ATO

BY 3DLAB


ATO LAB

# ULTRASONIC LAB SIZE METAL POWDER ATOMIZER

NECESSITY IS THE MOTHER OF INVENTION

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# GO BEYOND THE STATE OF THE ART

Open a new chapter in your research and development with ATO Lab.
Design your own alloys and quickly produce spherical metal powders with high flowability, which is perfect for your Additive Manufacturing and powder metallurgy needs..

# DESIGNER POWDER METALLURGY SOLUTION

ATO Lab enables to make metal powder yourself by optimizing the production of both reactive and non-reactive powders on a smaller, self-sufficient scale. Innovate alloy formulations and experiment with various metals and their alloys. We have developed stable procedures for metals and their alloys such as: aluminum, titanium, stainless steel and lots more.


ATO Lab throughput reaches several hundred grams of metal powder per hour with a particle size from 20 to 120 µm.

Additionally, depending on selected ultrasonic **ATO Frequency System** module, it's possible to produce a specific Particle Size Distribution tailored to user needs.

# KEY FEATURES

- Highest quality powders
- Most compact size
- Wide range of common and customized alloys
- Freedom of the input material choice
- Expand capabilities with ATO modules
- High temperature melting point
- Easy quickest material swap
- Highest safety standards
- Cost-effective production
- Affordable price

# SOFTWARE

The quality of the software is a strong factor for the user's experience.
We know this, so we've given ATO Lab a special software
that's adaptable and easy to use. Users can run the process
through an easy-to-reach touchscreen and precise controls.

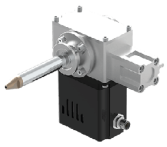
We designed this control system to let users easily adjust any setting,
including those for the ultrasonic and melting units.
Additionally, there's a feature enabling remote control of the atomization process.


# ATO LAB -ADDITIONAL CAPABILITIES

ATO Lab comes with a vacuum pump, which quickly creates the right environment with very low oxygen levels. This ensures the materials are of the highest chemical purity. Thanks to its tight-sealing chamber, it can make powders of reactive metals and their mixtures, like titanium and aluminum.

# DEDICATED MODULES OF FEEDING SYSTEMS

ATO Lab boosts productivity by offering flexible configurations. Users can choose from several feeding system modules, each designed for specific input materials. Additionally, custom feeders can be provided upon request.



**WIRE**
FEEDING SYSTEM

**SINGLE ROD**
FEEDING SYSTEM

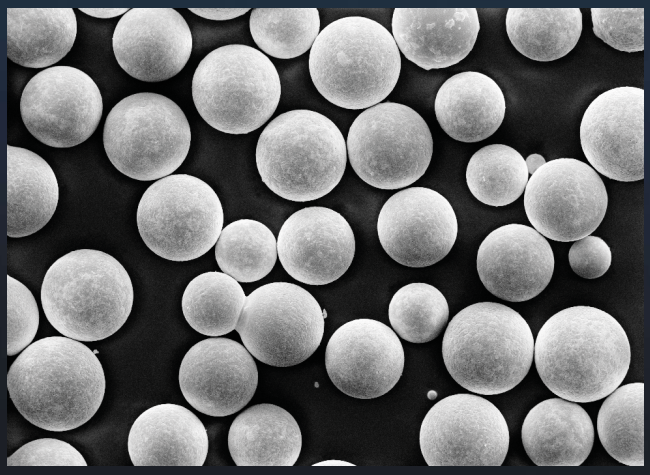
**MULTI ROD**
FEEDING SYSTEM

**REVOLVER ROD**
FEEDING SYSTEM

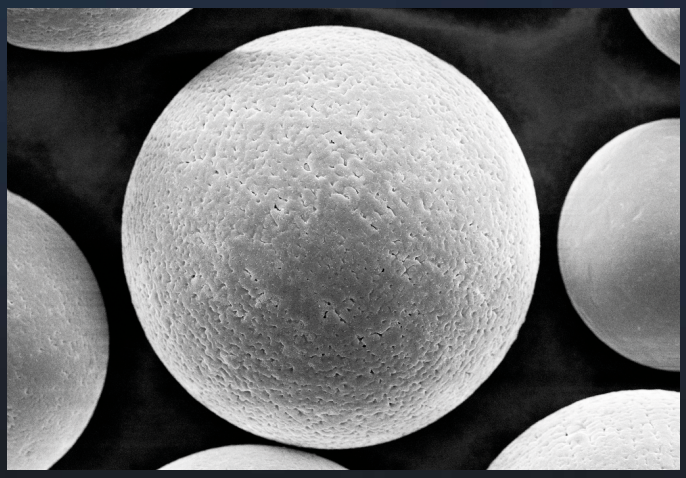
**CUSTOM**
FEEDING SYSTEM

# MAKE METAL POWDER IN YOUR LABORATORY

ATO Lab has been designed by industry-oriented researchers aiming to overcome traditional atomization limitations. ATO Lab has a compact form, making it possible for comfortable usage even in a limited space. Along with its innovative technology and no requirements for sophisticated infrastructure, it ensures exceptionally low operating costs and a quick return on investment.



Unsieved, raw ATO Lab powder, note the uniform size and spherical shape of the particles



A spherical IN718 metal powder particle produced in ATO Lab

# NEXT GENERATION ATOMIZER

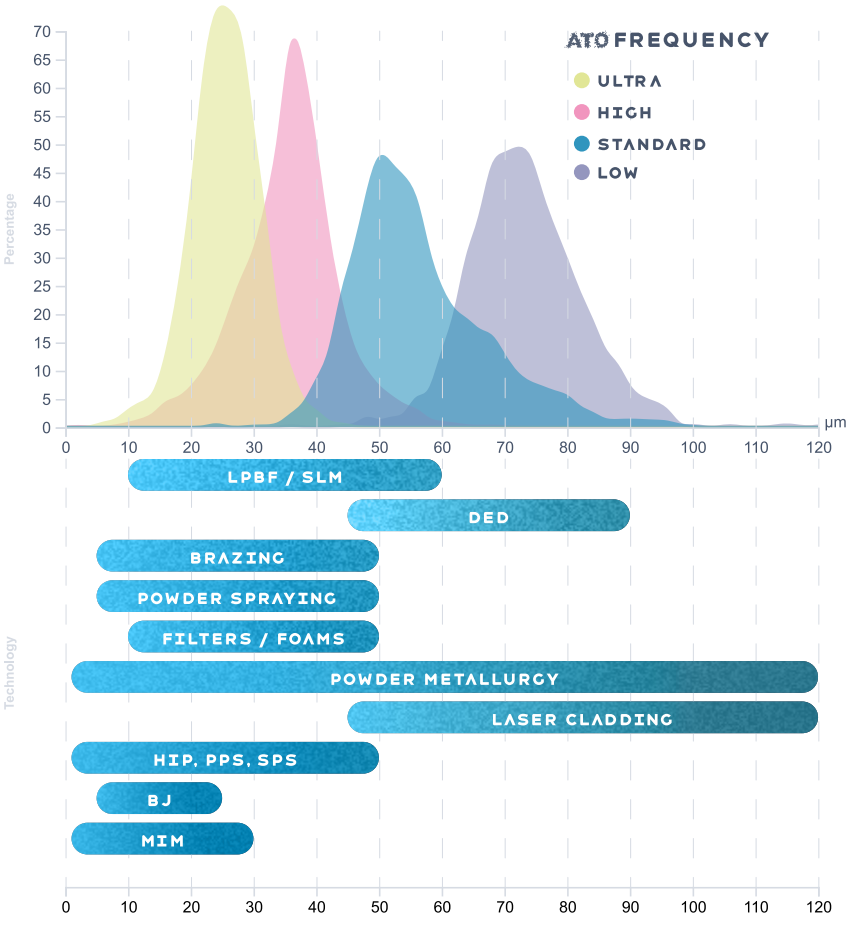
ATO Lab is a unique, compact machine for metal powders production, using a novel ultrasonic atomization technology. This breakthrough solution allows you to quickly produce metal powders with a high flowability and a narrow Particle Size Distribution.

# AFFORDABLE SOLUTION

Compared to other atomization devices available, ATO Lab is more resource-efficient and operates swiftly and economically.

With its compact modular design and unique characteristics, 3D Lab has made ATO Lab affordable for laboratories, small to medium-sized businesses or even start-ups.

# DIVERSE POWDER APPLICATIONS

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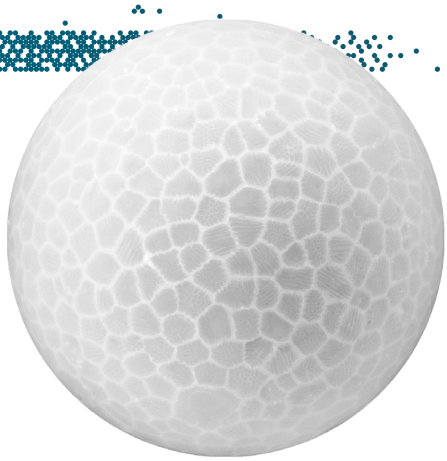
# DISCOVER THE BREAKTHROUGH IN POWDER PRODUCTION

## SEE THE UNMATCHED PARTICLE QUALITY

Due to the ordered nature of the ultrasonic atomization process, the output powder has a very narrow particle size distribution that depends on the chosen ultrasound frequency.



## TAKE YOUR PRODUCTION TO A NEW STAGE

Different melting modules make it possible to overcome the material melting point limitations. ATO Lab can use even very brittle or soft input material, as various dedicated feeding system modules are available to suit any form of feedstock.

By expanding with Induction Melting System module, users can precisely melt and atomize lower melting point materials with improved control and efficiency.

# WITH ATO IN YOUR LAB YOU WILL CHANGE THE WAY OF METAL POWDER PRODUCTION

**PROCESS CHAMBER**
stainless steel process chamber cooled with water-jacket

**MATERIAL FEEDER**
select feedstock form with ATO feeders*

**SONOTRODE**
the very heart of the machine, build with patented technology and state-of-the-art nanoalloys, it provides unique process flexibility

**FILTERS**
designed to remove small powder particles and excessive fumes

**ATO POWDER CONTAINER**
compatible with ATO accesories, keeps argon shield


**RECIRCULATION PUMP**
maintains the circulation of the argon atmosphere

**FRONT COVER**
ensures view and protect eyes

**TIG / PLASMA TORCH**
welding arc is formed by a electrode and is maintained in a shielding gas covering

**ULTRASONIC TRANSDUCER**
the "vibration engine" brings energy necessary for eject the particles from moltenmetal

**CONTROL PANEL**
user-friendly software, touchscreen, precise knobs

**WELDING SOURCE**
robust power supply guarantees stable process while efficient inverter minimize energy loss

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# SPECIFICATION

| GENERAL INFORMATION | ATO Lab |
|---|---|
| process | metal powder production |
| technology | ultrasonic atomization |
| melting method | TIG / Plasma / Induction (as module) |
| sonotrode type | half-wave nanoalloy sonotrode - patented |
| inert gas flushing method | vacuum pump |
| cooling method | liquide |
| processable materials | non-reactive & reactive alloys (e.g. Ti, Al, Zr-based alloys, intermetallics and refractory metals) |
| powder quality | high flowability, spherical particles shape, narrow PSD, low oxygen content |
| PSD (particle size distribution) | 20-120 um (depends on ultrasonic frequencies) |
| powder collecting system | cyclone |
| protective atmosphere preparation time | <15 min |
| input material | wire, rods, scrap, irregural |
| certfication | CE |

| PARAMETERS | |
|---|---|
| ultrasonic frequency | 20 / 35 / 52 / 72 kHz (upgradable) |
| O2 level | < 10 ppm |
| system throughput | up to 0.3 l/h |
| size (HxWxD) | 1997 x 813 x 1626 [mm] |

| REQUIREMENTS | |
|---|---|
| inert gas | argon |
| cooling | liquide & compressed air |
| power supply | 400V, 10 kVA / 3 phase |
| cleaning unit | ultrasonic cleaner (ATO Clean) |
| powder recycling system | sieving unit (ATO Sieve) |

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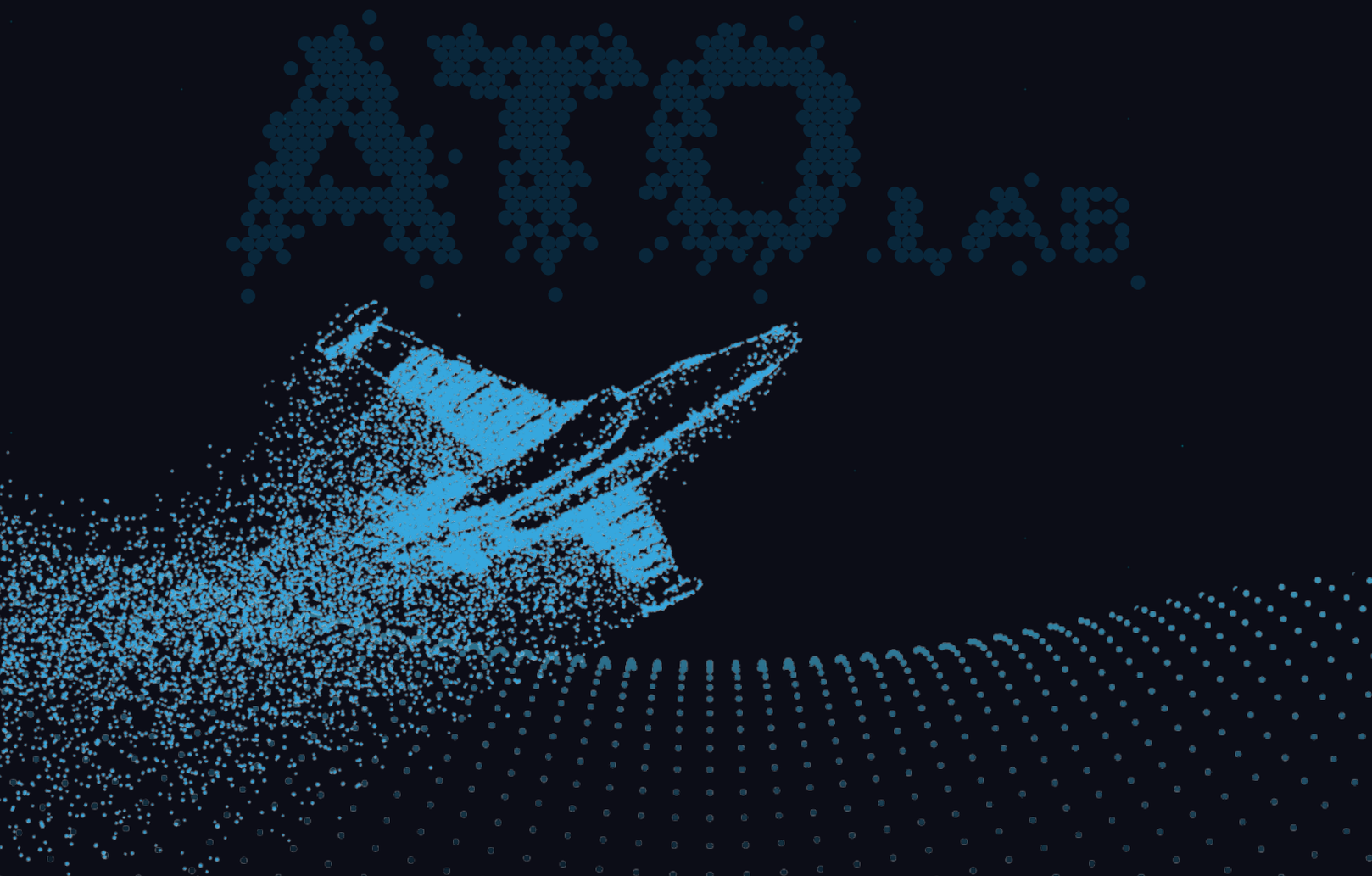

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