



RIFT

DECARBONIZING INDUSTRIAL HEAT WITH IRON FUEL TECHNOLOGY.

Investor Deck • March 2024
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The Challenge

The urgent
decarbonization
challenge of
industrial heat.

Currently, **20%** of global greenhouse gas emissions result from burning fossil fuels for industrial heat¹.

Companies using industrial heat face increasing economic pressure to transition from fossil fuels to clean tech, impacting their financial performance.

Consequences of inaction

- **CO₂ costs**: Tangible financial burdens, like those in the EU's Emissions Trading System.
- **Green certificates**: Industries face revenue losses due to consumer shifts toward carbon-free products or face increased costs to retain them.
- **Non-compliance risks**: Increasing financial and operational risks associated with evolving carbon standards.

1: IEA: 29% of all energy consumption originates from industrial heat (IEA). This is equivalent to 20% of all GHG-emissions.





Seeking Solutions

Finding the sweet spot with **practical feasibility** and a **cost-effective** alternative.

To implement clean technologies successfully, they must demonstrate both **practical feasibility** and **cost-effectiveness** compared to fossil fuels.

Currently, this poses a significant hurdle for industries. Over 90%¹ of companies struggle to adopt a cleaner alternative, as the current alternatives fall short on one or both criteria*.

*For example, by 2030, an estimated 80%² of companies will lack sufficient grid access to use hydrogen or electrification.

Urgent need for breakthroughs

To accelerate decarbonization for industries, it's imperative to introduce new alternatives that meet all the criteria, being environmentally friendly, practically feasible, and economically competitive.

1. Based on market study, conducted by RIFT, available in the data room.

2. Based on data of Euroheat (2019): <https://www.euroheat.org> and sustained by our own interview results.

Limitations of current alternatives

Hydrogen



- **Limited grid** infrastructure
- **Permit challenges** for boilers
- **Higher heat costs** compared to fossil fuels at >1.5 €/kgH₂

E-Boiler



- **Limited grid** capacity
- **Not feasible** in every case
- **Only cheaper** when electricity price <0.04 €/kWh

Heat pump



- **Limited by grid** capacity and rest heat availability
- Applicable **only in low heat** processes
- **Only cheaper** when <0.15 €/kWh

Electrical heat storage



- **Dependent** on the electricity **grid**
- **Limited by space** requirements
- **Feasible only** when electricity price <0.1 €/kWh



Iron Fuel Technology™

Iron powder as a
cost-effective, safe and
grid-independent
carbon-free
energy carrier.

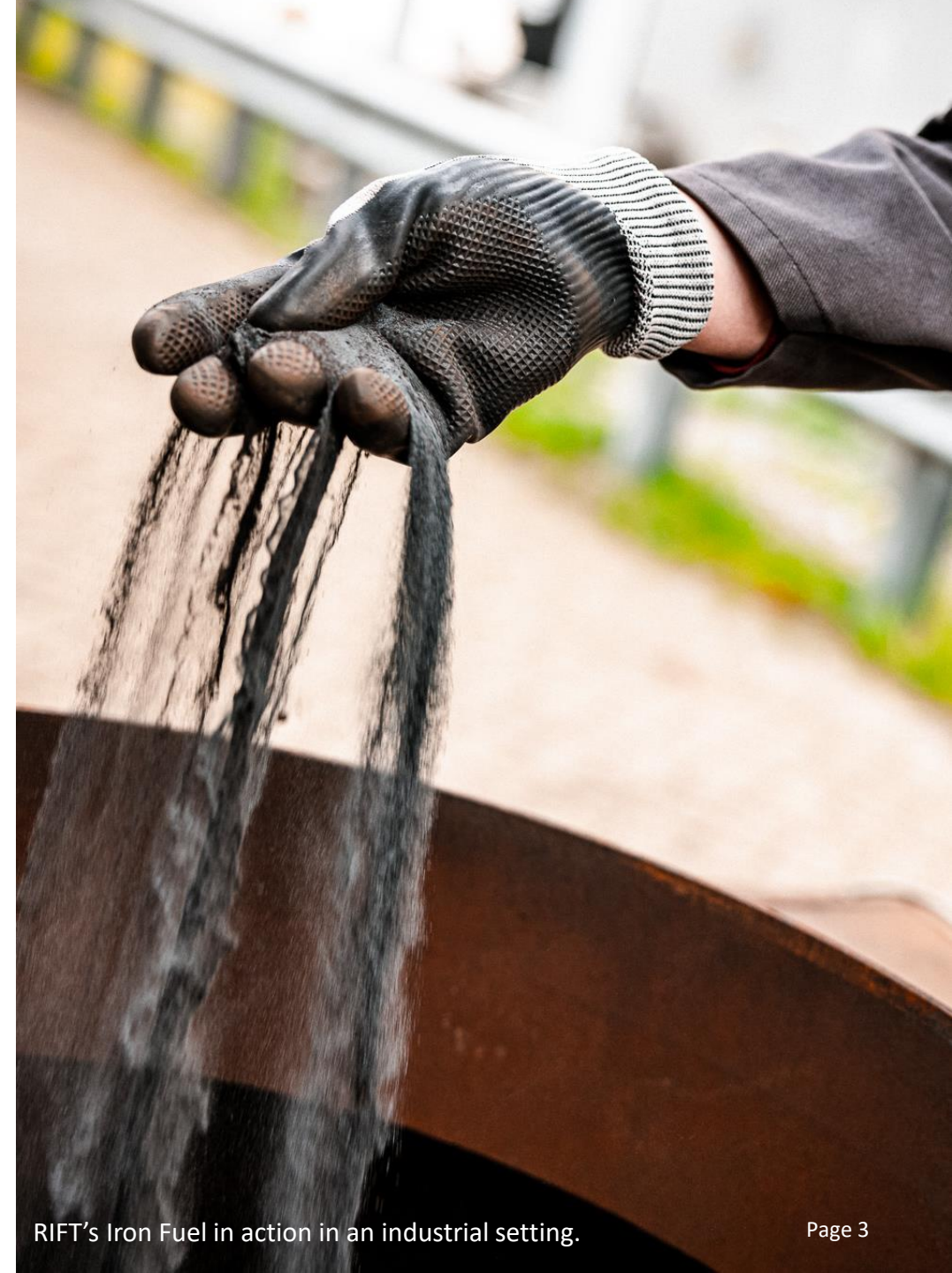
RIFT unveils a propriety novel approach to tackle the challenges of decarbonizing industrial heat. Introducing: Iron Fuel Technology™.

Key benefits

- **Carbon-free** industrial heat generation, featuring ultra-low NOx emissions.
- **Grid-independent** scalability.
- **Practical feasibility** in locations where alternatives fall short.
- Applicable across **all temperature ranges**.
- **Cheaper** than fossil fuels.

Fueling the future

At RIFT, we are on a mission to decarbonize industrial heat. By 2050, we aim to cut carbon emissions by 1 Gigaton of CO₂ per year.



RIFT's Iron Fuel in action in an industrial setting.



We are RIFT

In just over three years, RIFT has emerged as a **global leader** in Iron Fuel Technology™. What distinguishes us is our ability to address customer needs in a practical and economically feasible manner, a capability that sets us apart from others in the field.

Industrial Pilots

Implemented **Megawatt-sized** Industrial Pilots at customers sites, leveraging proven real-world viability.

2B \$ of LOIs

\$2 billion in secured LOIs from customers for technology implementation between 2025 and 2030.

Patent Protection

Boasting **11 patent families** with a solid **freedom-to-operate** foundation.

Strong Network

A dedicated team of **37 FTE**, supported by 12 strategic partners, and over 200 committed suppliers.

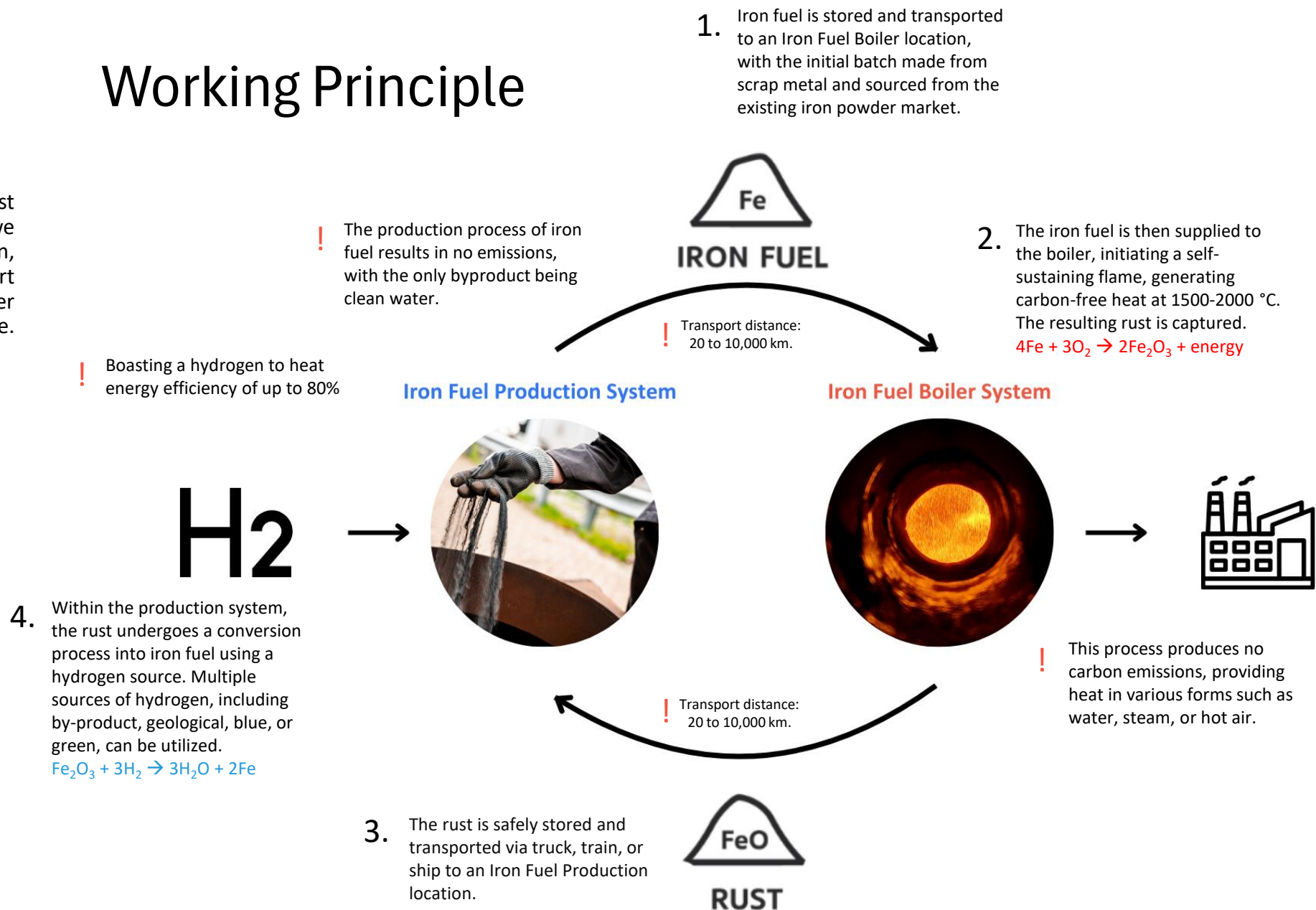


RIFT's Megawatt-sized Industrial Iron Fuel Boiler Pilot in Helmond, the Netherlands.



Working Principle

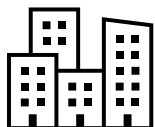
In its simplest description, we **rust and unrust** iron, enabling the transport of energy over time and distance.





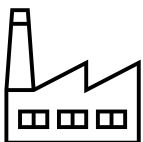
Market Focus

Iron Fuel Technology™ offers versatility across a full range of industrial heat applications.



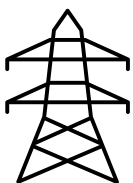
District heating

Supplying hot water or steam for residential, public, and business purposes • Scale: 2-50MW



Industrial processes

Producing saturated steam (180-300°C), superheated steam (380-640°C) and direct heat without product contact (100-1000°C), applicable in most industries • Scale: 5-50MW



Electricity plants

Can be used for peak-load electricity generation or combined heat and power • Scale: 20-500MW

Beachhead market

Our initial focus is a strategic beachhead market identified through insights from over 100 customer interviews and in-depth market study.

Target criteria



Boiler capacity of **5MW**



Companies facing **CO₂ costs**, particularly within the EU ETS.



Companies **requiring carbon-free heat** as mandated by their customers.

Geographical focus

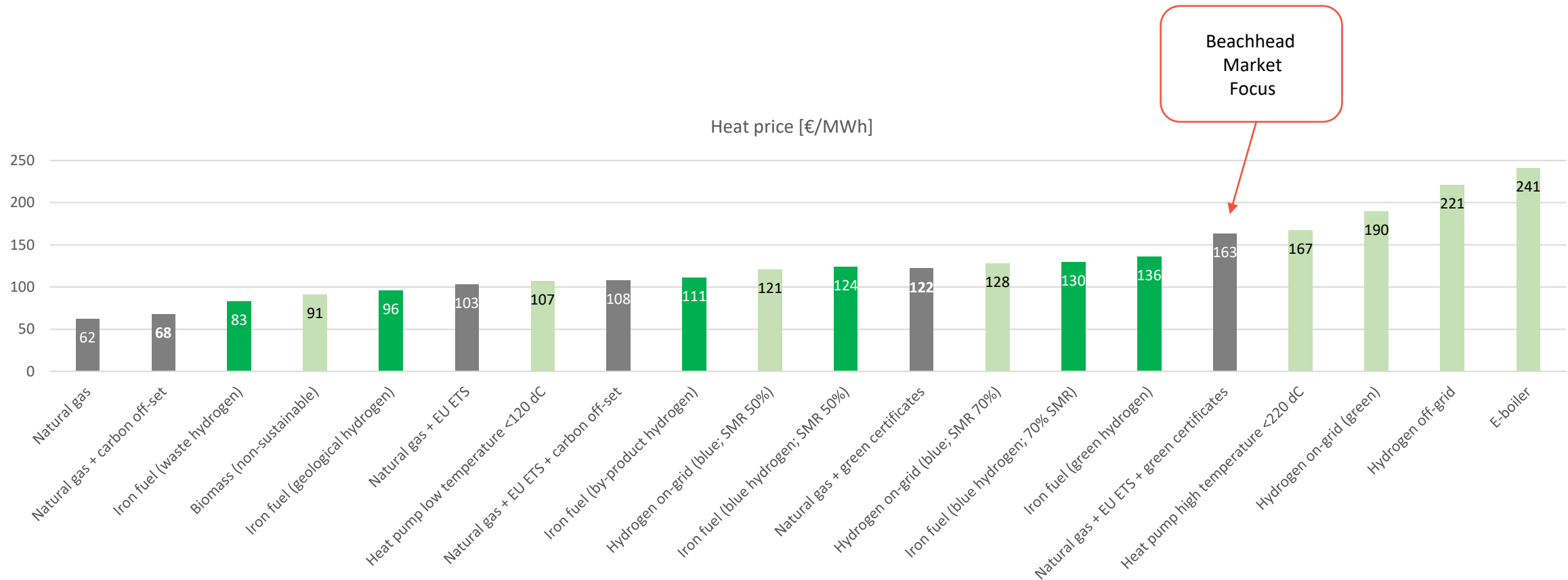
European Union,
chosen due to high industrial heat pricing.

Focus industries

Industries that align closely with our requirements:
• Food & Beverage • Pulp & Paper • Special Chemicals



Competitive Edge in the Market

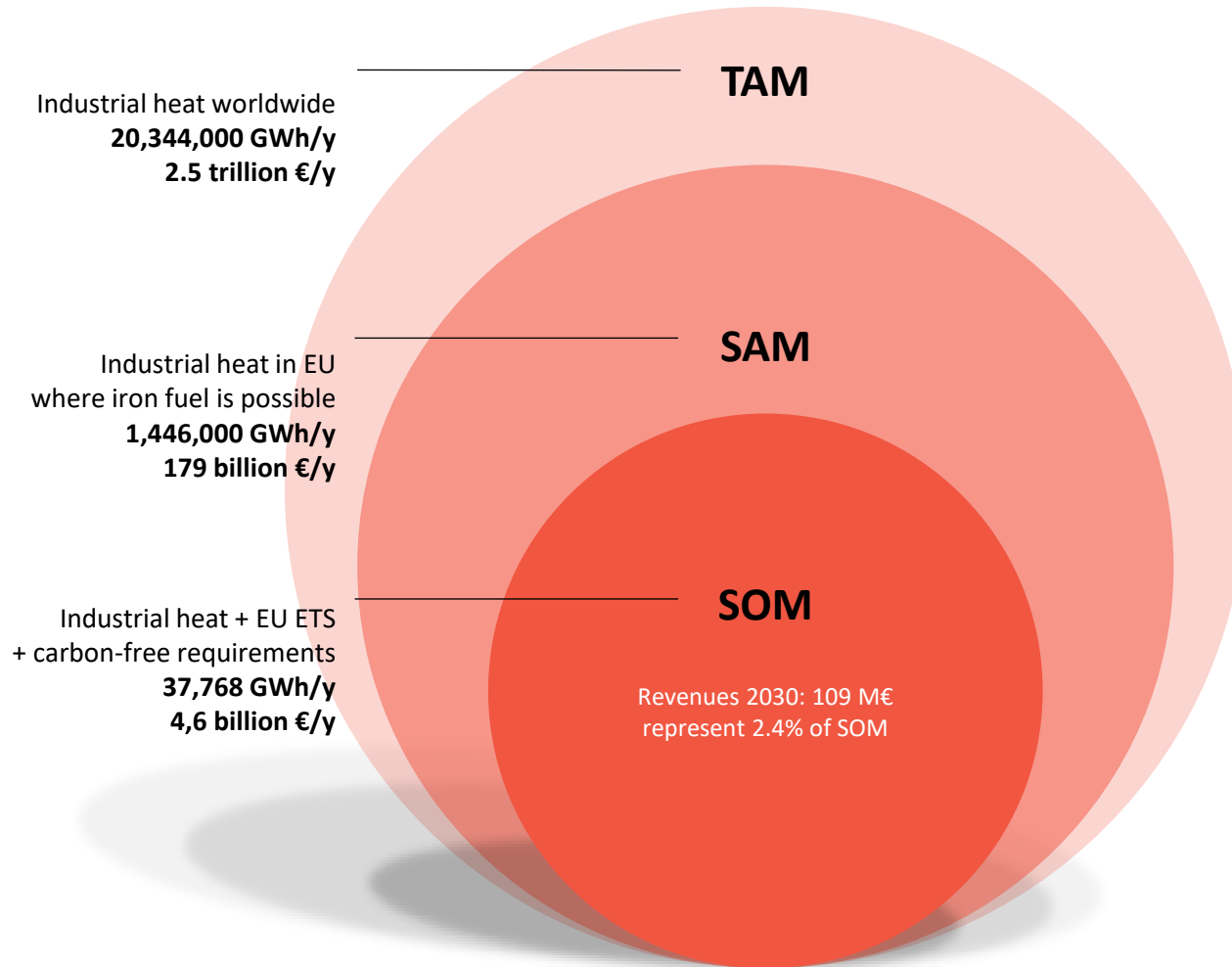


Based on validated data in our LOI's; boiler operations: 6000 FLH/y; TTF natural gas price: 40 €/MWh; EU ETS: 90 €/tCO₂; electricity costs: 0,2 €/kWh; flue gas temperature boiler: 135dC; waste hydrogen: 0.5 €/kg; geological hydrogen: 1 €/kg; by-product hydrogen: 1.5 €/kg; blue hydrogen SMR 50%: 2 €/kg; blue hydrogen SMR 70%: 2.2 €/kg; green hydrogen: 2.5 €/kg; validated costs of CAPEX + O&M for each technology.



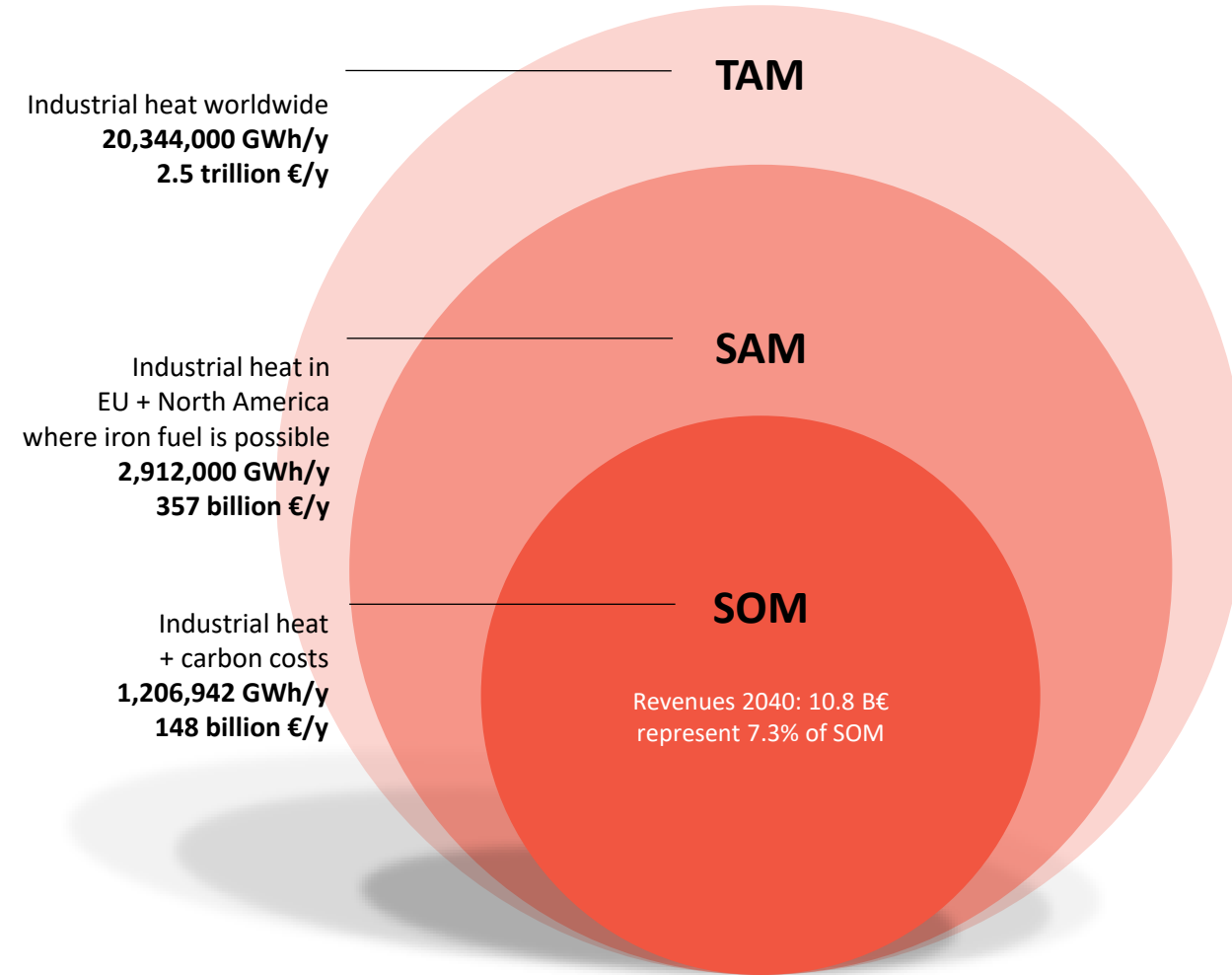
Market Size 2030

(Of selling Iron Fuel Technology™ systems + iron fuel supply contracts using blue hydrogen as feedstock for iron fuel production process)



Market Size 2040

(Of selling Iron Fuel Technology™ systems + iron fuel supply contracts using blue hydrogen as feedstock for iron fuel production process)



Analysis of market size is based on the use blue hydrogen. SOM expands when using by-product or geological hydrogen.
1GWh/y represents iron fuel revenues of 107,600 €/GWh*year + system replacement 17,777 €/y ; based on a replacement speed of 15 years and operational time of 6,000 FLH/y.
TAM: data comes from open sources on industrial heat in EU and North America. SAM are the locations where iron fuel is practically possible;
SOM are the locations iron fuel is practically possible and cheaper than fossil fuels. The in-depth analysis is available in RIFT's data room.



RIFT's Business Model

An **integrated approach**
for economic reliability
and success.

RIFT offers a fast and easy-to-implement boiler system implementation, coupled with a long-term iron fuel supply contract. The iron fuel is produced at an iron fuel production location owned by RIFT and its strategic partners.



Sale of Iron Fuel Boilers

- Method: Lump-sum (€/system)
- System size: 5-20 MW (modular)
- Revenue: 0.5M €/MW¹ (2.5-10M €/system)
- Gross margin: 30%



Iron fuel supply contract

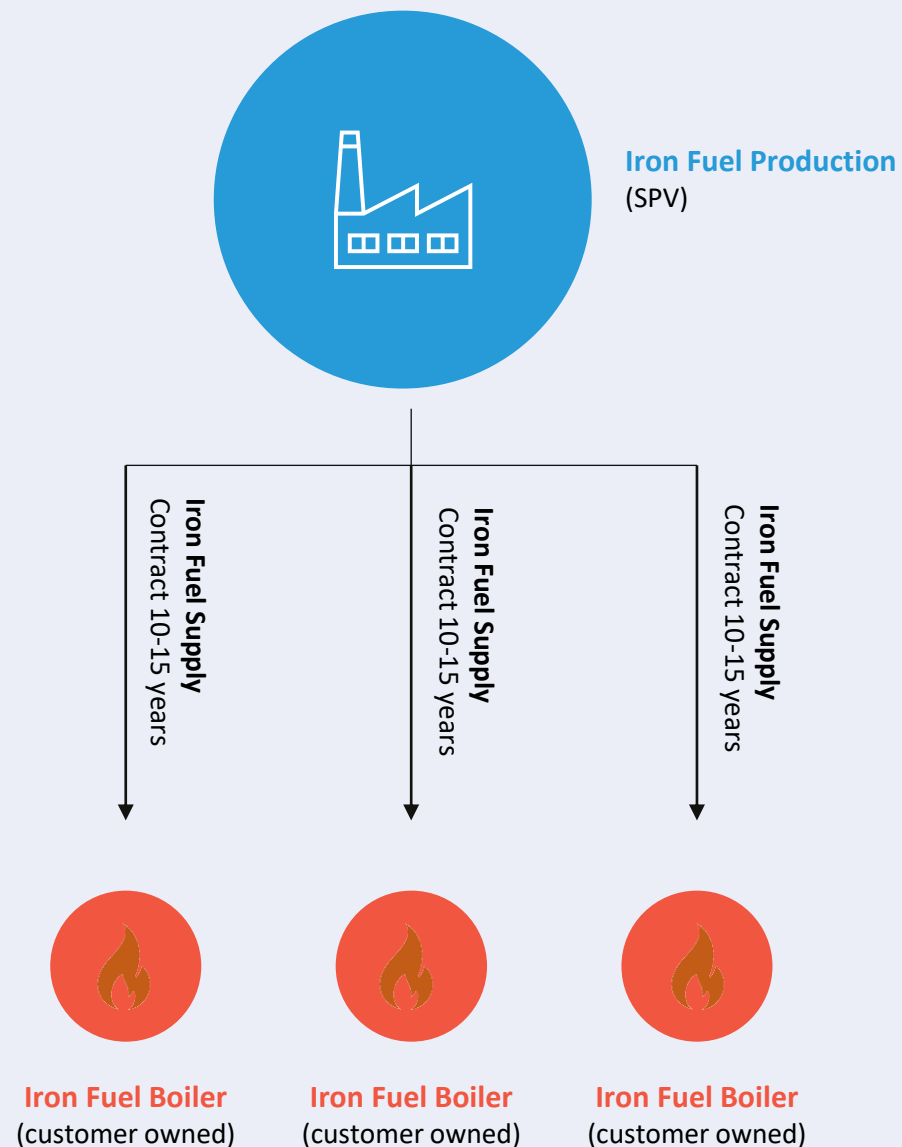
- Recurring revenue stream for 10-15 years
- Iron fuel production IRR²: >12-50%
- CAPEX required: 1.25 M€/MW

This model translates to each boiler system generating a revenue of 2 M€ (lump-sum) and 60 M€ for iron fuel supply over 15 years.

1: Based on a class 5 cost estimate of the basic FOAK design.

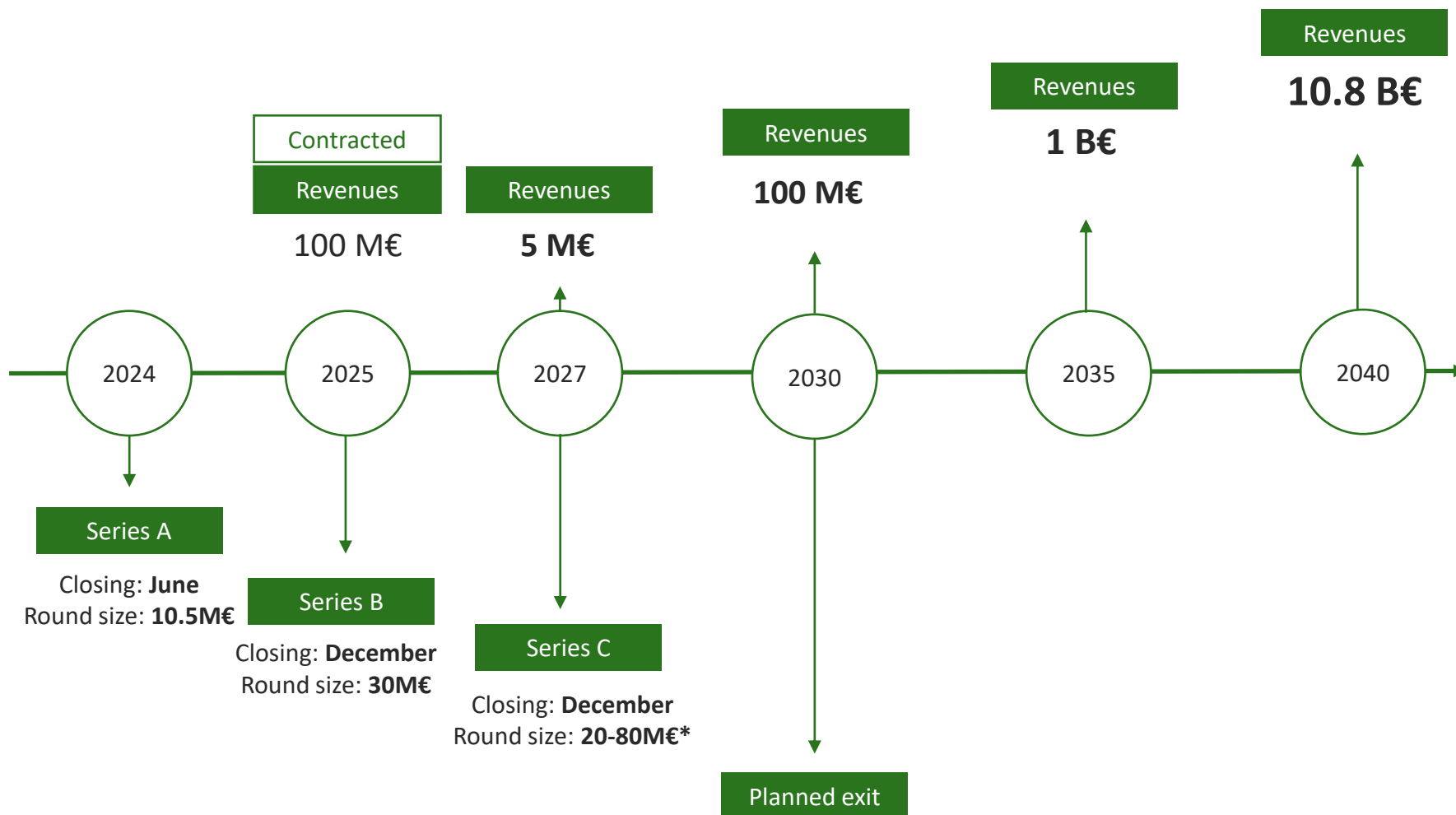
2: Depending on the hydrogen and electricity price on location.

3: Revenue depends on the costs structure and potential revenue gained from various markets.





Financial Overview



Grants

Grants are a potential upside, reducing Series B and C round sizes.

- Current success rate **96%**
- Grants secured **13 M€**



Jan Hubers
Non-Dilutive Finance
Manager RIFT

Consolidated
gross margin **25%**

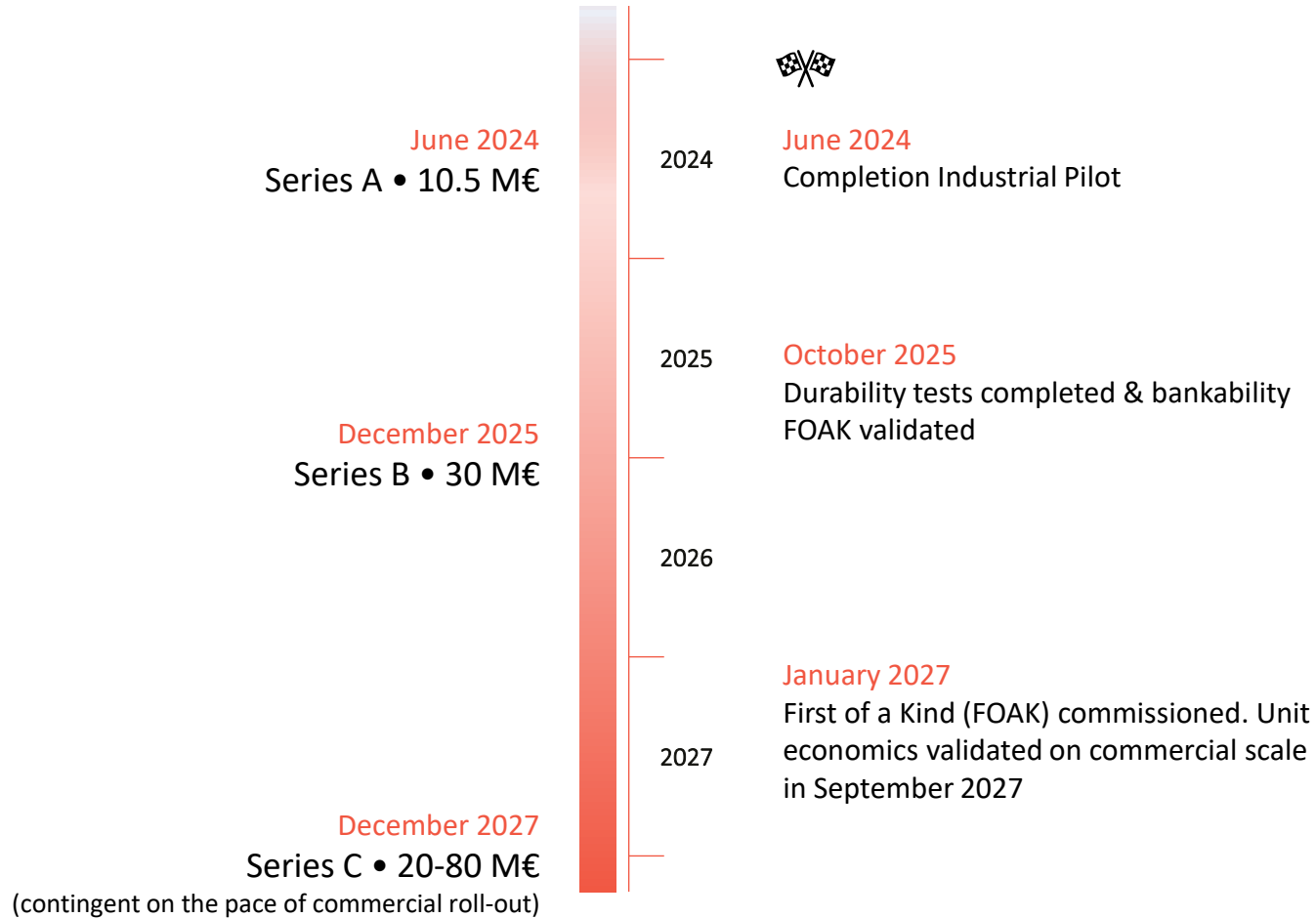
Previous Seed round

- Funds raised: **2 M€**
- Post money valuation: **8 M€**
- Closed: **2022**



Road to Commercialization

These are the steps to be taken towards the commercialization of Iron Fuel Technology™.



RIFT's Industrial iron fuel production pilot in Arnhem, the Netherlands.



Overview of Series A

**10.5
M€**

We seek a total investment of **10.5 million** to fuel our progress, with the runway extending towards **December 2025**. We are anticipating a **2.5-3.5 multiple towards Series B**.

**20
months**



Milestone 1

Successfully completing durability testing on our already finished Industrial Pilot systems, reaching TRL7.

Milestone 2

Secure financial approval for the FOAK commercial system, involving completed design, permits, supply contracts, location selection, and committed paying customers.

Milestone 3

Secure 100 M€ in purchase orders to ensure a seamless transition into the commercial rollout once FOAK is completed.



Planned exit: **2030**



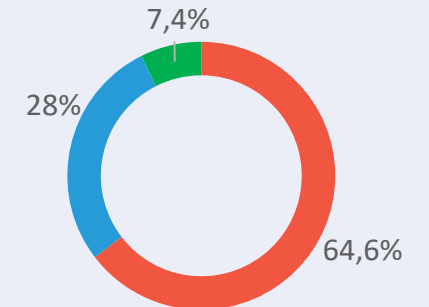
Raised Seed: **2M€**

Funding Update

Our current investors have demonstrated their confidence with an anticipated Series A investment of **€ 5 million**. New investors are in the advanced stages of commitment, totaling it to **€ 8.5 million**



Current Cap Table



Founders

Investors

Employee option pool



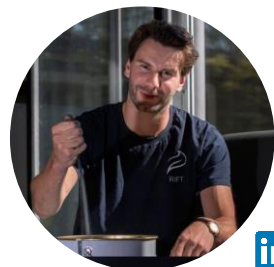
Team RIFT

Our story is written
by a **diverse team**,
committed to realizing
the potential of Iron
Fuel Technology™.

39
FTE

50
people

Leadership Team



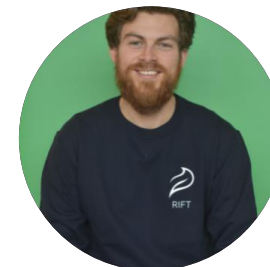
Mark Verhagen
CEO & co-founder
+12 years experience



Tim Janssen
CFO
+25 years experience
in diverse FD roles



Lex Scheepers
CTO & co-founder
+7 years experience



Vincent Seijger
CTO & co-founder
+7 years experience



Elise van 't Westeinde
CHRO
+25 years experience
in multiple CHRO roles

Highlighted Experts



Peter Boons
Industrial scaling expert
Ex-Global head of technology Shell
+30 years experience



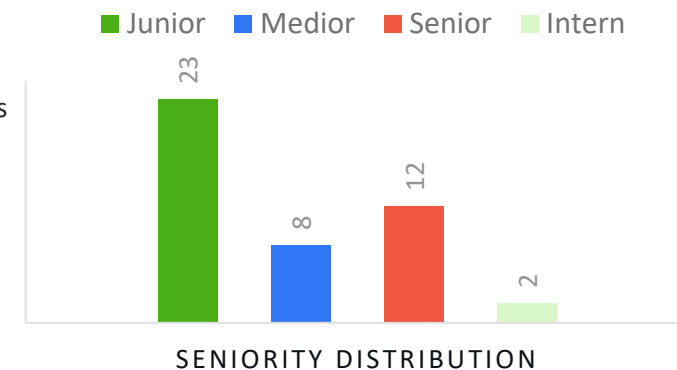
Peter van Meel
Operation expert
Ex-Head operations Shell Moerdijk
+35 years experience



Peter Lambooy
Project Management Expert
Ex-manager EPC boiler systems
+35 years experience



Anne Beijer
Head of Marketing
+13 years experience





Our Ecosystem

More than a network,
our **ecosystem adds value** at every step of
our journey.

Suppliers

Over 200 committed suppliers
providing expert assistance for
free; their dedication to our
mutual success is evident
through the **offered discounts**,
totaling approx. **2M€** to date.



Strategic partners

We are joined by **12 strategic partners**, who offer a mutual,
long-term commitment,
providing invaluable resources,
including finances, time, and
expertise. This enables cost-
cutting initiatives and facilitates
entry into the market(s).

RioTinto



Customers

Our expanding customer
pipeline, signaling a surging
demand for Iron Fuel
Technology, boasts **signed LOIs**
totaling **\$2 billion**. Coupled with
promising leads in the pipeline
and customer commitments of
2.5 M€ in **co-development**
grant projects

Mosa.





Our Impact

Our comprehensive and validated market study, shows that Iron Fuel Technology™ **enables 35% of companies to decarbonize**, significantly expanding the decarbonization potential of the industrial heat market. This is substantiated by the execution of an ISO-standardized **Life Cycle Analysis¹**.

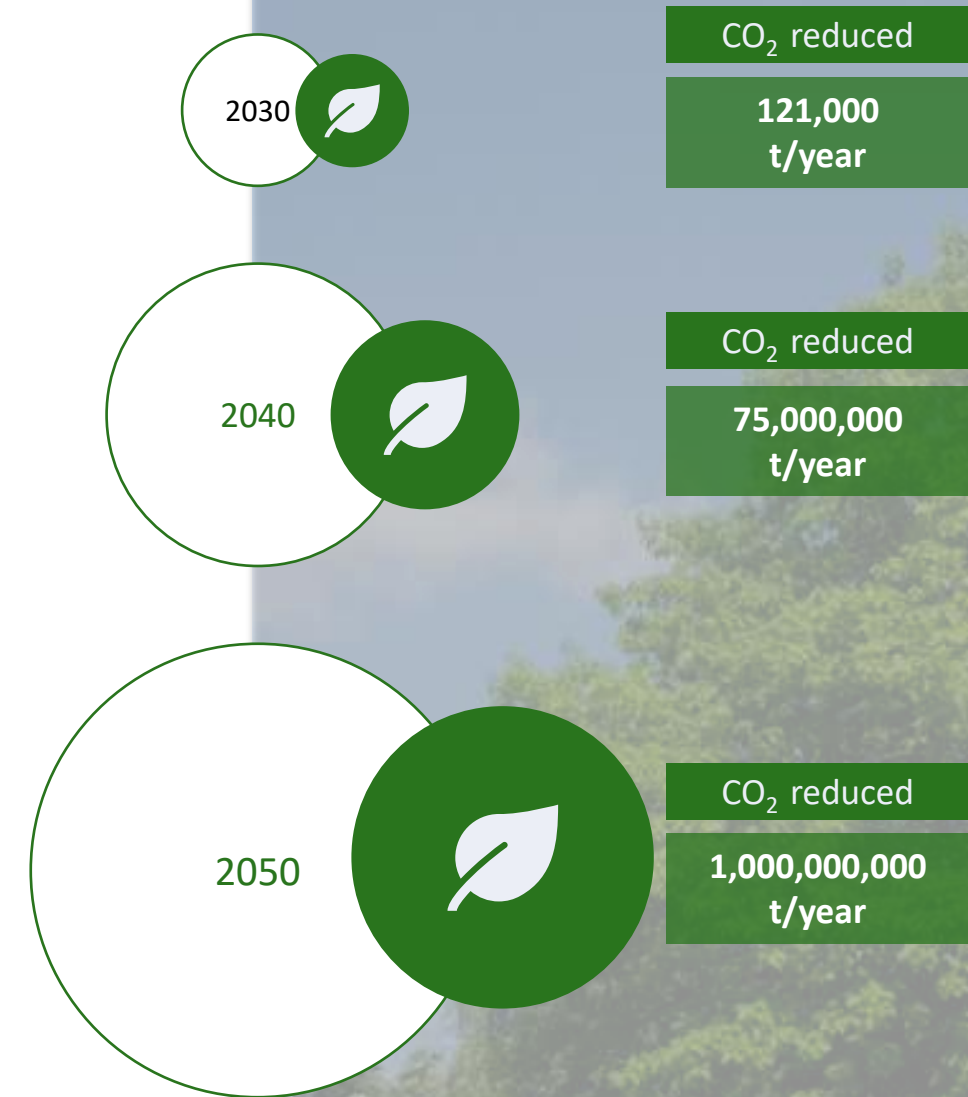
Decarbonization assurance

- Achieving an exceptional **80% energy efficiency**.
- Guaranteeing 95-55% decarbonization, with variability based on the hydrogen source.
- Ensuring environmentally feasible long-distance transport, covering distances up to 10,000 km.

Fun facts

- The Iron Fuel route requires **20% less hydrogen** than direct burning of hydrogen for industrial heat.
- Utilizing blue hydrogen for iron fuel production results in **less natural gas consumption** than direct burning of natural gas.

1. Both the market study and the LCA are available in the data room.





Fueling Progress Together

As we ignite the Iron Fuel revolution in industrial heat, we invite you to be a driving force in our journey. Your investment will propel our progress, and together, we can shape a sustainable energy future.

For more details, feel free to reach out, and our data room is ready when you are ready to delve into the details.



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