

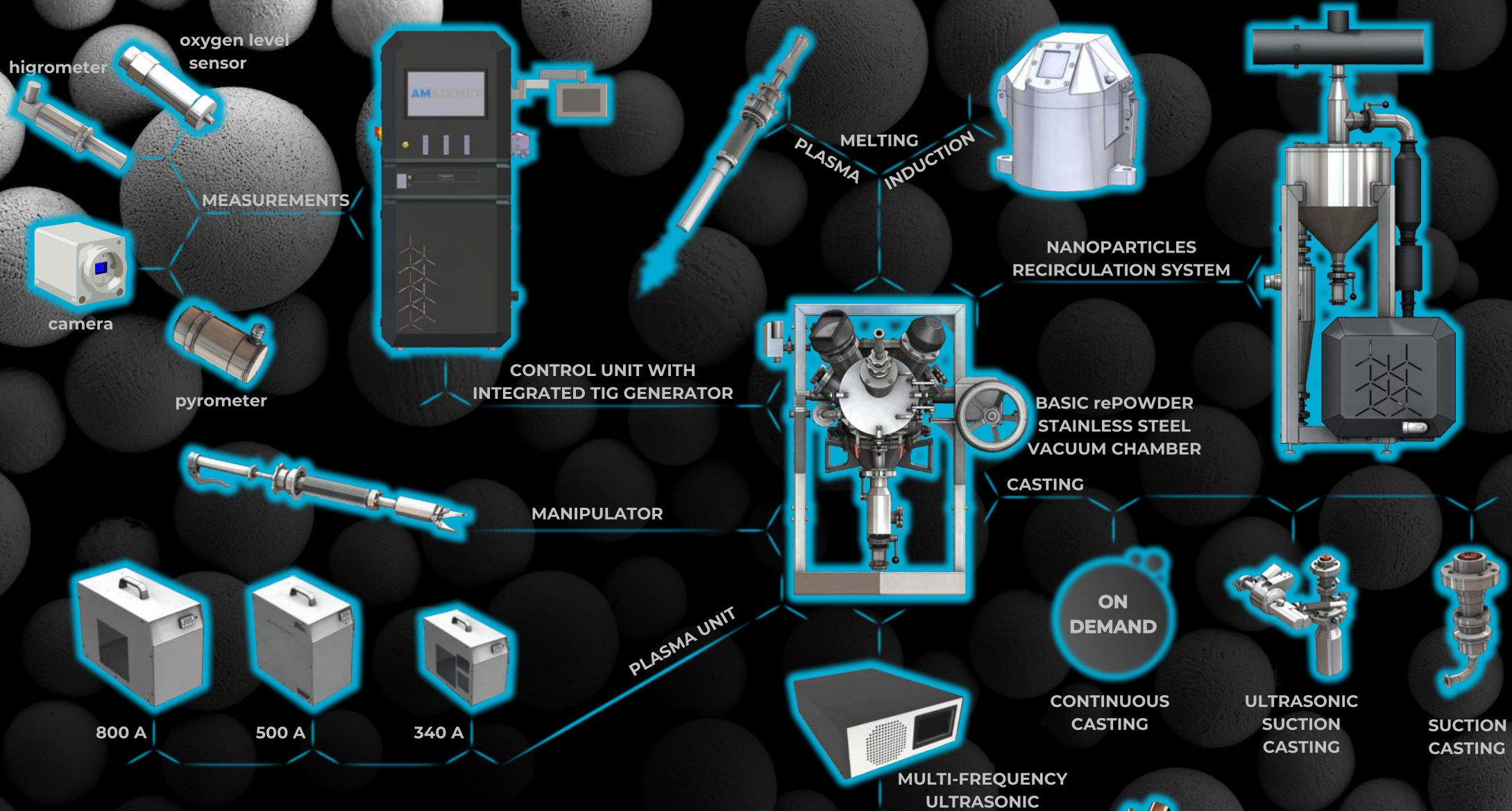


rePowder

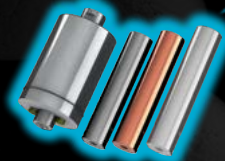
ATOMIZING PLATFORM

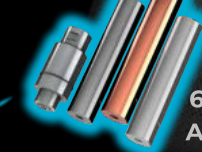
by **AMAZEMET**

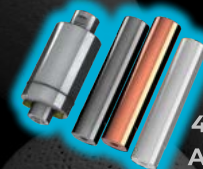





rePowder
 ATOMIZING PLATFORM
 by **AMZEMET**

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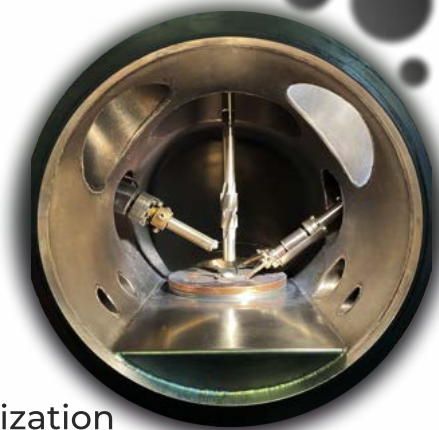
BASIC
20 KHZ TRANSDUCER
AND SONOTRODE SET
- 

ADVANCED
60 KHZ TRANSDUCER
AND SONOTRODE SET
- 

UPGRADE
40 KHZ TRANSDUCER
AND SONOTRODE SET

rePowder - freedom in materials design

The core of the system is an adaptable stainless steel vacuum chamber. Starting with basic functionality of arc melter and ultrasonic atomizer, rePowder can be expanded with emerging research possibilities.



Feedstock shape and form is not a limitation anymore!

Everything, including:

- failed printouts
- powder
- chips
- granulate

can be put on the atomizing table.

For rods and wire atomization, **FEEDER** can be used. Continuous and suction casting upgrades for rePowder allow to prepare feedstock in-house

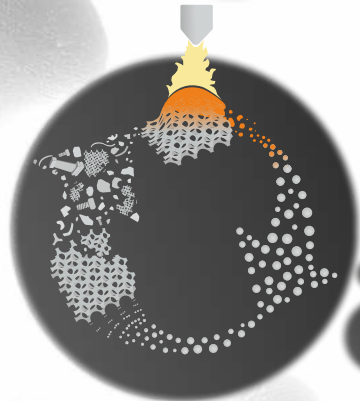
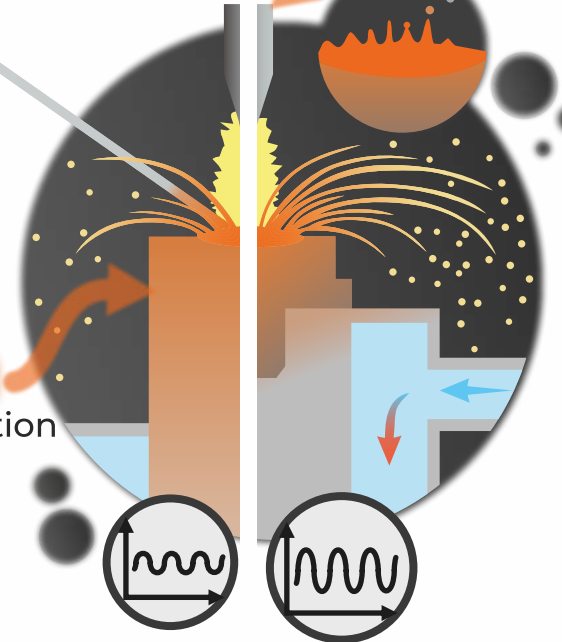
For volatile elements, rePowder can be upgraded with **INDUCTION FURNACE**

Control the atomization process through quartz glass **VIEWPORT**

500 amperes **PLASMA TORCH** will allow to melt any metallic material

AIRLOCK equipped container allows for powder collection without exposing it to oxygen. Filtering system recovers evaporated nanoparticles

A powerful **ULTRASONIC SYSTEM** can be used for atomization and ultrasonic-assisted alloying or upgraded for casting and forging



Standard configuration – arc-based ultrasonic atomizer:

Process Chamber

- Adaptable stainless-steel vacuum chamber
- Integrated with any add-on and upgrades
- Final vacuum level below 10^{-2} mbar in standard version equipped with dual stage oil pump
- Overpressure and vacuum sensor (Pirani)
- Additional ISO-KF/ISO-K ports for sensor and custom development
- Arc-melting system with 6 cold crucibles
- Powder collection chamber with airlock
- Quartz glass viewport

Melting system

- 340 A 40% (290 A 60%) duty TIG system
- Plasma torch up to 500 A
- High Frequency Pulsation up to 20 kHz current pulsation
- Lift-off arc ignition

Ultrasonic system

- Standard 20 kHz system – 1,5 kW maximum power
- Quick release flange – tooling change within 15 min
- Universal tooling for atomization and ultrasonic-assisted alloying
- Dual water-air cooling
- Replaceable sonotrode tips

Options and upgrades:

Induction melting

- 225 cm³ graphite crucible
- 1300 °C maximum operating temperature
- Designed for precious and non-ferrous alloys

Multifrequency ultrasonic generator

- Working with any ultrasonic system
- 17 to 70 kHz frequency range
- Full phase and amplitude monitoring
- Adjustable transducer voltage

Exhaust gas recirculation system

- Designed for continuous operation
- Nanoparticles production

Ultrasonic casting

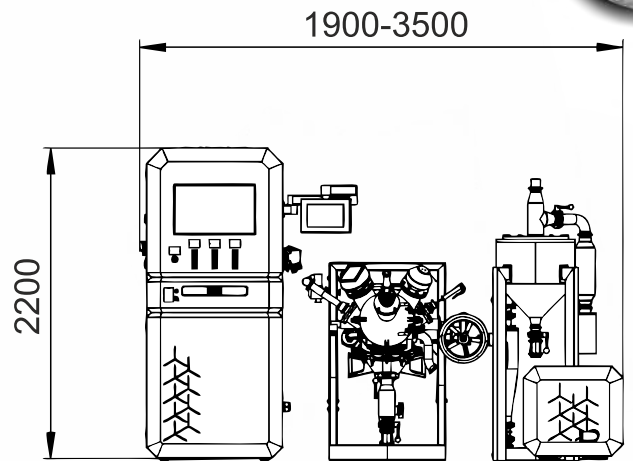
- Texture-less microstructure
- Suction and continuous casting
- Up to 10 mm diameter and 100 mm length

On demand systems

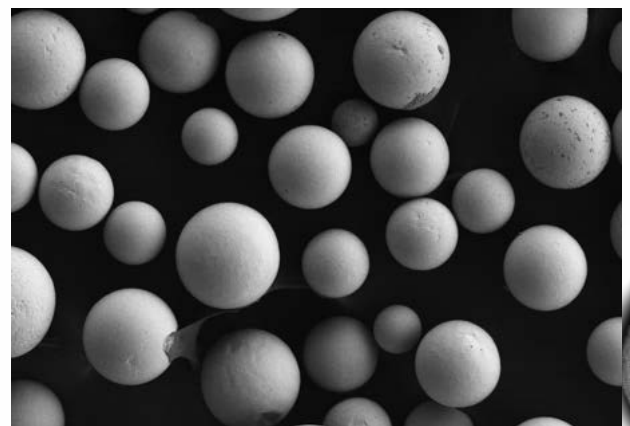
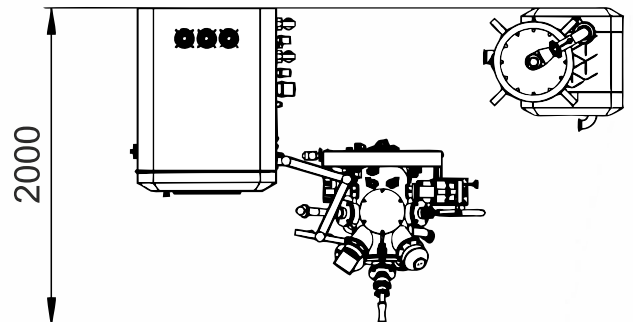
- High vacuum option – up to 5×10^{-5} mbar
- 800 A plasma arc system
- Czochralski crystal system – monocrystals up to 3000 °C
- Ultrasonic forging – in situ severe plastic deformation
- Electron Beam Unit – up to 30 kV

Processed Alloys:

- Zr-, Cu- and Fe-based BMGs
- Various HEAs including WTaVTi
- Ag- and Au-based precious alloys
- High speed steels
- Ti alloys - forging and atomisation
- AlSi12, AlSiMg, AlFe-intermetallics
- NiMnGa magnetocaloric alloys
- AZ31 magnesium alloy
- Cu-based nano-alloys



rePowder layout



Sample WTaVTi powder



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