



SUN METALON

PLANET POSITIVE METAL MANUFACTURING

Modernizing the metal industry
through decarbonization solutions

October 2024

SUN METALON at a Glance...

Established:

2021

Seed stage:

\$30M

No. of employees

40, 4PhDs

Field:

**Deep tech
Climate tech**

Commercialization:

2024

No. of patents:

12 applied, 2 granted

Core technologies:

- Metal recycling
- Metal refining

Products:

- Green steel
- Green aluminum

HQ

Chicago, USA



R&D

Kawasaki, JAPAN



Conventional Metal Heating

Metal manufacturing is an outdated industry

- Responsible for **10% of all global CO₂ emissions**
- Recycling through **downcycling**

Proprietary Heating Technology

SUN METALON cost-effective decarbonizing solution enables

- **0 CO₂ emissions** with reduced cost (-10% cost)
- Recycling through **upcycling** (9× value)



SUN METALON

PROPRIETARY HEATING TECHNOLOGY

0

CO₂ emissions
during process¹

10%

Cost savings
during recycling
process²

9x

Value enabled
after recycling²

Planet-positive metal manufacturing
with huge impacts

1) Based on SUN METALON data 2) In comparison with traditional gas furnace

Our Solution

Sun Metalon targets the heart of the metal value chain, recycling, and refining.

Our proprietary heating technology **reduces global CO2 emissions by 7%**



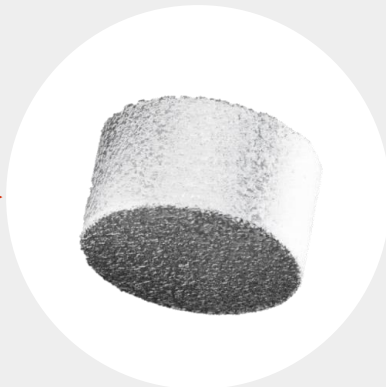
RECYCLE

Metal Waste



REFINE

Metal Ore



**SUN METALON
BRIQUETTE**



End Use - Partners

Our proprietary technology for recycling & refining



The Sun Metalon solution: Billions in cost savings



OPEX/CAPEX

Reduce cost

▼ **\$53** Bn/Yr



LOGISTICS

Reduce logistics

▼ **\$8.6** Bn/Yr



LANDFILL

Powder waste disposal

▼ **\$21** Bn/Yr



CO₂

Reduce CO₂

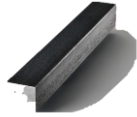
▼ **2.4** Gton/Yr

Go-to-Market: Small to big, value to growth

	2024	2025	2026
	<p>Small</p>  <p>Foundry</p> <p>Green aluminum via recycle</p>	<p>Medium</p>  <p>Steel Mill (EAF)</p> <p>Green steel via recycle</p>	<p>Large</p>  <p>Steel Mill (BF)</p> <p>Green steel via recycle</p>
Market size	SAM: \$3B	SAM: \$13B	SAM: \$53B
Customer	<p>Confidential JP mobility OEM</p> <p>Confidential US mobility OEM</p>	<p>Confidential US Steel Mill (EAF)</p> <p>Confidential JP Steel Mill (EAF)</p>	<p>Confidential JP Steel Mill (BF)</p>
Biz stage	Commercial	Pilot	R&D

Pain in recycling: Low purity equals low value

Metal powder waste is very dirty, thus low value



WASTE GENERATION

TRANSPORTATION



VIRGIN
METAL

100%
purity

\$1,000
per ton



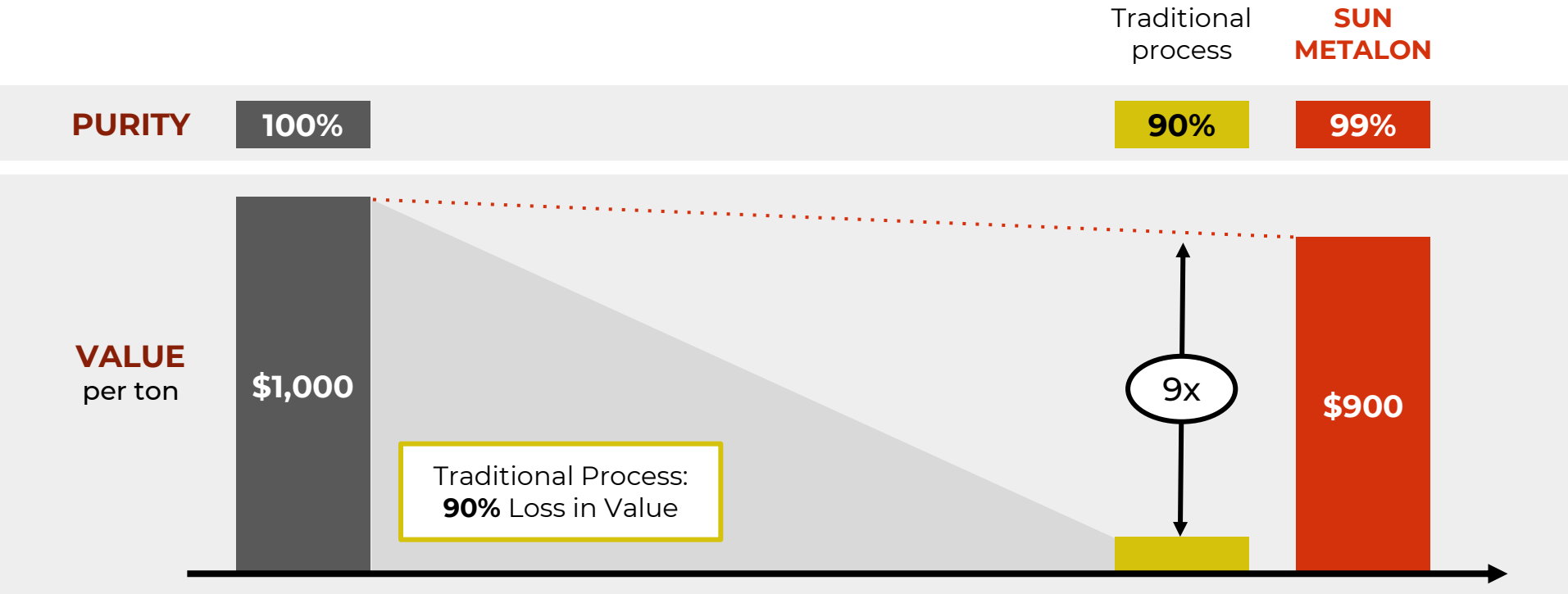
POWDER
WASTE

90%
purity

\$100
per ton

9x value with our proprietary recycling process

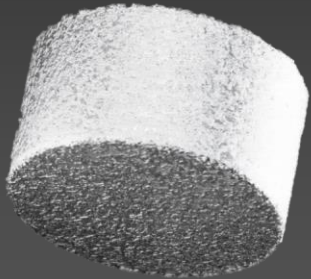
Enabling higher purity for increased value



Flexible business models

Adjustable for customer's preference

METAL



Patented

EQUIPMENT

Monthly Charge

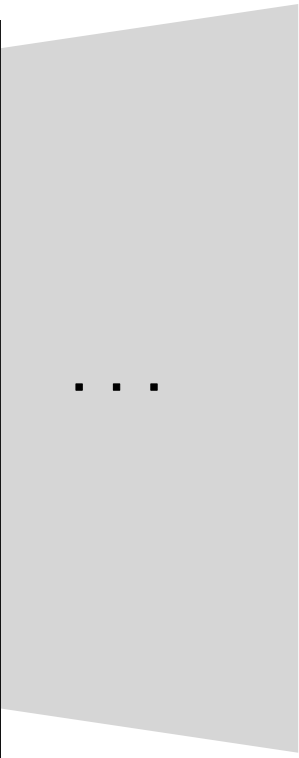
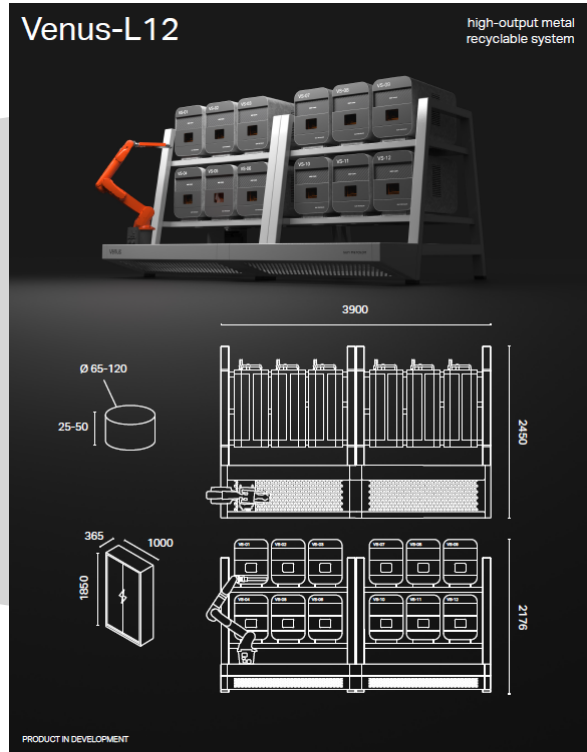
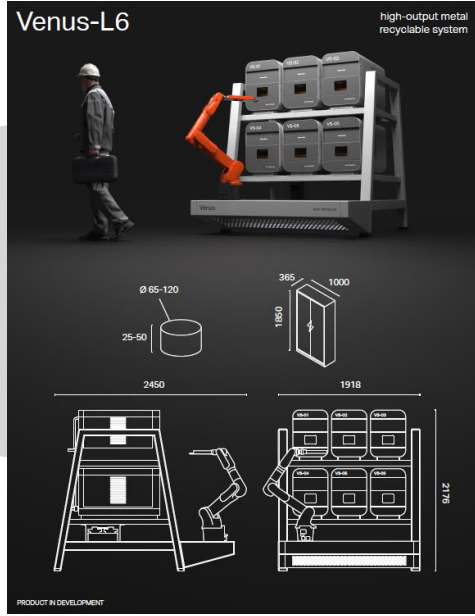
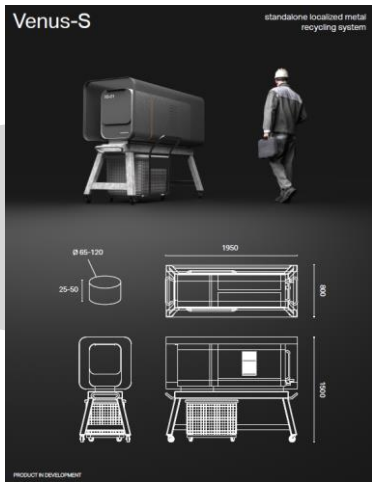
Upfront Payment



Patented

Modular and scalable process

Adjustable for customer's throughput request



SUN METALON

PARTNERS

Confidential
JP mobility OEM

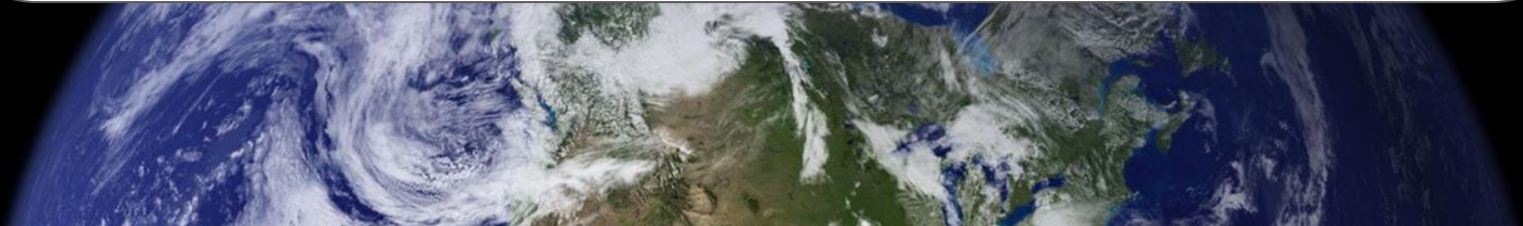
Confidential
US mobility OEM

Confidential
US Steel Mill (EAF)

Confidential
JP Steel Mill (EAF)

Confidential
JP Steel Mill (BF)

PLUS 50 MORE



Management with profound expertise



**Kazuhiko
Nishioka**

Co-founder, CEO

Nippon Steel
10+ years in steel
engineer
15+ Patents
MS University of Tokyo
Northwestern



**Julian
Bobe, PhD**

**Chief Strategy
Officer**

Co-founder / CTO CIRC
2 IPOs
25+ Patents
PhD Chem. Eng.
Duke MBA



**Kei
Takizawa**

**Co-Founder,
Head of Japan**

Mckinsey & Company
Metal mining industry
IMD MBA



**Mark
Cook**

**VP of Product
Development**

VP of Product,
3D Systems
30 years in product
development of metal
manufacturing
systems
Northeastern MBA



**Will
Shambley**

**Director of business
Development**

Chairman, American
Foundry Society
Director of Materials, Z
Corporation
Co-founder, Viridis3D
Chem. Eng. UPenn

Advisory board

Academia



Prof. Greg Olson

Prof. of MIT
Co-Fouder
QuesTek



Prof. Diran Apelian

USCI Prof.
Co-Founder
Ascend Elements



Prof. Roger Reed

Prof. of
University of Oxford



Prof. Naohiko Sugita

Prof. of University
of Tokyo



Strategy



Vik Pavate

Founder
Tacta/Locix
2 Exits



Michelle Kiang

Co-founder
Impact
Science
Ventures

Industry



Dr. Adrian Keppler

Independent
board member
Former CEO of
EOS

Our vision

Accelerating the
adoption of clean metal
manufacturing to
advance humankind

Local Circularity of Metals



- Stainless Steel
- Nickel-based Supper Alloys
- Steel
- Aluminum
- Copper

and more