ENTRAS
Energy Transition SaaS platform

Industrya - Pitch

24/03/2023

ENTRAS

Contact information: *Frank.alaerts@entras.be*

Jeroen.Vanfraechem@entras.be

Problem & opportunity

Entras is ready to seize the opportunity

- **The energy transition for energy-intensive industries is painful**
  (very) high energy & CO2 cost, tax & regulation issues, complex solutions, major process changes required, no technology certainty…
- And it is **urgent**
- **Opportunity**: disentangle complexity, offer solutions, optimisation-as-a-service

The TEAM

We can do it

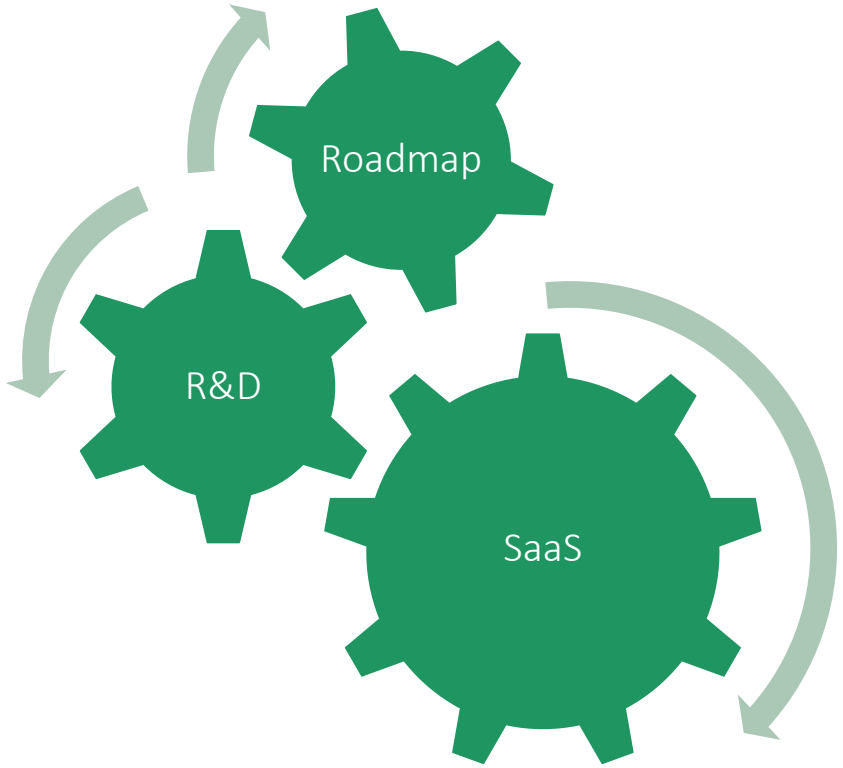
- **Frank** – Founder. Industry & operations
- **Jeroen** – Founder. Energy contracts & economics
- **Filip** – Director. Finance & strategy
- **Twan** – PhD. Applied algorithms
- **Jens** – PhD. Virtual power plants
- **Stijn** – Software & scalability
- **Dimitris** – Cloud software
- **Lieven** – Software-as-a-service
- **Joost** – Consultancy
- **Filip** – Mathematical engineering

Together > 150 years of experience

The SOLUTION

We know how to do it

- **Know where to go**
  - Optimisation of total cost of energy
  - Roadmap – strategy
- **Know how to do it**
  - SaaS - Optimisation as a Service
  - Real-time & on demand



Value proposition

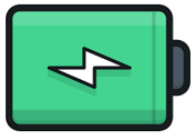
It pays back

- **Real-time steering apps**
  - Direct cost savings, up to 5-15% of total cost of energy
  - Less CO2, more own consumption

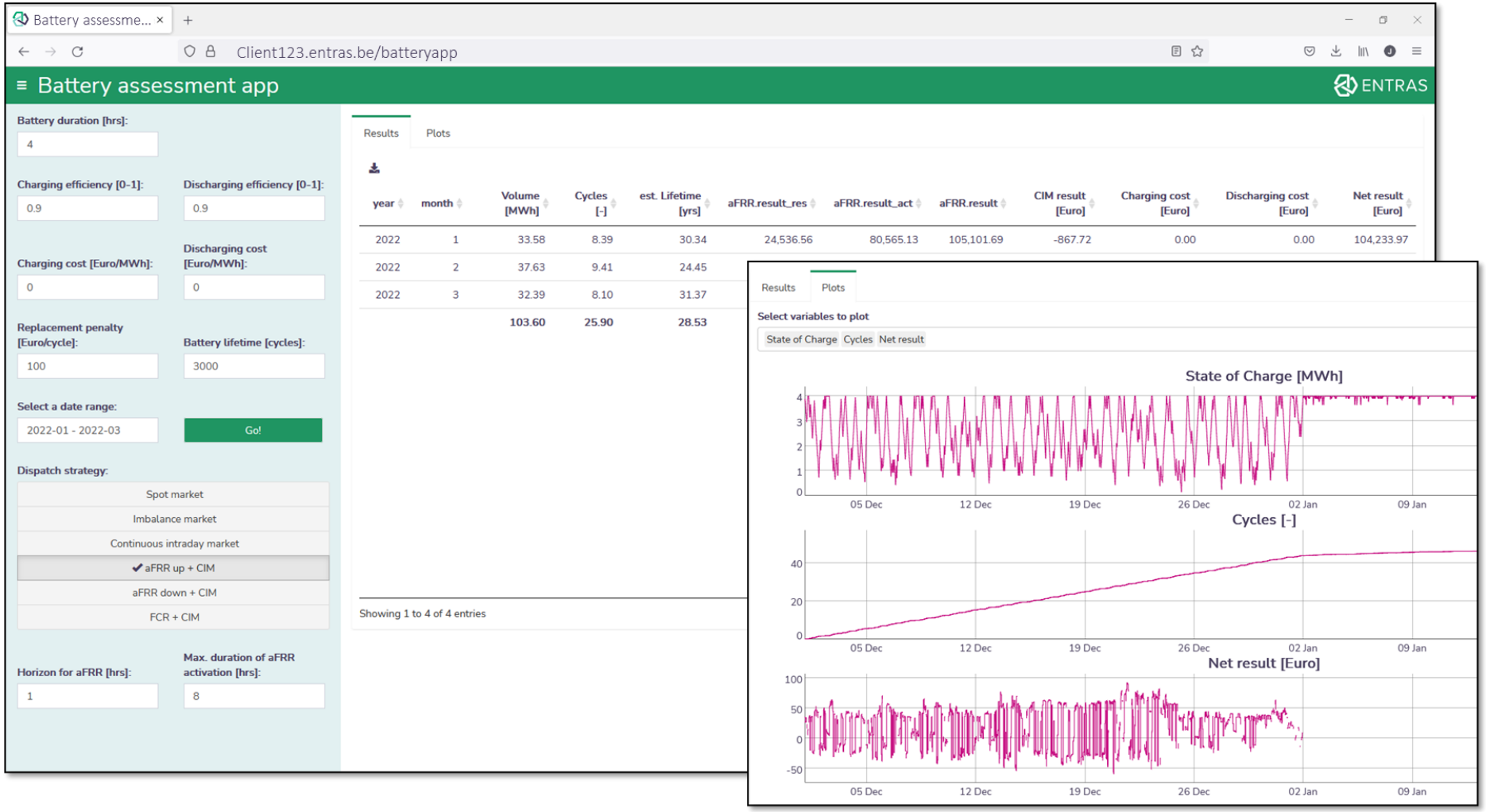
- **Consultancy activity**
  - Idea generator for apps
  - Real-time steering is an evolution, not a one-off product
  - Energy transition roadmaps
  - App-backed, high-end consultancy

Magic – show the tools

Energy storage – electricity & heat



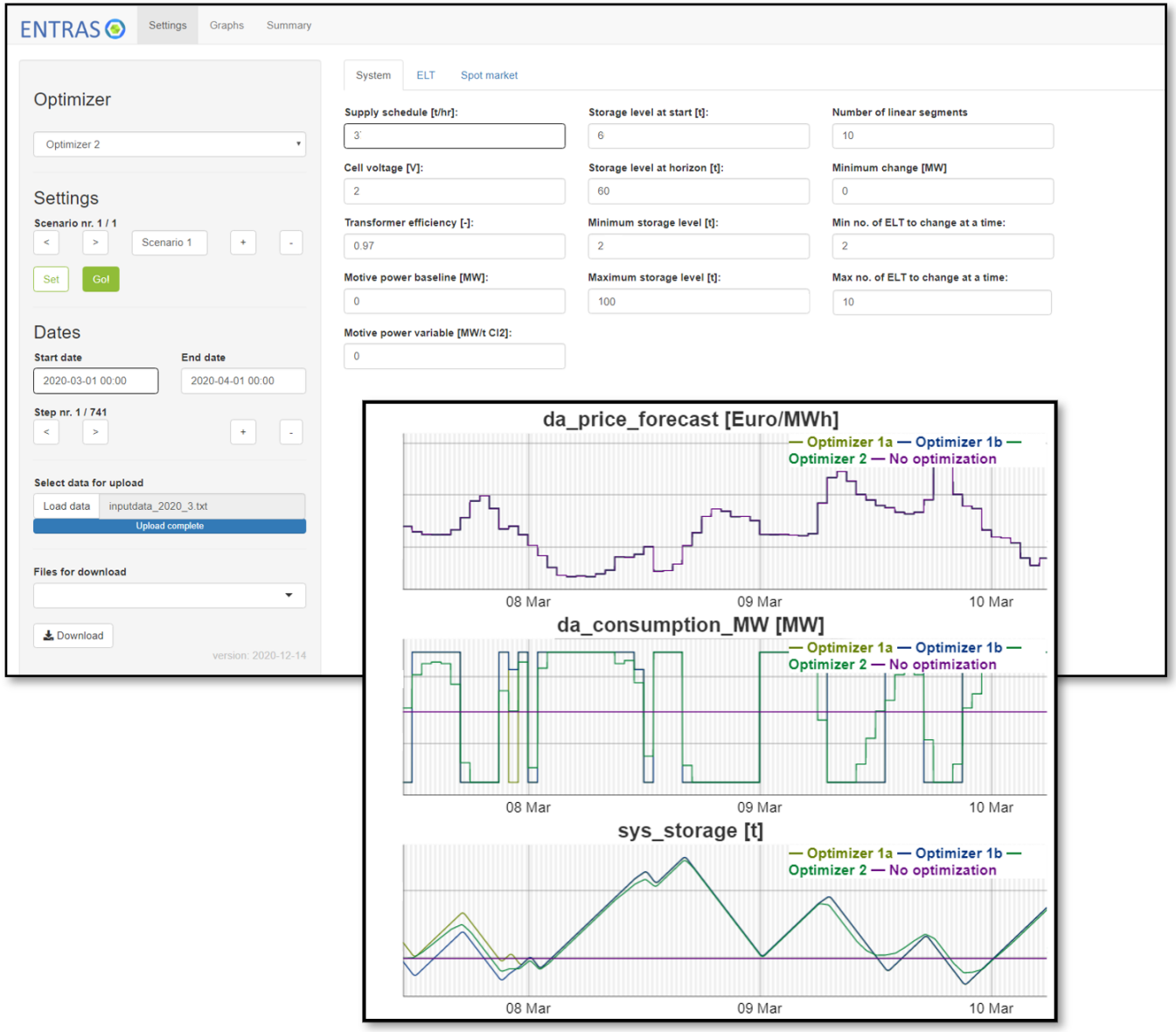
Storage
(battery & heat)



Magic – show the tools

On grid electrolysis

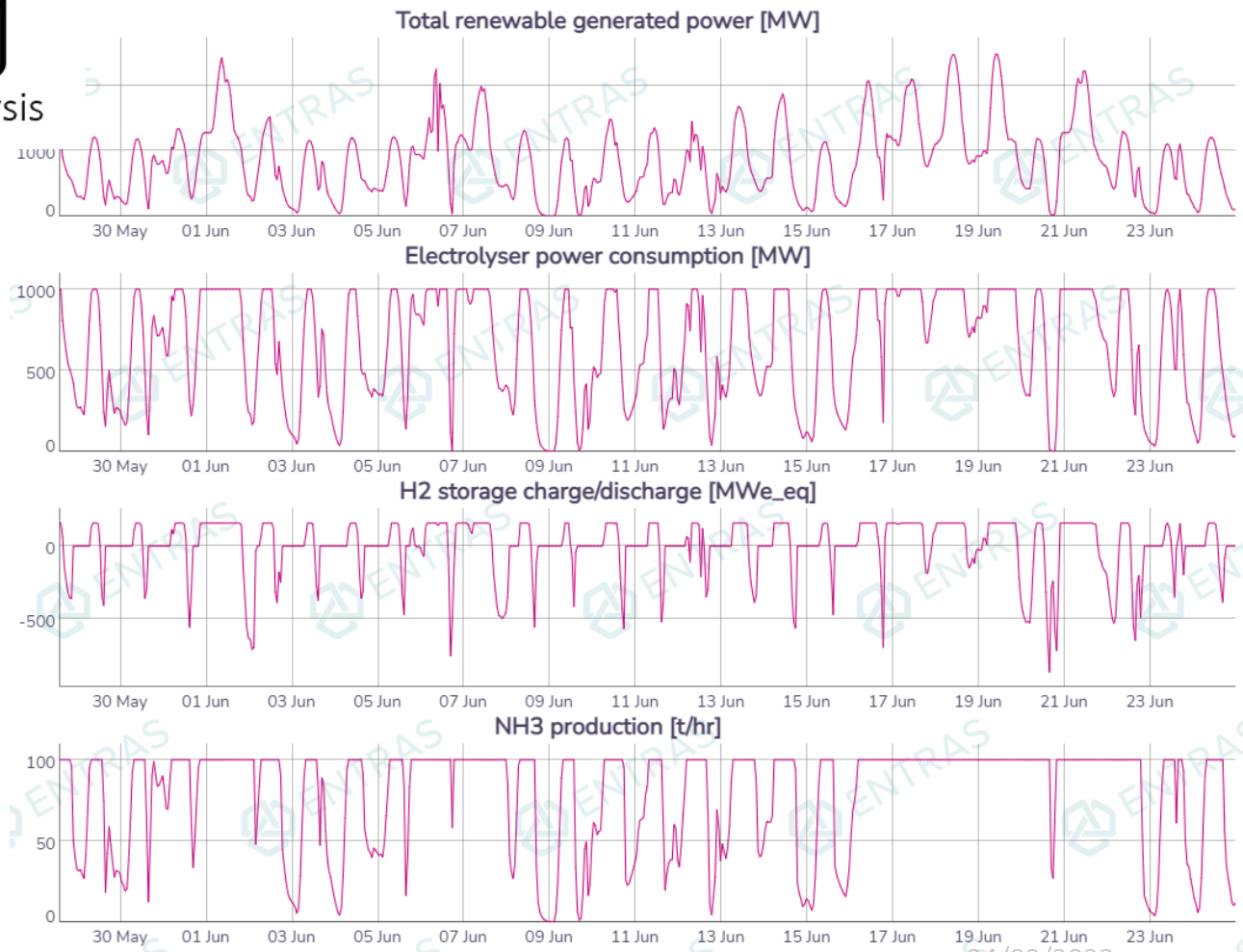
Electrolysis



Magic – show the tools

Off grid electrolysis

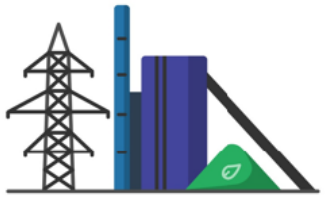
Electrolysis



Variables of Interest	
PV maximum capacity [MW]	670.97
Wind maximum capacity [MW]	528.71
Time span [years]	1.00
H2 production volume [t]	43 172
NH3 production volume [t]	245 297
Specific consumption [kWh/kg NH3]	10.04
Volumes	
Cumulative production of PV [MWh]	1 250 910
Cumulative production of Wind [MWh]	1 603 792
Cumulative consumption of Electrolyser [MWh]	2 080 907
Cumulative consumption of Conversion [MWh]	147 178
Cumulative battery charging/dischanging [MWh]	0.00e+00
Cumulative H2 storage [MWhe_eq]	5.34e-11
Cumulative consumption of Balance of Plant [MWh]	234 102
Cumulative loss by curtailment [MWh]	392 515
Full Load Hours	
Full Load Hours of PV [hr]	1 864
Full Load Hours of Wind [hr]	3 033
Full Load Hours of Electrolyser [hr]	5 202
Full Load Hours of Conversion [hr]	2 453
Variable and fixed costs (cumulative)	
Variable and fixed costs for Battery storage [Keuro]	721.89
Variable and fixed costs for PV [Keuro]	4 541
Variable and fixed costs for WIND [Keuro]	14 578
Variable and fixed costs for H2 storage [Keuro]	2 346
Variable and fixed costs for Electrolyser [Keuro]	21 435
Variable and fixed costs for Conversion [Keuro]	6 016
Variable and fixed costs for Balance of Plant [Keuro]	3 710
Capex	
Capex for battery [kEuro]	48 000
Capex for PV [kEuro]	301 936
Capex for Wind [kEuro]	581 576
Capex for Electrolyser [kEuro]	180 000
Capex for Conversion [kEuro]	300 000
Capex for H2 storage [kEuro]	156 000
Capex for Balance of Plant [kEuro]	148 005
Total Capex [kEuro]	1 715 518
Levelised Cost	
Levelised Cost of Electricity for PV [Euro/MWh]	26.47
Levelised Cost of Electricity for Wind [Euro/MWh]	43.41
Levelised Cost of Electricity [Euro/MWh]	33.64
Levelised Cost of Ammonia [Euro/t]	826.34

Magic – show the tools

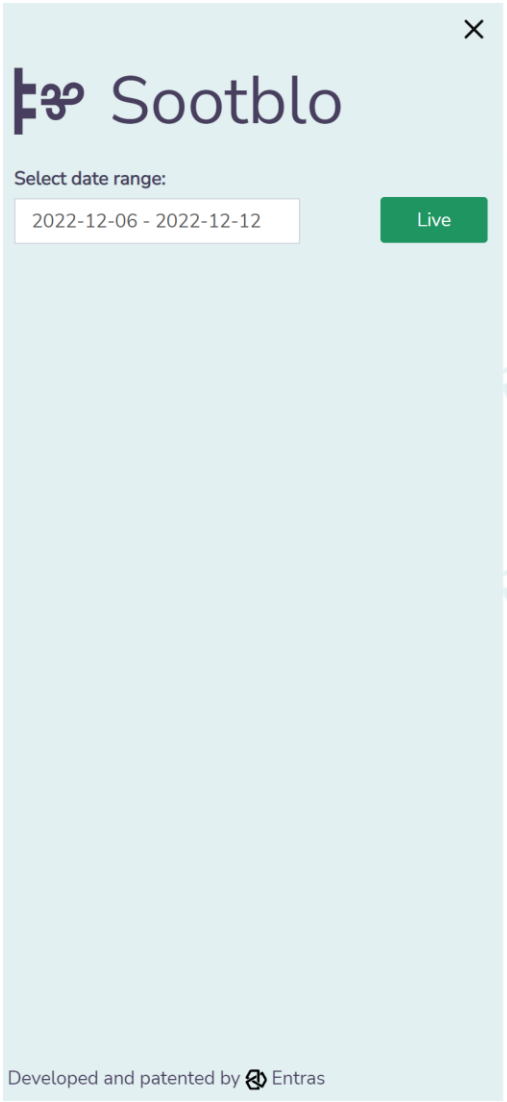
Sootblo – predictive maintenance combined with revenue optimization

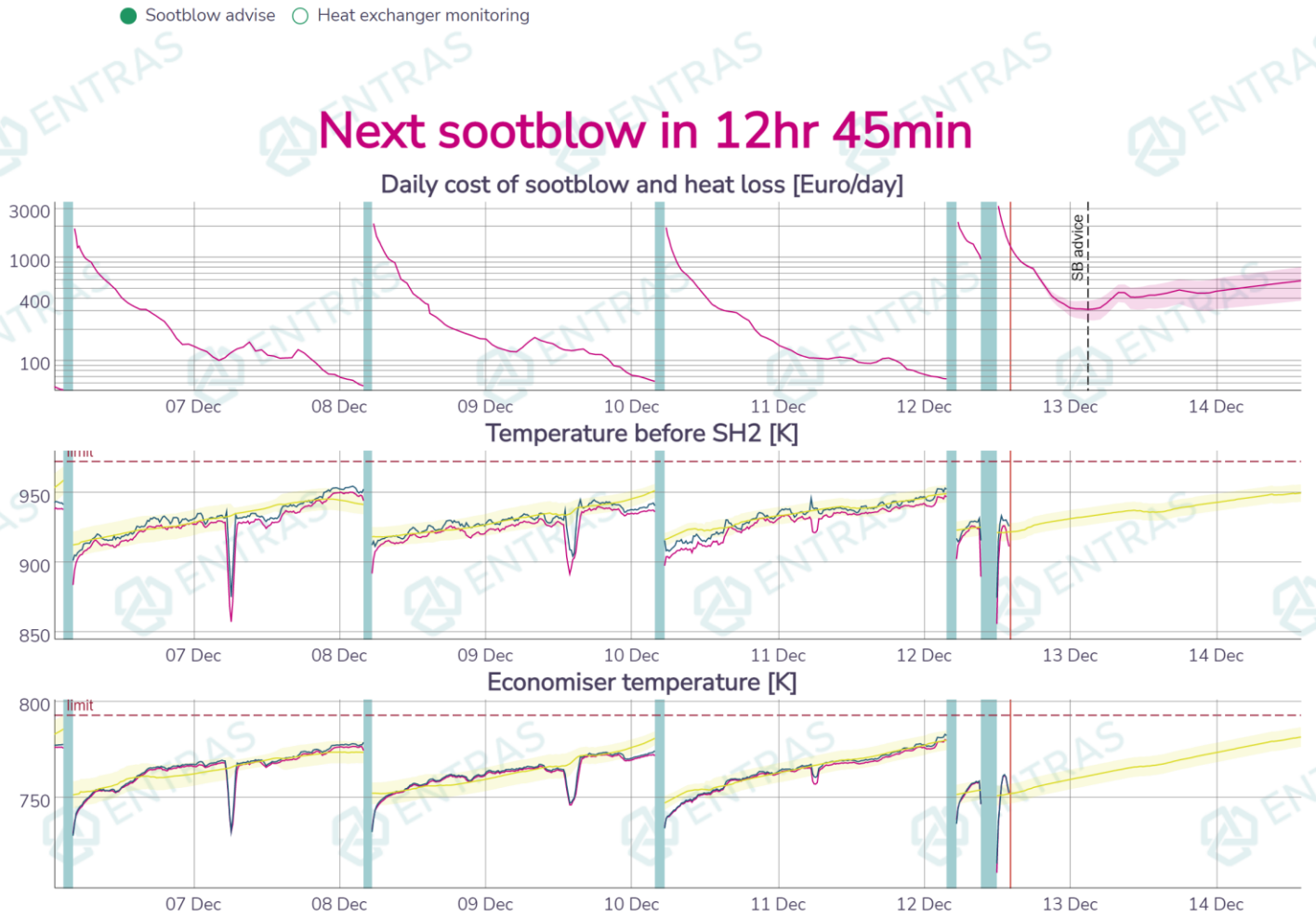


Power Plant
(biomass)

In operation

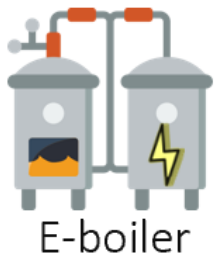
Patent Pending





Magic – show the tools

Flexible dispatching of large electricity consumers / demand side management



Flex assessment app

ENTRAS

Profile
- Consumption
- Production

aFRR
- Upward
- Downward
- None

aFRR
- fullCCTU
- perCCTU

Day ahead
- Optimisation
- No optimisation

Imbalance
- Optimisation
- No optimisation

Date range: 2021-11-01 - 2021-12-01

Strike price: auto

aFRR reservation bid: auto

aFRR activation bid: auto

Optimise unit: month

Strike Price | Trends | Line | Raster | Table

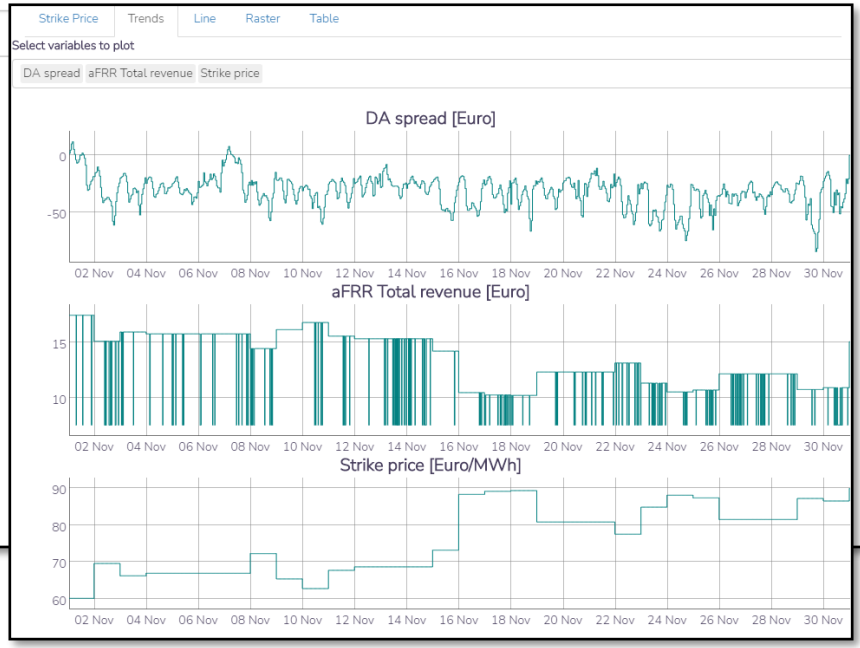
Gas boiler efficiency	E-boiler efficiency	Feedwater enthalpy	Steam enthalpy
0,9	0,95	300	3350

Condensing stage

Gas grid cost	Electricity grid cost	Gas price
24	50	auto

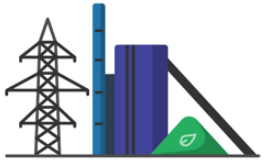
CO2 price	LHV/HHV conversion factor	CO2 conversion factor
71	1,107	

Energy source	Specific consumption
Gas	0.94 MWh_hhv / t steam
Electricity	0.89 MWhe / t steam



Magic – show the tools

Biogee – the optimizer for biogas plants



In operation

BIOGEE
Biométhane du Bois d'Arnelle

Logged on as *Jens Baetens*

Logout

SETTINGS

Realtime

Fromdate

2022/12/01

Todate

2022/12/16

BIOGEE TOOL PROFITS

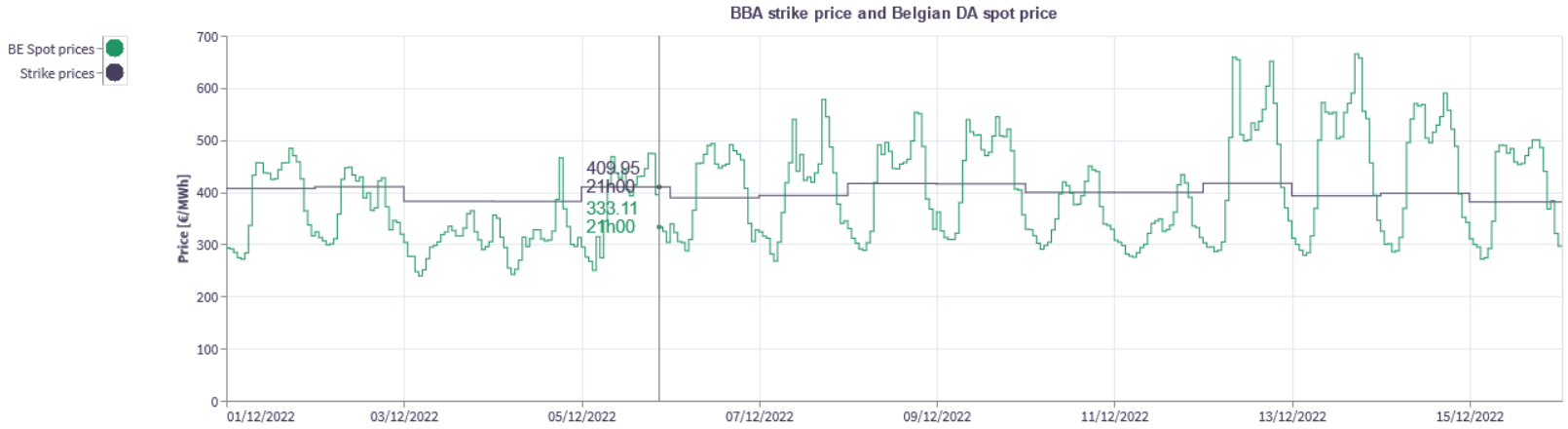
Potential profit: €2717.34

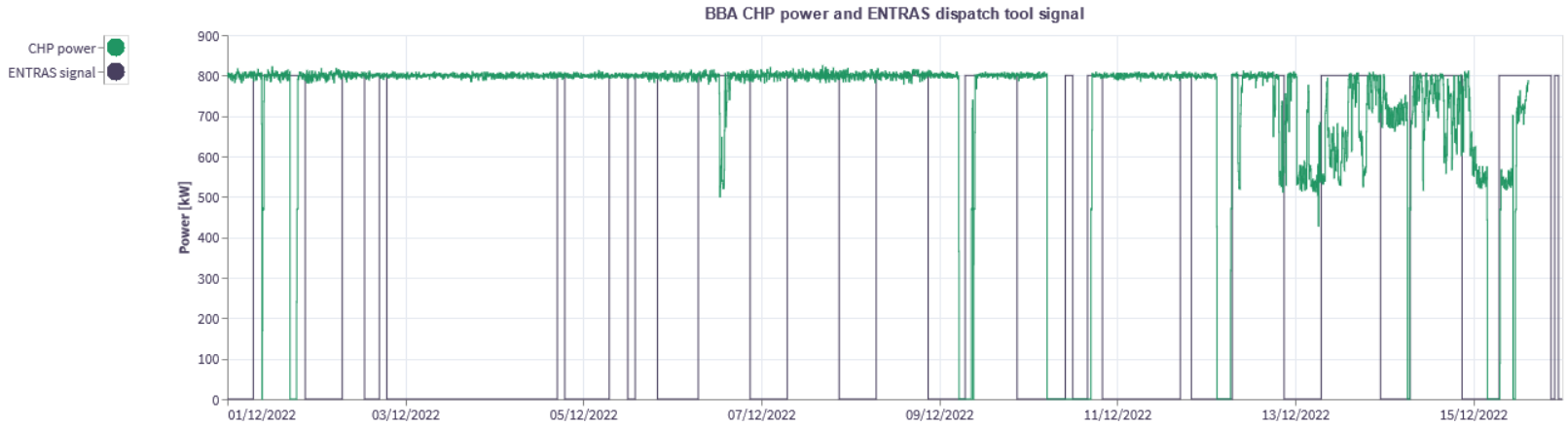
Realised profit: €2048.10

CHP PRODUCTION DATA

Produced electricity: 250.91 MWh

Average power: 715 kW





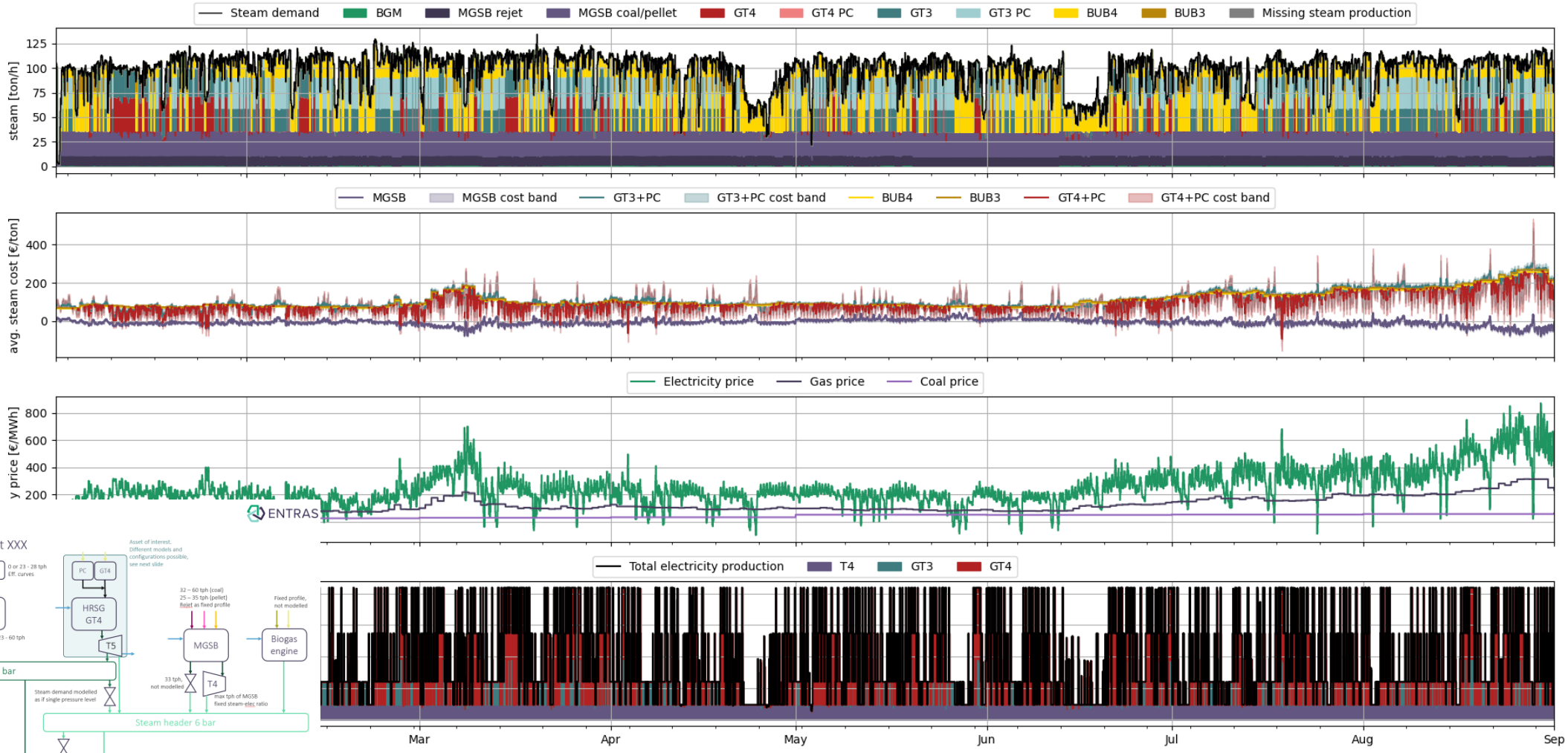
Magic – show the tools

Multi-asset optimized dispatching – demand flex, local production, storage

Power Plant
(CCGT, OCGT, CHP)

?

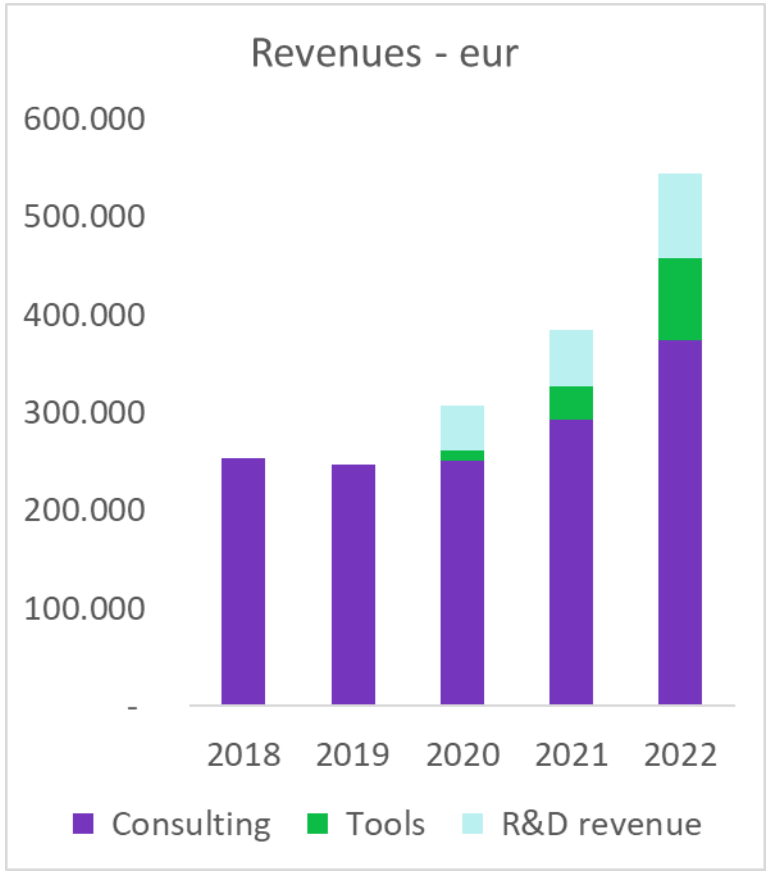
Your Process



Track record Entras

Stepping stones towards SaaS for unlocking flexibility in industrial energy assets

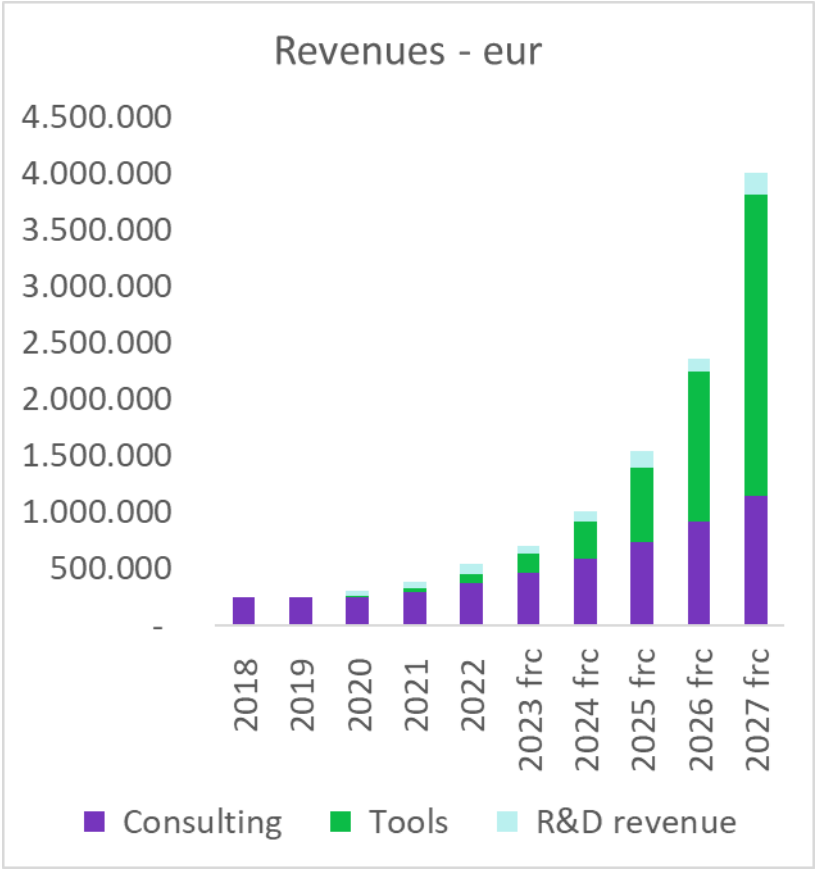
- 2016
  - Entras was founded by Frank & Jeroen
  - Project development for complex industrial assets – CHP, CCGT, Biogas, Biomass, …
  - **Consulting model**
- 2018
  - Investment in **R&D** to develop dispatching algorithms / apps – hiring Twan
  - **"Application backed consulting"** – P2M, CCGT, e-boilers & heat pumps
- 2020
  - Vlaio support for biomass boiler optimization with Canguru
  - Key order for flexible dispatching of +100MW electrolyser with storage in Belgium
  - Hydrogen import coalition – access to emerging scene of hydrogen projects
- 2021
  - Hiring of Jens - second data scientist with process knowledge
  - Development & patent of Sootblo, Pilot Biogee operational, Flex assessment app
- 2022
  - Battery app, HeatFlex app, multi-assets dispatching app, Pilot Sootblo operational
  - Vlaio support Sootblo, ETF support Electrolys, ETF support flex CHP with VUB
  - Teaming up with Joost Vanden Berghe for consulting activities - roadmaps, PPA
  - **Decision to grow with roll-out of tools & build team – SaaS model / profit share**



Further growth powered by SaaS

Market is ready for flex SaaS, Entras is ready with its algorithms & market presence

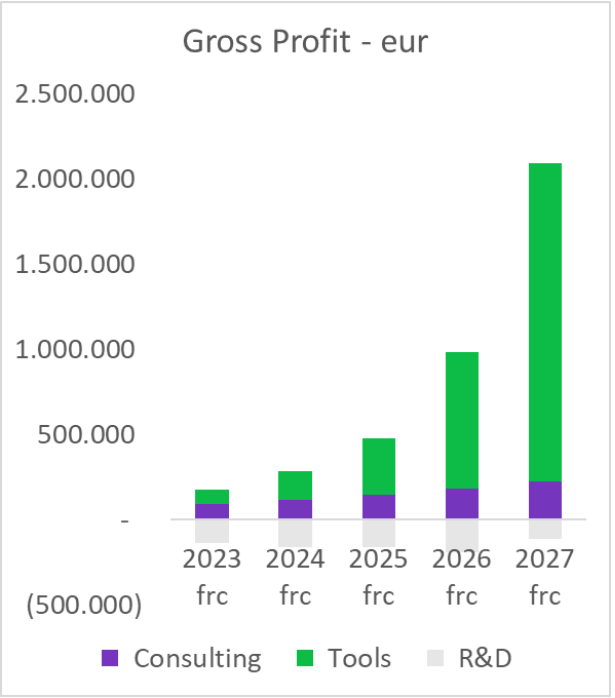
- Tools
  - Target topline growth + 100%pa
  - Recurring revenues
  - Additional team members hired, further growth required
    - Dimitris - 1 FTE IT developer – 02/2023
    - Stijn - 0,5 FTE IT project manager Stijn – 12/2022
    - 0,6 FTE senior b'ness developer Saas - 01/2023 -> full time in case of funding
  - Maintain IP – profit share / SaaS
  - Initial Gross Profit at 50%, target to increase to +70% depending on scaleability
- R&D
  - additional key developer hired as of 05/2023 – Filip
  - additional support projects under development: Interreg Flexintensity, ICON, Vlaio, ..
- Consulting
  - Structural integration of Joost Vanden Berghe to sustain consulting
  - Remains key element of strategy
    - Provides profitable algorithm development
    - Knowledge building emerging technologies
    - Bridges phase between pre-feasibility and implementation of flexilble assets
    - Market access & lead generator for SaaS projects
  - Separate b'plan – no need for funding



B’plan

Develop the team & roll out Tools - SaaS

		2018	2019	2020	2021	2022	2023 frc	2024 frc	2025 frc	2026 frc	2027 frc
Revenues											
	Tools	-	-	11	34	83	167	334	668	1.335	2.670
	Consulting	254	247	250	293	374	468	585	731	914	1.143
	R&D revenue	-	-	45	58	86	63	92	140	112	191
	Total revenues	254	247	307	385	544	698	1.011	1.539	2.362	4.003
FTE											
	FTE Tools / external IT						2,0	4,0	6,0	8,4	10,9
	FTE Sales & BD Tools					0,7	0,8	1,5	2,0	2,5	2,5
	FTE consulting	1,7	2,0	2,0	2,4	2,8	3,5	4,5	5,6	7,0	8,8
	FTE R&D	1,0	1,0	1,0	1,5	1,5	2,0	2,5	3,0	3,0	3,0
	Total FTE	2,7	3,0	3,0	3,9	5,0	8,3	12,5	16,6	20,9	25,2
Expenses											
	Expenses FTE						852	1.235	1.586	1.941	2.275
	Expenses non-FTE						70	101	154	236	400
	Total Expenses				347	459	922	1.336	1.740	2.177	2.676
EBITDA											
	EBITDA				**38,0**	**85,0**	**(223,4)**	**(325,4)**	**(201,4)**	**184,6**	**1.327,6**
	EBITDA %				*9,9%*	*15,6%*	*-32,0%*	*-32,2%*	*-13,1%*	*7,8%*	*33,2%*
Gross Profit											
	Gross Profit						**40,5**	**125,8**	**319,9**	**796,3**	**1.988,2**
	Gross Profit %						*5,8%*	*12,4%*	*20,8%*	*33,7%*	*49,7%*



Go-to-market SaaS

Focus on niches and start in favourable markets for flex – scale as “Powered By Entras”

Today

- Direct selling
- Energy intensive Industries
- BE-NL-FR + UK-DE
- Proven

Going Forward *“Powered by Entras”*

- Software automation vendor platforms
- Energy Management & Monitoring Systems
- Original Equipment Manufacturers
- Energy / flexibility supplier

Use of proceeds

Tools - Accelerate growth in a SaaS b'model and protect IP

- Financial resources required for
  - Roll-out SaaS model – recurring revenues
  - Large development costs for industry grade apps
  - Quicker go-to-market in different industries at the same time

- Estimated financial resources requirement ~2.500 k€
  - ~1.000 k€ negative EBITDA due to hiring, BusDev new markets, patent costs, internal organization
  - ~1.000 k€ for reinforcing balance sheet
  - ~500 k€ working capital
  - Timing: 2023
  - Funding for period up to 2026

Competition & market size

Emerging market with a technology barrier to enter

- State-of-art technology
  - New approach to unlock flexibility
  - Incumbents like energy & flex suppliers / aggregators are complementary
  - 2 patents, other patentability studies ongoing

- Market size – some data
  - EU, energy-intensive industry electricity consumption 2022 est. at 800.000 GWh
    - value creation: 10% cost savings, results in 8.000 M€ (@ 100 €/MWh)
    - @ 10% value capture: 800M€ market size
  - Chlor-alkali electrolysers energy use 3-5% of energy-intensive industry elec cons.
  - Announced hydrogen electrolyser cap. by 2030 (REPowerEU): 30x cap. of chlor-alkali electrolyser cap.
  - Biomass/biogas plants within 500 km of BE: > 1.200 plants


ENTRAS