Converting oathulls into energy

SINCE 1912

vyncke.com

CLEAN ENERGY TECHNOLOGY

VYNCKE

MARKETS

AGRI

SEEDS

COCOA

COFFEE

PALM OIL

GREENHOUSES

EDIBLE NUTS

SUNFLOWER OIL

SOY

RICE

MALT

PEER INDUSTRIES

BAYER – NAGYIGMÁND

NAGYIGMÁND, HUNGARY

Commissioned	August 2013
Fuel	corn cobs
Plant efficiency	> 88 %
Hot water temperature	85 °C
Dust emissions	< 150 mg/Nm³

MW 12 → MW 11

CARGILL – TEMA

TEMA, GHANA

Commissioned	November 2015
Fuel	cocoa shells
Plant efficiency	> 87 %
Steam pressure	10 barg
Steam temperature	184 °C

MW 8 → TPH 10

RISO SCOTTI

PAVIA, ITALY

Commissioned	October 2018
Fuel	rice husks
Plant efficiency	> 88 %
Steam pressure	11 barg
CO emissions	< 150 mg/Nm³

MW 11 → TPH 15

NESTLÉ – TUTBURY

TUTBURY, UNITED KINGDOM

Commissioned	April 2019
Fuel	dry spent coffee grounds
Plant efficiency	> 89 %
Steam pressure	21.5 barg
Steam temperature	219 °C

MW 5.2 → TPH 7

MALTERÍA ORIENTAL

MONTEVIDEO, URUGUAY

Commissioned	June 2022
Fuel	wood chips and malt dust
Plant efficiency	> 88 %
Hot water temperature	160 °C
Dust emissions	< 250 mg/Nm³

MW 24 → MW 20

BUNGE – NIKOLAYEV

NIKOLAYEV, UKRAINE

Commissioned	March 2016
Fuel	sunflower hulls
Plant efficiency	> 85 %
Steam pressure	16 barg
Dust emissions	< 50 mg/Nm³

MW 27 → TPH 35

BÜHLER - UZWIL

UZWIL, SWITZERLAND

Commissioned	April 2023
Fuel	wheat bran, agri residues
Hot water pressure	5.5 barg
Hot water temperature	140 °C

MW 1.2 → MW 1

MASELIS
ANNO 1829

ROESELARE | BELGIUM

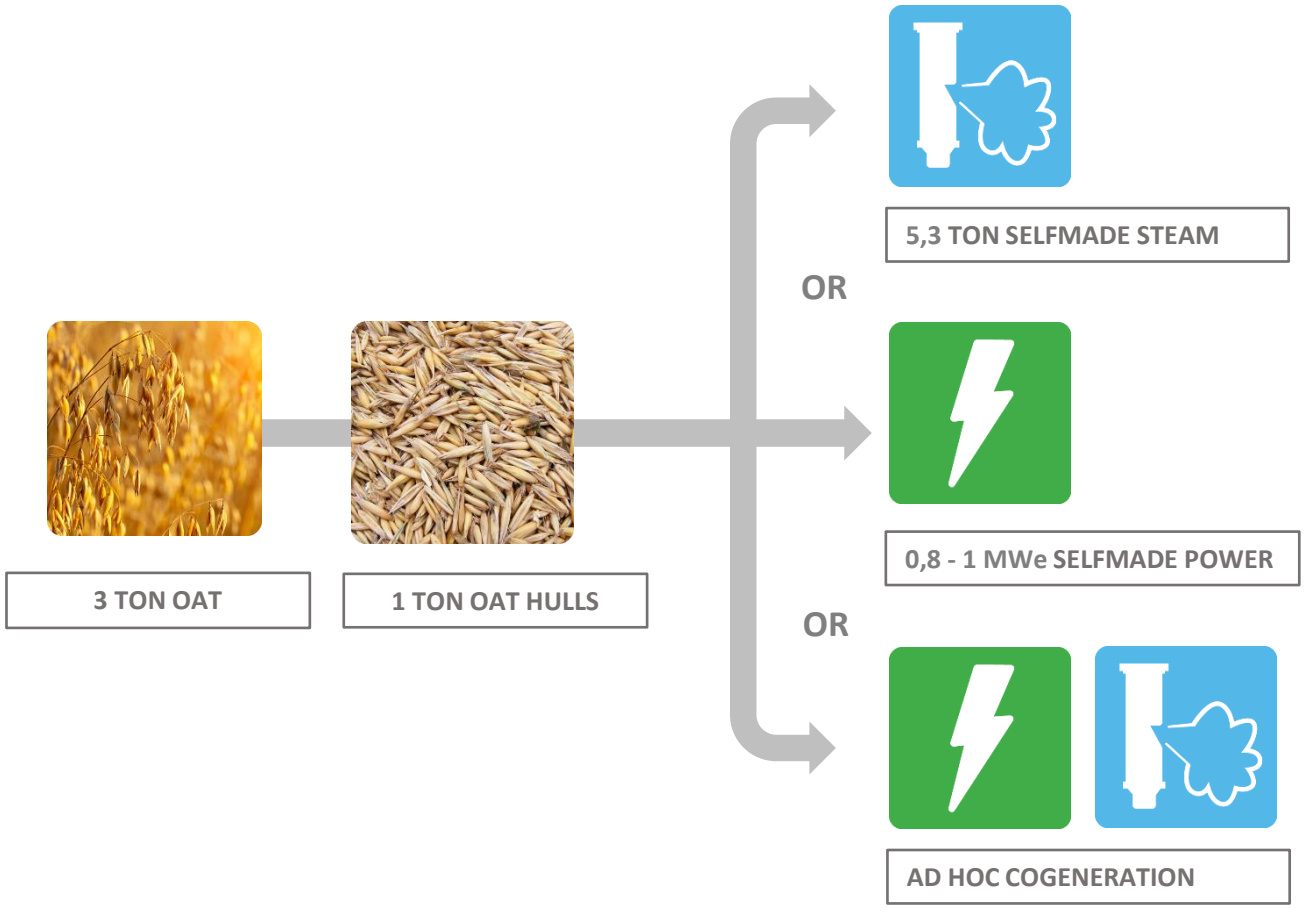
MASELIS

ROESELARE, BELGIUM

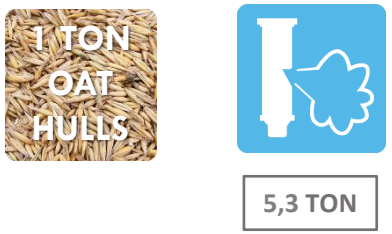
Commissioned	June 2008
Fuel	oat hulls
Plant efficiency	> 84 %
Steam pressure	10 barg
Steam temperature	184 °C

MW 4.7 — TPH 6

OAT MILL – Rules of Thumb

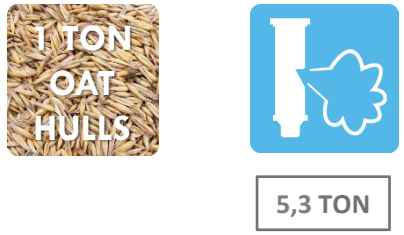


OAT HUSK – CO_2 SAVINGS



Ton CO_2 saving per ton oat hulls

Coal	Fuel Oil	Gasoline	LPG	Natural Gas
1,2	1,0	1,0	0,8	0,8



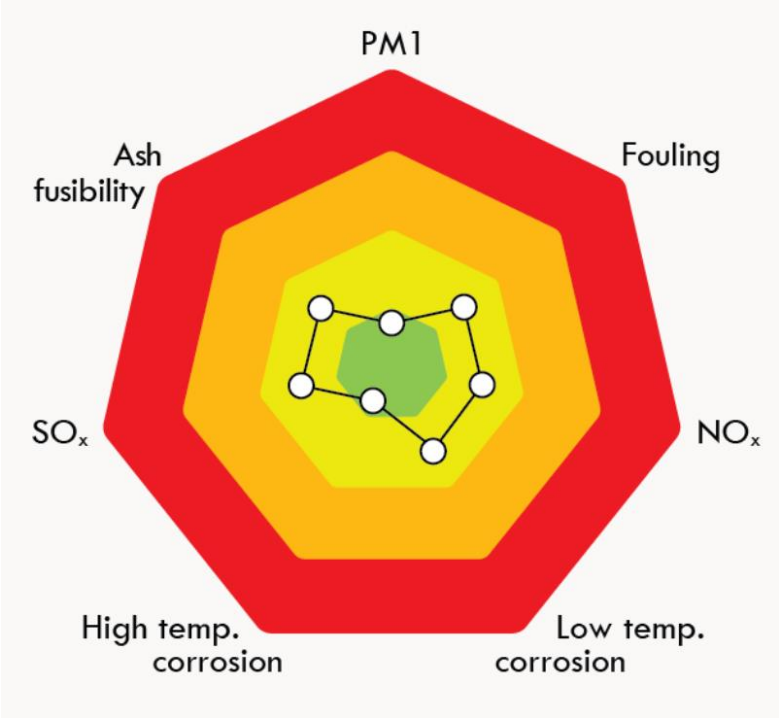
Fuel equivalent per ton oat hulls

Coal (kg)	Fuel Oil (L)	Gasoline (L)	LPG (m^3)	Natural Gas (m^3)
540	350	390	550	340

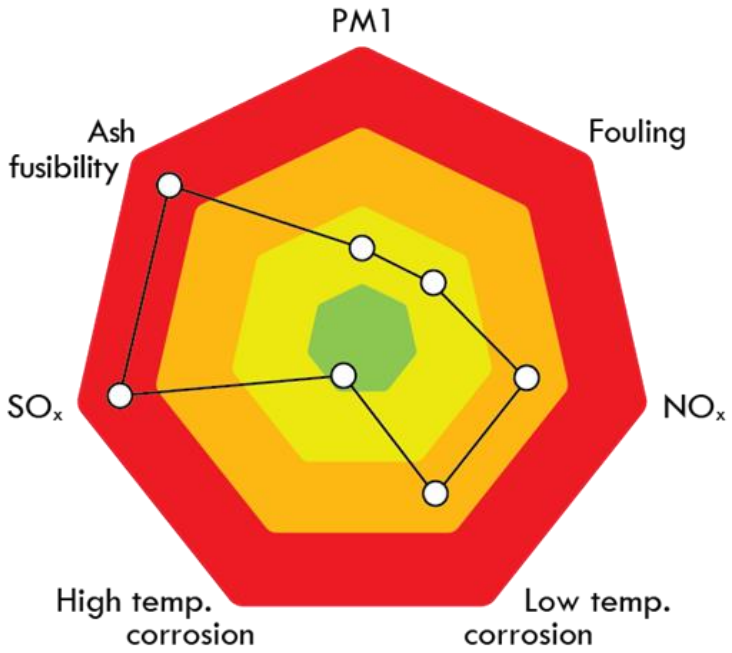
OAT HULLS ≠ OAT HULLS

	English	Scottish	Swedish	Finnish
Gross Calorific Value kJ/kg	16893	17381	16748	16856
Net Calorific Value kJ/kg	15568	16007	15432	15521
Ash %	3.7	3.8	4.3	4.3
Volatile Matter %	70.1	72.3	69.6	70.5
Fixed Carbon %	15.1	12.8	15.1	14.1
Total Moisture %	11.1	11.1	11.0	11.1
Sulphur %	0.05	0.06	0.06	0.10
Chlorine %	0.07	0.02	0.06	0.04
Carbon %	41.89	42.60	41.32	41.66
Hydrogen %	5.17	5.32	5.32	5.3
Nitrogen %	0.68	0.97	1.36	1.97
Oxygen %	37.4	36.2	36.6	35.6
SiO_2	68.2	59.0	68.4	57.4
Al_2O_3	0.1	0.2	<0.1	<0.1
CaO	3.0	3.5	2.5	2.3
MgO	2.4	5.4	3.0	4.8
Na_2O	1.2	2.0	0.5	0.2
K_2O	6.9	13.4	13.9	15.8
P_2O_5	6.2	15.0	8.0	17.2
SO_3	0.5	0.8	0.1	2.3
Initial Ash formation Temp (°C)	950	980	1010	+1400

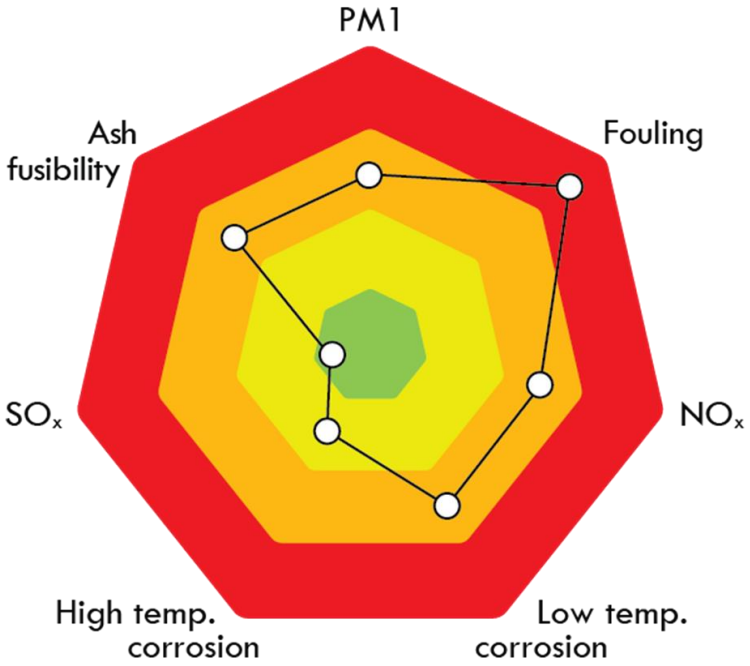
KNOW YOUR FUEL, SUIT THE TECHNOLOGY



Wood Chips – “Simple” Fue

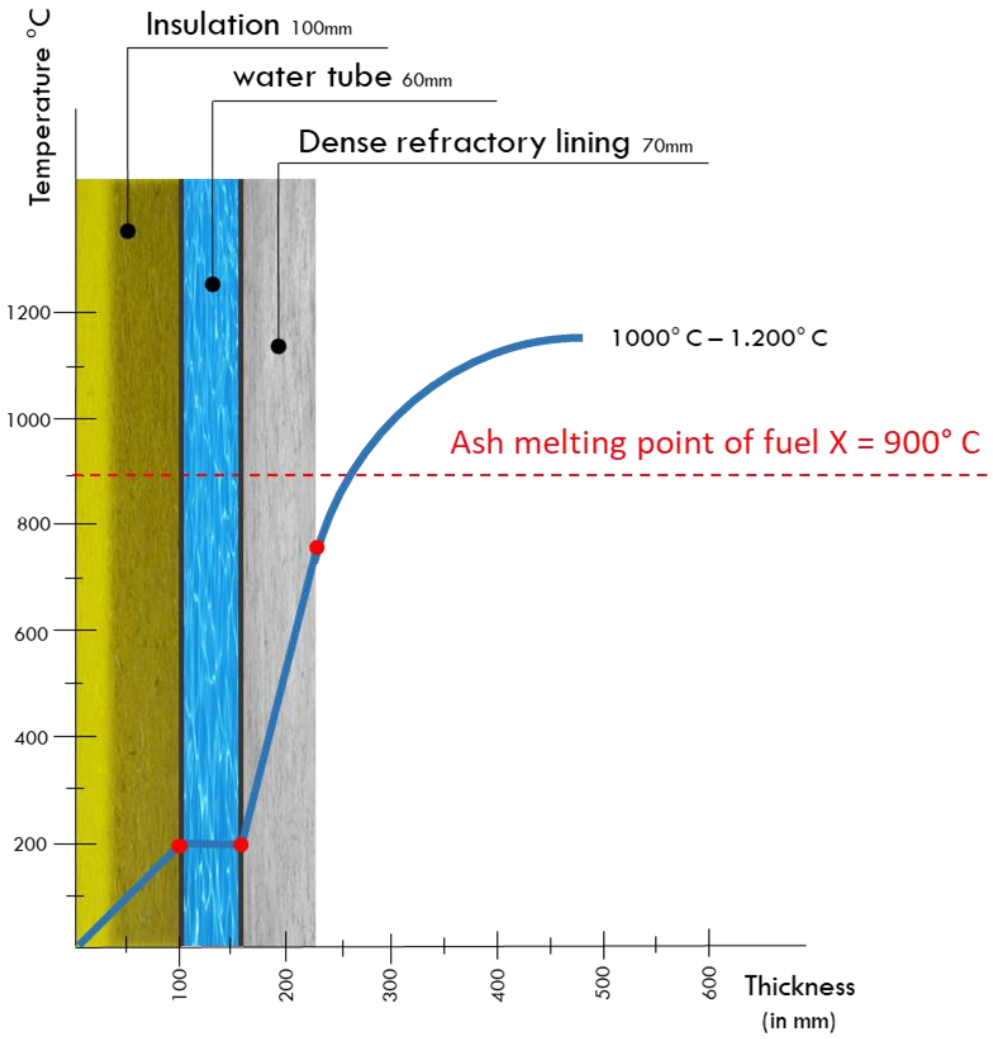


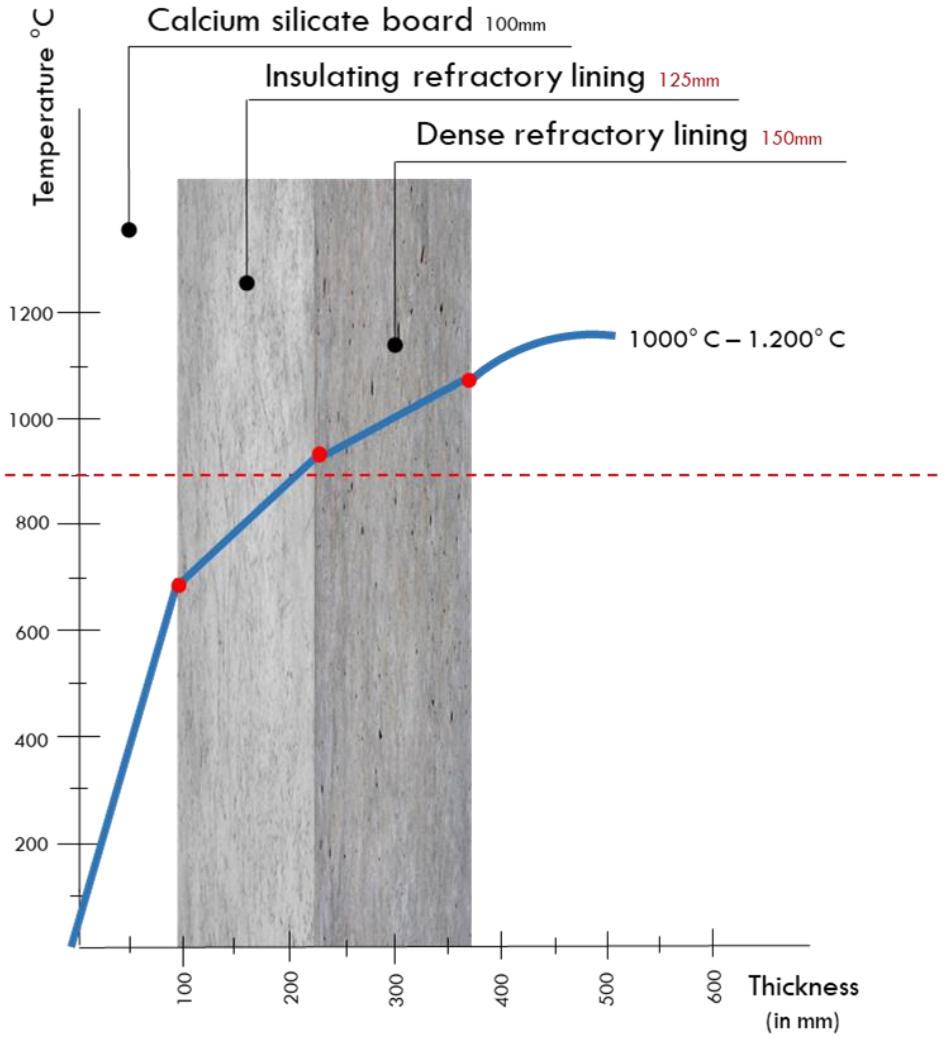
Oat Hulls – “Complex” Fuel



Sunflower hulls – “Complex” Fuel

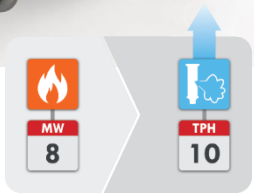
TECHNOLOGY

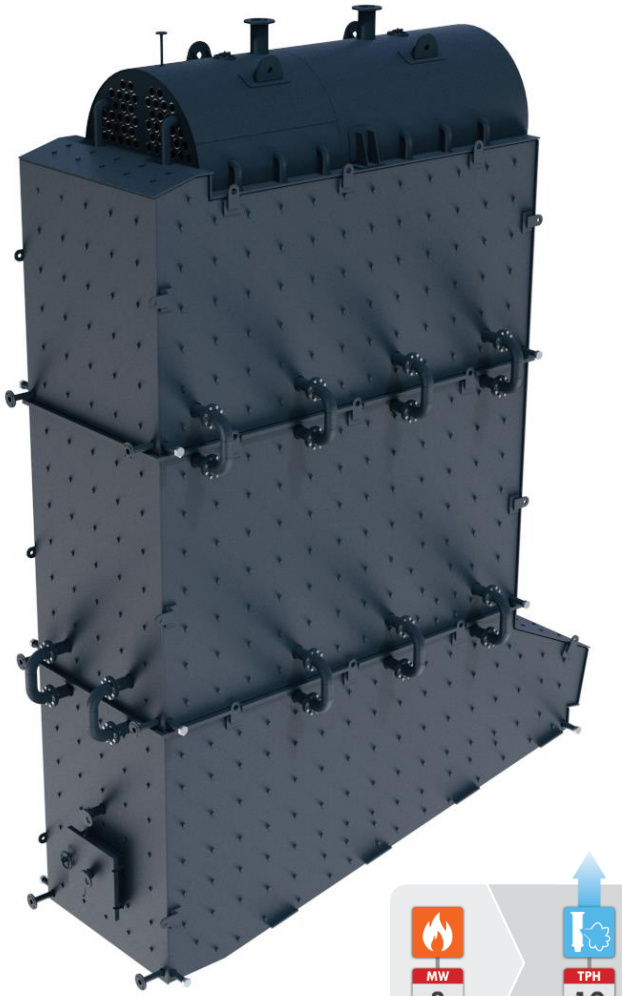

Temperature °C
Insulation 100mm
water tube 60mm
Dense refractory lining 70mm
1000° C – 1.200° C
Ash melting point of fuel X = 900° C
1200
1000
800
600
400
200
100
200
300
400
500
600
Thickness
(in mm)


Temperature °C
Calcium silicate board 100mm
Insulating refractory lining 125mm
Dense refractory lining 150mm
1000° C – 1.200° C
1200
1000
800
600
400
200
100
200
300
400
500
600
Thickness
(in mm)

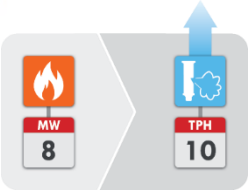
Solutions

Woodchips design

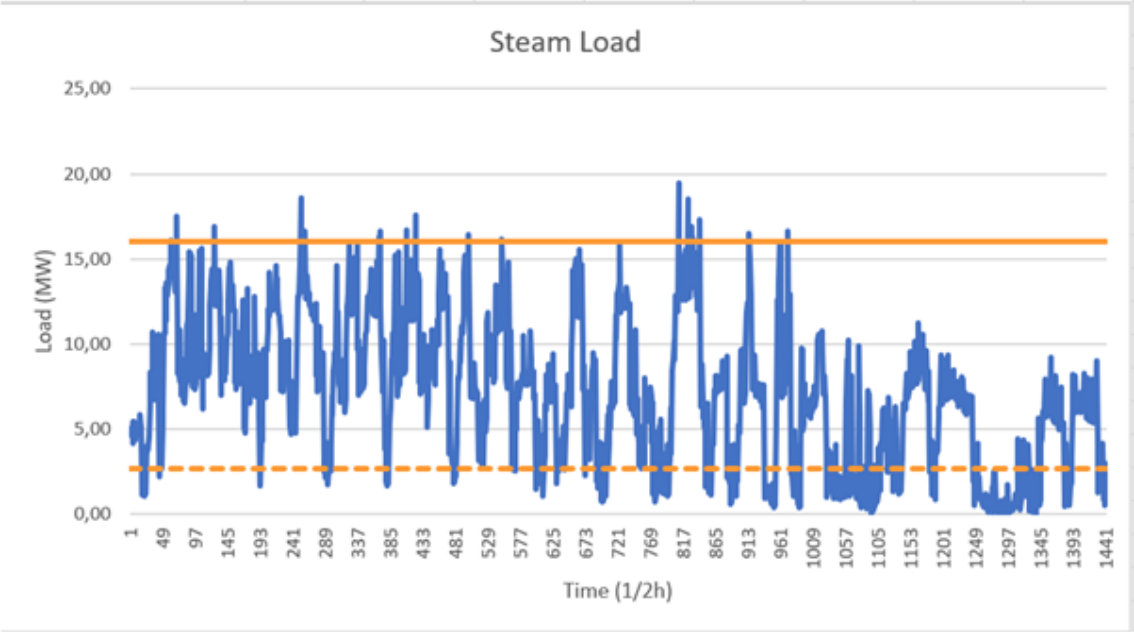




Oat hulls design



Solutions


Steam Load
25,00
20,00
15,00
10,00
5,00
0,00
Load (MW)
1
49
97
145
193
241
289
337
385
433
481
529
577
625
673
721
769
817
865
913
961
1009
1057
1105
1153
1201
1249
1297
1345
1393
1441
Time (1/2h)

FOOD & AGRI | OAT

- IS ALWAYS AVAILABLE :

  Thanks to the smart design of our boilers and fully automated cleaning systems you don't struggle with frequent interventions for repair or long cleaning stops. You have the most reliable energy plant on the market.

- IS FULLY AUTOMATED :

  Our energy runs automatically and unnoticed so you can focus on more important things !

- MAKES YOUR OPERATION SELF-SUFFICIENT :

  Our boiler uses your own oat hulls to generate all the steam you need for your process. No oil or gas bills anymore !

- 100% Oat hulls , no pelletizing needed

BE THE REFERENCE

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