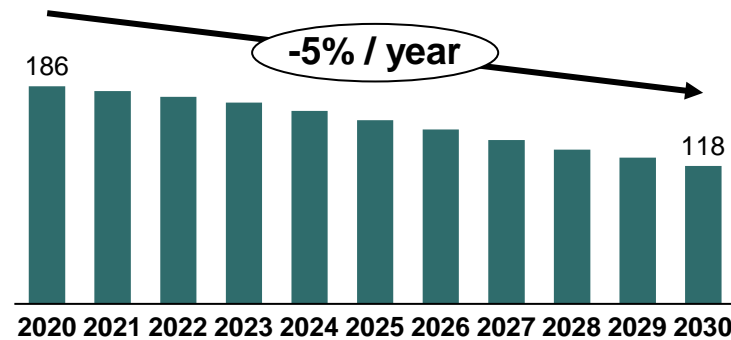
\*ETS2 - is the new Emission Trading Scheme for carbon dioxide that will cover the whole EU from 2027

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# Regulatory pressure on industry to replace fossil gas

- Stricter enforcement of national carbon budgets (“Fit for 55” package)
- EU ETS2 implemented from 2027 → higher prices on CO<sub>2</sub>
- Increased compulsory public reporting regarding reduction measures taken

**Example:**  
The national CO<sub>2</sub> budget of German industry is falling by 5% per year



Source: National Climate Action Law bill, May 2021

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# Most possible technologies for process steam face challenges on at least one of the key criteria

## Example: Pasteurization in the dairy industry

10 ton steam/h, 16 Bar, fast load response requirements

Possible technology / fuel	Financial	Local and secure supply	Sustainability	Technical performance
Natural gas	✓	?	✗	✓
Wood chips	✓	✓	✓	✗
Biogas	?	?	✓	✓
Bio oil	?	?	✓	✓
Hydrogen	✗	✗	?	✗
Heat Pump	?	?	?	✗
Electrical boiler	?	?	?	?





# What is wood pellets?

- Pressed, dry wood material
- Residual products from the wood industry, mostly made from sawdust or wood shavings
- Chose on different qualities where the most common meet the European standard ENplus, normally:
  - Calorific value approx. 4.8 kWh/kg
  - Diameter 6 or 8 mm and length up to 40 mm
  - Ash content normally 0.5%
  - Moisture less than 10%

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# Wood pellets – the only green solution that fulfil all criteria here and now

1.



## Technically sound

High technical performance & trouble-free operation

2.



## Sustainable

Renewable source of fuel with emissions close to zero

3.



## Secure supply

Established local market with potential to increase volumes

4.



## Economical

Relatively low investment and fuel cost



**Brewery, Krönleins**  
**4MW steam production**  
**wood powder since 2023**



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# 1. Technical performance

A pellet-fueled plant can handle high temperature, fast load changes and is easy to install and operate



## High performance

Can handle high temperature, pressure, and fast load changes



## Trouble-free operations

High reliability, easy operation and low need of maintenance



## Compact solutions

Small footprint and can be delivered in modules

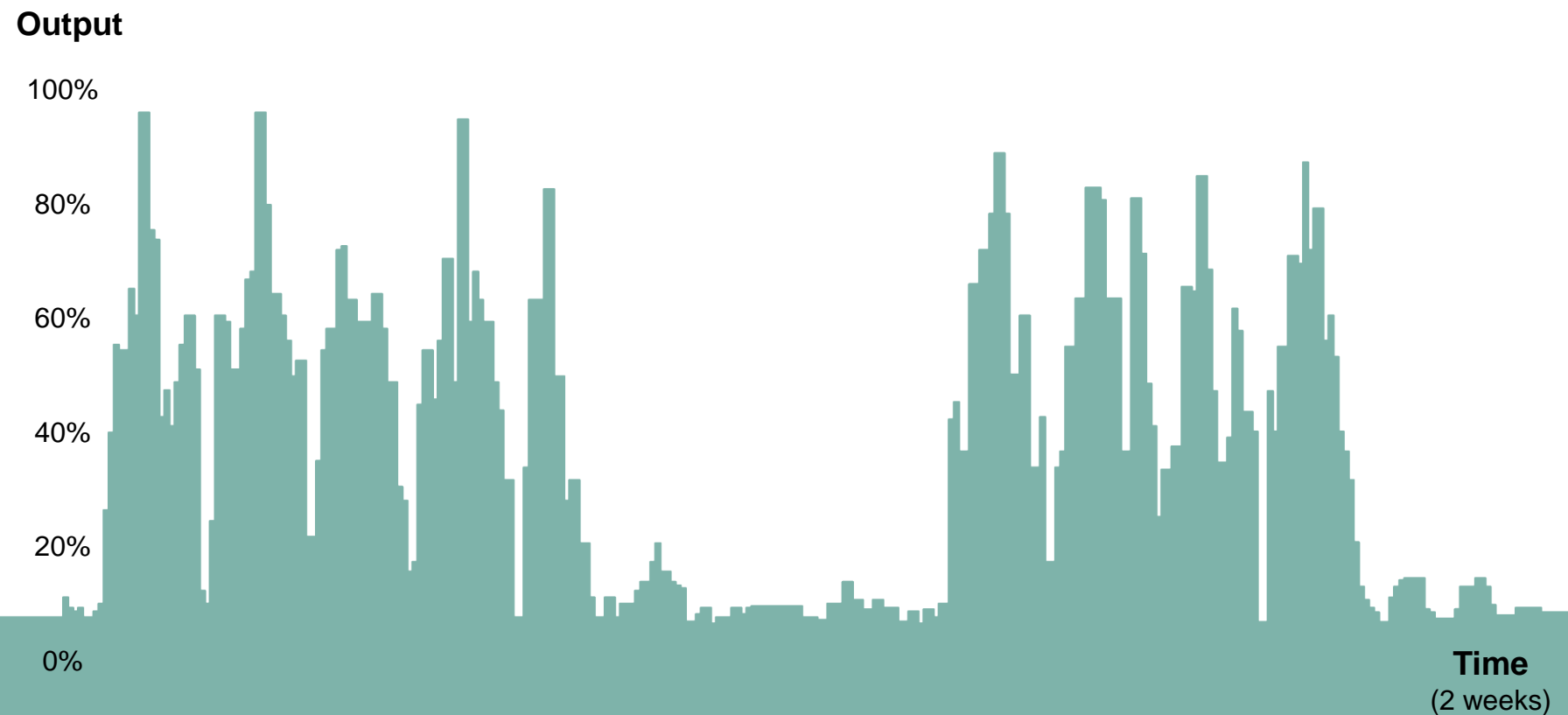
**Crisps Svenska Lantchips  
3 MW steam production  
wood pellets since 2018**



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# 1. Technical performance

Example of load variations handled by a pellets energy center in the food industry



Wood pellets:

**The ideal ingredient**

for decarbonizing all steam generation in the food industry

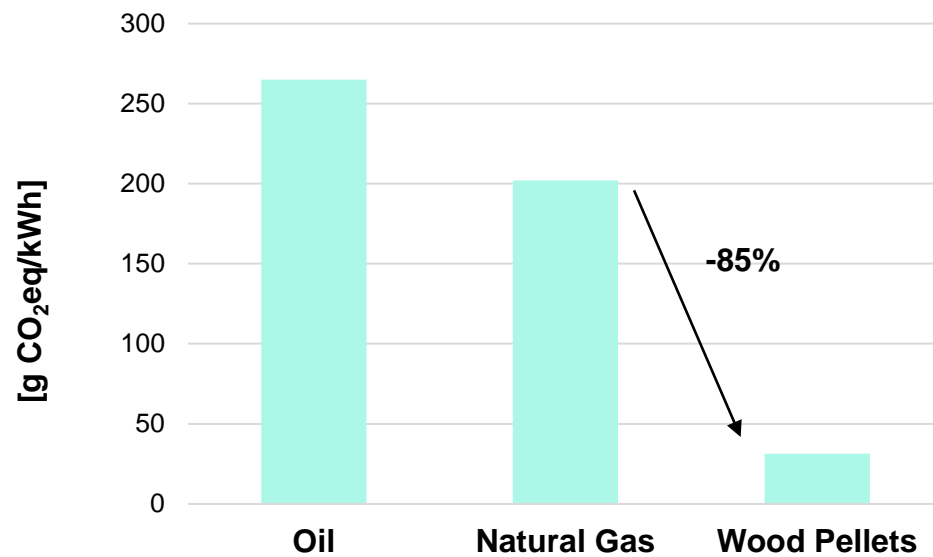


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## 2. Sustainability

Using wood pellets is a fossil free, renewable and long term sustainable solution for heat and steam production in all industry

**CO<sub>2</sub> reductions by converting to wood pellets**



Source: Directive (EU) 2018/2001; the Greenhouse gas protocol



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### 3. Secure & local supply

- Global pellet production 55 million tonnes per year
- German and French pellet production about 3 million tonnes per year each and increasing
- Huge additional sustainable biomass volumes available!  
Pellet industry is similar to food industry – New pellet production goes hand in hand with increased consumption.
- Wood pellets is a sustainable solution for long term contracts

Wood pellets:  
**The ideal ingredient**

for decarbonizing all steam  
generation in the food industry

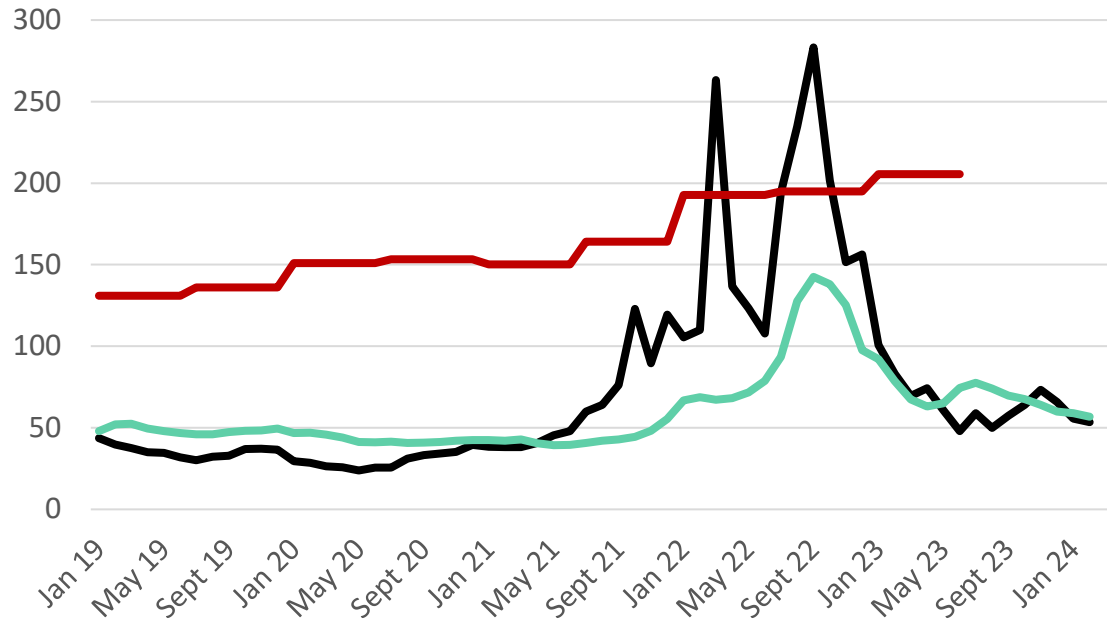


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# 4. Cost efficiency & competitiveness

Energy Price Comparison Germany (€/MWh)



## Electricity

Avg price non-household 2 – 20 GWh/year.  
Source: Destatis

## Natural gas

TTF NG 1 month future + network costs & taxes  
Sources: Destatis, EEX & Bundesregierung

## Wood pellets

Pellet price index, 26 ton bulk  
Source: DEPV

## Wood pellets: The ideal ingredient

for decarbonizing all steam generation in the food industry



# Pellets - THE green solution that fulfils all essential criteria



Possible technology / fuel	Financial	Local and secure supply	Sustainability	Technical performance
Natural gas	✓	?	✗	✓
Wood chips	✓	✓	✓	✗
Biogas	?	?	✓	✓
Bio oil	?	?	✓	✓
Hydrogen	✗	✗	?	✗
Heat Pump	?	?	?	✗
Electrical boiler	?	?	?	?
<b>Wood pellets</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>





**Whiskey distillery**  
**High Coast**  
**870 KW steam**  
**production from**  
**wood pellets**  
**since 2021**



**Potato processing**  
**Vätternpotatis**  
**3 MW steam**  
**production from**  
**wood pellets**  
**since 2020**



**Brewery**  
**Krönleins 4MW**  
**steam production**  
**from wood**  
**powder since**  
**2023**



**Dairy products**  
**Falköping Mejeri**  
**4 MW steam**  
**production from**  
**wood pellets**  
**since 2020**



**Poultry products**  
**Guldfågeln**  
**3 MW steam**  
**production from**  
**wood pellets**  
**since 2023**



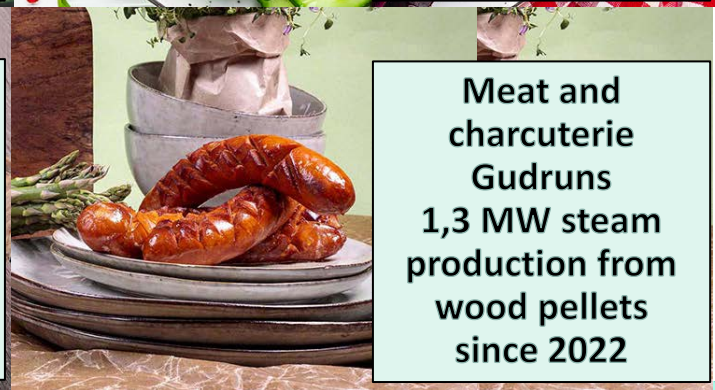
**Poultry products**  
**Lantfågeln**  
**870 KW steam**  
**production from**  
**wood pellets**  
**since 2022**



**Crisps/snacks**  
**Svenska Lantchips**  
**3 MW steam**  
**production from**  
**wood pellets**  
**since 2018**



**Meat and**  
**charcuterie**  
**Skövde Slakteri**  
**1,3 MW steam**  
**production from**  
**wood pellets**  
**since 2022**



**Meat and**  
**charcuterie**  
**Gudruns**  
**1,3 MW steam**  
**production from**  
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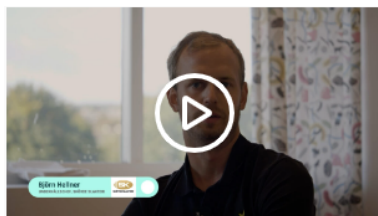


# Green steam – said by our customers



## Krönleins Bryggeri

For six generations, the Krönlein family has been running a brewery in Halmstad, Sweden. Join Carl Krönlein, managing director, as he talks about the industry's sustainability requirements, the pursuit of fossil-free beverage production, and an energy market "gone crazy."



## Skövde Slakteri

Having been in business for more than 40 years, Skövde Slakteri was ready to start their journey towards fossil-free production. Björn Hellner, Maintenance Manager, comments on the collaboration with BKtech.



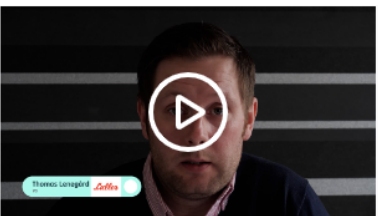
## Nya Lantfågel på Österlen

Andreas Norman, Purchasing Manager, and Bill Wigren, PTA Manager, share insights on reducing energy costs, fossil-free production and BKtech's Plug&Play solution located by the sea in beautiful Simrishamn.



## Wermlands Mejeri

The dairy business is living up to its motto 'Moo or never'. Listen to Yngve Gustafsson talk about sustainable dairy production and how a bioenergy plant is probably the best investment his company has ever made.



## "Lulles" - Ludvig Sörensen

"Lulles," long-established cured meat producer, stands for quality and craftsmanship. Fossil-free production and green investments are top of the agenda. Tomas Lenegård, CEO, tells us about one of the company's safest investments ever.



## Falköpings Mejeri

Falköping Mejeri is outspokenly committed to caring for society, nature, and future generations. CEO Anders Segerström explains how they have managed to reduce their emissions by 2880 tons of CO<sub>2</sub> per year.

BKtech play  
On-demand

Watch now



# BKtech experiences

BKtech is today a leading solution provider in Sweden, the pioneer market for industrial biomass

## BKtech has:

- A leading position in bioenergy centers for 1 to 15 MW in Sweden
- +15 years of experience using solid biomass for industrial applications
- +45 bioenergy centers delivered
- +5 years of application R&D

*BKtech presence in Sweden*

*BKtech presence in Europe*



# Product range from 1-15 MW (1,5 – 22,5 t steam/h)

For steam, hot water & thermal hot oil

**BioOne**



Pellets, 0,87 – 3 MW

**BioDuo**



Pellets, 3 – 4 MW

**BioTwin**



Pellets, 3 – 6 MW

**BioMulti**



Multifuel, 5 – 9 MW

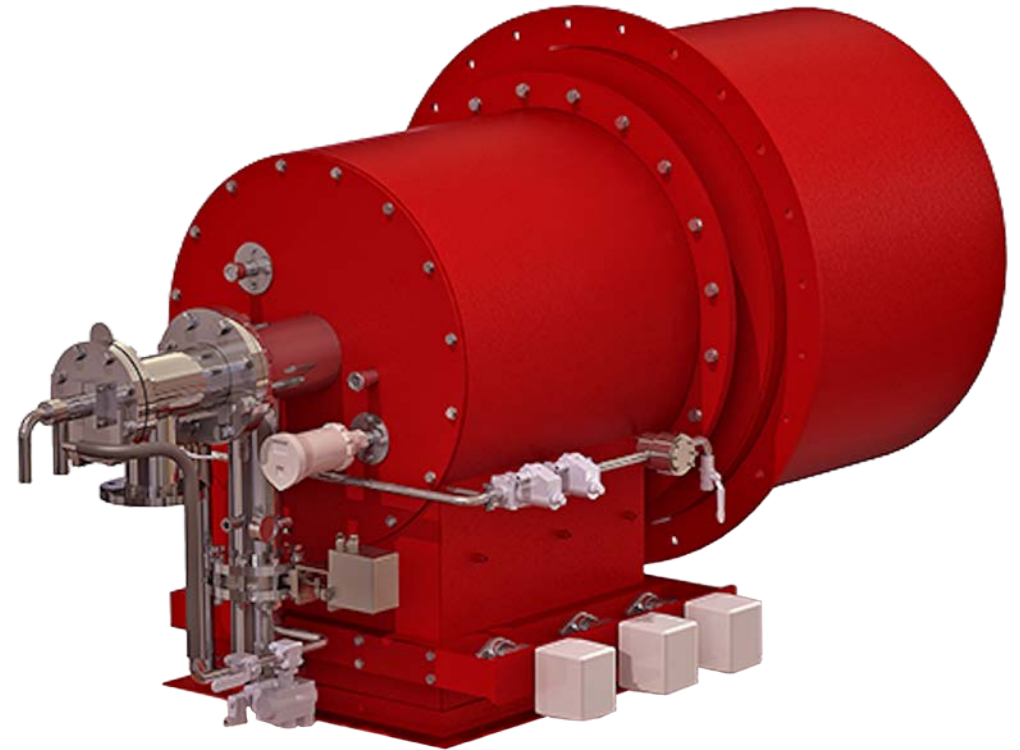
**BioMax**



Multifuel, 10 – 15 MW

# WTS AB – Powder Burners (Multifuel)

- Part of BK Tech Group
- Manufacturer of multifuel burners
  - › Operate on solid, gaseous and liquid fuels. For example, wood powder, bio-oil, biogas, natural gas, LPG and E01
  - › Wood powder main fuel
  - › 3 – 50 MW (up to 4 x 50 MW)
  - › Can handle up to three fuels simultaneously, giving great flexibility
- Delivery include dosage, control system, oil table, and powder silo



# The uniqueness of the BKtech customer offering

The BKtech Energy Centers are productified, prefabricated and flexible



## “Productified” in the range 1 to 15 MW

Minimize time-to-quote, overall lead time and total costs. Comes with an option list and there is room for customer adjustments.

## Prefabricated, modular and mobile

Enable easy integration and minimize time for assembly and integration at the customer site.

## Multifuel burner solution

Include for example wood powder, biogas and natural gas. Can rapidly change load and gives a fuel flexibility.

## Turn-key solution

Includes operation, maintenance & repair, and fuel supply. Make the energy transition easy and hassle-free for the customer.

**Thank you for your  
attention!**

**Come talk with us in  
booth D018, hall 5.2**



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