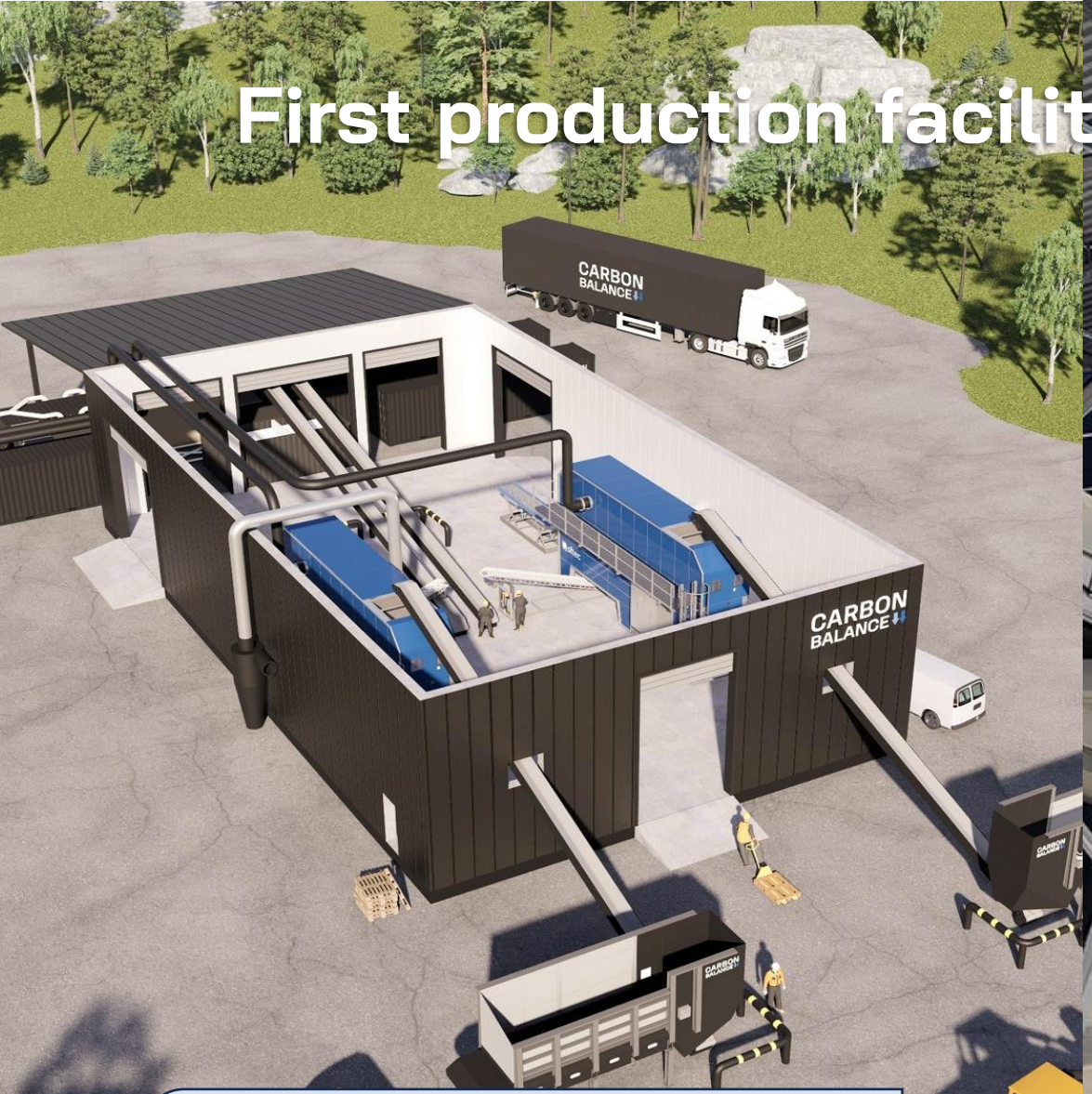
sftec

Technological solutions for circular economy

www.sftec.fi
www.carbonbalance.fi

First production facility in operation at Utajärvi



CARBON BALANCE

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Drying new value

- We come from Oulu, Northern Finland, and our mission is to enable an economically and ecologically sustainable future
- Our main products are technological **unique and patented/patent pending solutions** for
  - Drying
  - Pyrolysis
- Millions of tons of side stream and waste materials are produced each year by the industry – **and to dry we have big advantage**
- SFTec's technologies enable new high value uses for underutilized materials
  - Re-using as a raw-material
  - Developing new circular economy -based products
  - Substituting fossil fuels in energy production
  - Producing carbon negative products - biochar

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Founded 2013

Main product:
ModHeat® drying technology

CARBON BALANCE

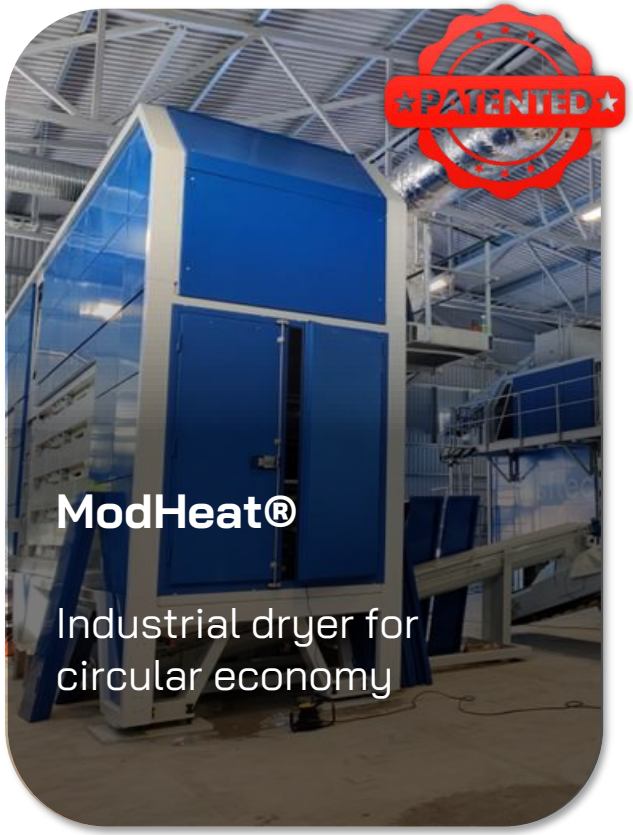
Founded 2021

Subsidiary of SFTec Oy

Main product:
PyroHeat® pyrolysis technology

Product portfolio

Innovative, patented technologies that enable greener industry



ModHeat®

Industrial dryer for circular economy

RecHeat®

Slag heat recovery system

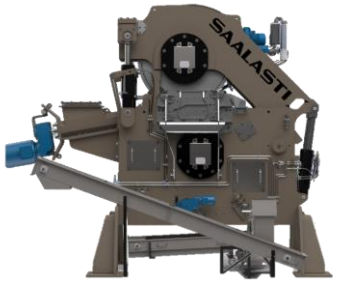
PyroHeat®

Modular biomass pyrolysis plant

Our solution

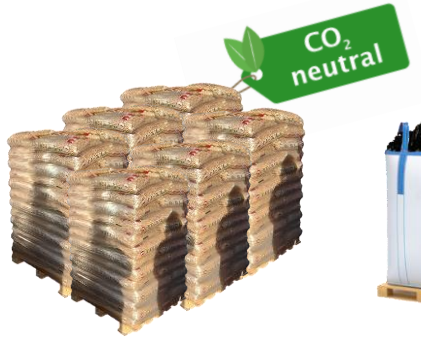
Highly competitive technology concepts for cost-efficient biomass and industrial sidestream valorization – **up to 60 % lower comparable operational costs**

Biomass or industrial side-stream materials



Mechanical processing

Thermal drying **utilizing efficiently waste heat**



High-value sustainable bio products

Improved energy content

Raw material for internal processes

Landfill avoidance and cost reduction

Waste heat sources

Unique competitive advantage

Challenges related to biomass

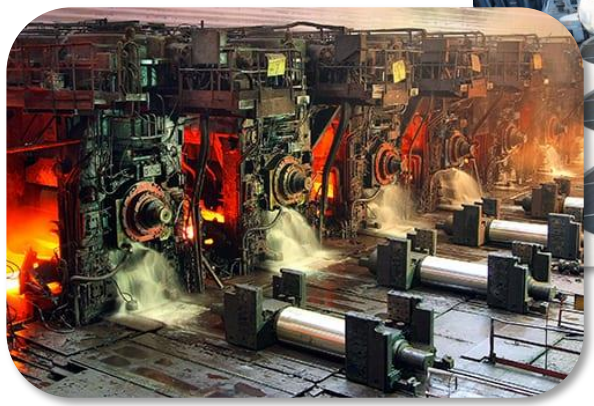
Operational challenges *by European Biomass Industry Association*

- **Feedstock unavailability:** Inefficient resource management and the government non-intervention approach are the key factor hindering the expansion of the biomass industry.
- **Regional and seasonal availability of biomass and storage problem:** The seasonal variation results in the fuel price. As the energy density of biomass is low, acquisition of land for harvesting and storage is difficult.
- **Pressure on transport section:** Because of biomass moisture, transporting wet biomass from the plantation to the production site becomes energetically unfavorable and costly with increasing distance.
- **Inefficiency of conversion facility, core technology and equipment shortage:** Technical barriers were resulted from the lack of standards on bioenergy systems and equipment, especially where the energy sources are so diverse. Appropriate pretreatment required to prevent biodegradation and loss of heating value, not only increases the production cost but also in equipment's investment.
- **Immature industry chain:** It is virtually impossible to get long term contracts for consistent feedstock supply in reasonable price. The low ability to gain profits is also a reason that many upstream firms lack driving forces in the technology reform.

https://www.eubia.org/cms/wiki-biomass/biomass-resources/challenges-related-to-biomass/

Waste heat potential

- The sum of waste heat potential in EU is 304,13 TWh
  - 16,7 % of the industrial consumption of process heat
  - 9,5 % of the total industrial energy consumption
    - Papaptrou et al. (2018)
  - Legislation making use mandatory (first user cases related legislation starting 2023)

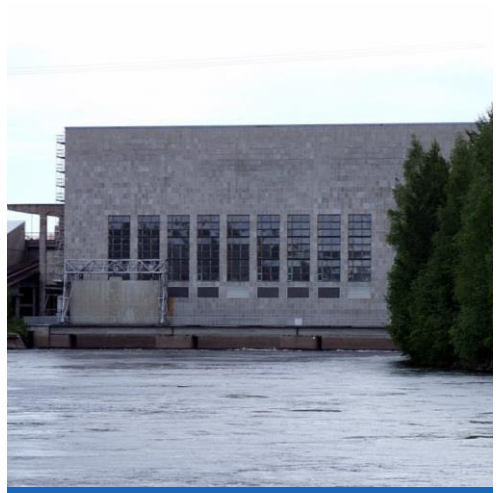


Untapped sources of energy

+ under used material sources = winning concept

Data centers

All electricity power converts to waste heat. Currently unused. Legislation making reuse mandatory.



Hydro power

Wasted thermal energy available from cooling systems and generators. ~1 % of output converts to waste heat.

Molten slag

Largest unused heat potential in the steel industry. RecHeat can capture 20-35 % heat to be used for drying.

Flu gas

Up to 20% of industrial heat is lost via flue gases and exhaust air leaving the stack or chimney.

Landfill gas

Varying methane concentration limits the potential use cases for LFG. Can be utilized for drying of materials.

Use-cases of Biochar

- Materials
- Soil
- Livestock
- Hight-tech
- Biogas
- Industry
- Food
- Construction
- Cosmetics
- Medicine
- Purification/ Filtration

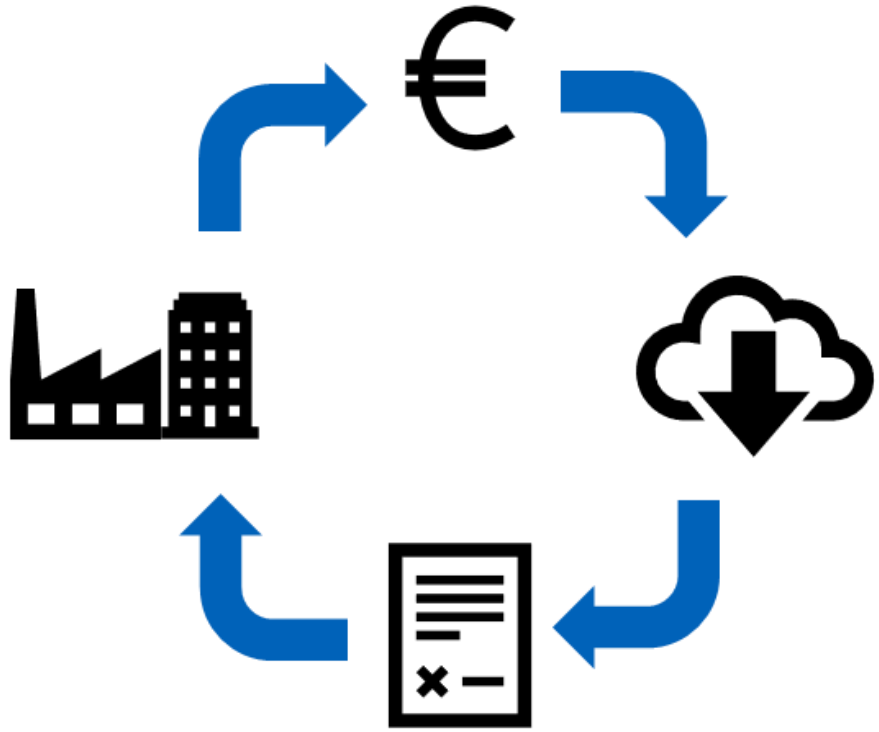
EBI European Biochar Industry

Balancing the carbon cycle

- The amount of carbon on Earth is constant. However, the amount of CO2 in the atmosphere has been increasing since the industrialisation
- Biochar is carbon, that is produced from ecologically sustainable raw materials
- There are numerous applications for biochar for various industrial sectors
- Raw material characteristics and processing parameters determine the quality and application of biochar products

The climate impact of pyrolysis

- The plant's target yield is 3 000 tons of biochar per year
  - One ton of biochar corresponds to about 2,6 t of CO2e
  - Per annum, this makes 7668 t CO2e reduction
- The price estimates for carbon trading in the coming years up to 70 - 90 € / t CO2e
  - Currently up to 500 € / t CO2e
- If the end product and process meet the requirements of carbon trading, the pyrolysis plant can generate up to 500 k€ - 950 k€ per year based on carbon trading alone
- Carbon Balance's goal is to help our partners meet the conditions of carbon trading



SFTec + Carbon Balance team

- Total 13 persons in the team
- M.Sc. / B.Sc. background
  - Process engineering
  - Energy engineering
  - Machine engineering
  - Industrial engineering
  - Finance
- Mixture of youthful talent and long industrial experience
- Experienced board members and led by experienced and successful serial entrepeneur

Founders

Jani Isokääntä

- CEO of SFTec & Carbon Balance
- M.Sc in process engineering. Experienced industrial director with a background in the foundry industry and managed over +200 person teams in manufacturing

Juha Roininen

- CTO of SFTec & Carbon Balance
- M.Sc in process engineering. Serial entrepreneur and innovator. Experienced in commercializing industrial cleantech innovations. Steel industry expert.

GRK

Biohiili voitti Uusi Puu -kilpailun

GRK investoi voimakkaasti ympäristöliiketoimintaansa ja rakentaa useita biohiililaitoksia vuoteen 2025 mennessä. Yksi tärkeä etappi saavutettiin, kun ensimmäisen laitoksemme tuottama biohiili otettiin käyttöön työmaallamme Helsingissä Itäbaanalla.

MANUFACTURING PERFORMANCE DAYS
Towards Outcome Economy
May 29-31, 2017

Suuri ideakilpailu MPIDEA ratkennut Tampere-talossa: Bioenergian tehokkuutta parantava kuivuri vei voiton Ouluun

30.5.2017 15:07:34 EEST | MPD

Jaa

Korkeatasoinen MPIDEA-kilpailu 100 000 työpaikan luomiseksi Suomeen ratkesi tänään Tampereella. Oulussa kehitetty teollinen kuivuri ModHeat valittiin neljän finalistin joukosta parhaaksi ideaksi kaupallistamismahdollisuuksiensa ja työllistämisnäkökulmansa ansiosta. Palkinnon vastaanotti idean isä Juha Roininen SFTec Oy:stä.

MPIDEA-kilpailun voittaja Juha Roininen pitchaamassa ModHeatia, teollista kuivuria.

KasvuOpen

13.8.2018 08:30:00 EEST | Kasvu Open

Jaa

Kiertotalouden Kasvupolun lupaavimmaksi kasvajaksi on Kasvu Openin sparrausprosessin jälkeen valittu Soilfood Oy Helsingistä. Kunniamaininnan sai yhteensä kolme yritystä: SFTec Oy Oulusta sekä Soil Scout Oy ja Koepala Packaging Oy Helsingistä. Kaikki yritykset etenevät valtakunnalliseen finaaliin 100 parhaan kasvuyrityksen joukkoon. Tästä sadan joukosta valitaan Startup ja Start Again -sarjojen parhaat yritykset valtakunnallisessa finaalissa lokakuussa.

Vasemmalta: Janne Asikainen (Koepala Packaging), Eljas Jokinen (Soilfood), Jalmari Talola (Soil Scout) sekä Janne Anttila (SFTec).

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1,800 followers
5yr •

SFTec on valittu Stora Enson globaaliin kiertotalouden start-up yrityksille suunnattuun Accelerator-ohjelmaan! Vaativan valintaprosessin päätteeksi kiihdyttämöön valittiin kuusi yritystä ympäri maailman. Ohjelman tarkoituksena on tarttua kiertotalouden radikaaleihin mahdollisuuksiin yhteiskehittämisen kautta.

Olemme erittäin innostuneita mahdollisuudesta tehdä uudenlaista yhteistyötä merkittävän globaalin toimijan kanssa. Tästä on hyvä käynnistää vuosi 2019!

See translation

SFTec valittiin mukaan Stora Enson Accelerator-ohjelmaan!

sftec.fi

Juha Roininen

CTO – Sales and solutions

juha.roininen@sftec.fi

+358 40 444 1539