

ATO⁺.LAB

3DLAB

LABORATORY
METAL
POWDER
ATOMIZER

NECESSITY IS THE MOTHER
OF INVENTION



SOLID DYNAMIC

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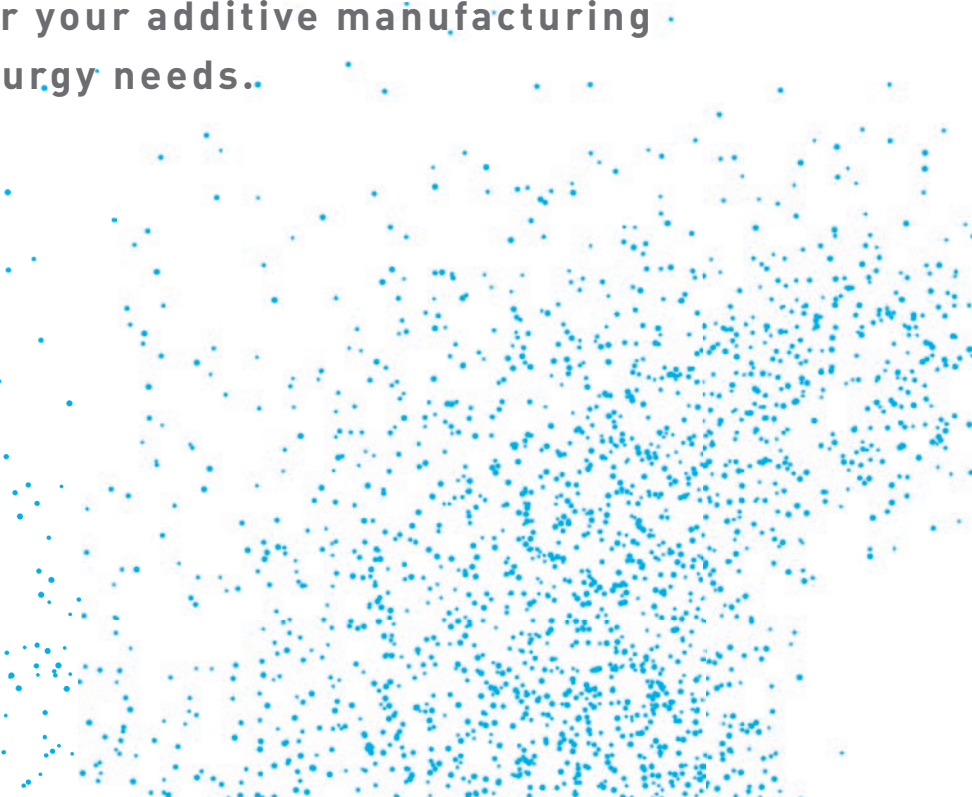
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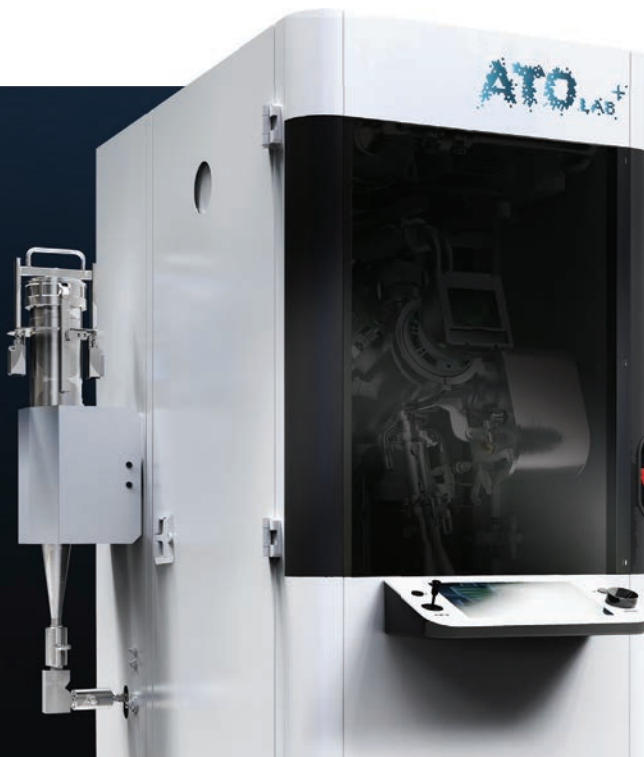
**G O B E Y O N D
T H E S T A T E
O F T H E A R T**

Open a new chapter in your research and development with ATO Lab plus. Design your alloy and quickly produce spherical metal powder with high flowability, which is perfect for your additive manufacturing and powder metallurgy needs.



**D E S I G N E R
P O W D E R
M E T A L L U R G Y
S O L U T I O N**

Our intensive R&D work was aimed at optimizing the laboratory-used atomization process and creating a device that enabled a successful production of both reactive and non-reactive powders on a smaller, yet still completely self-sufficient scale. We have developed stable procedures for metals and their alloys, such as: aluminum, titanium, stainless steel and lots more.

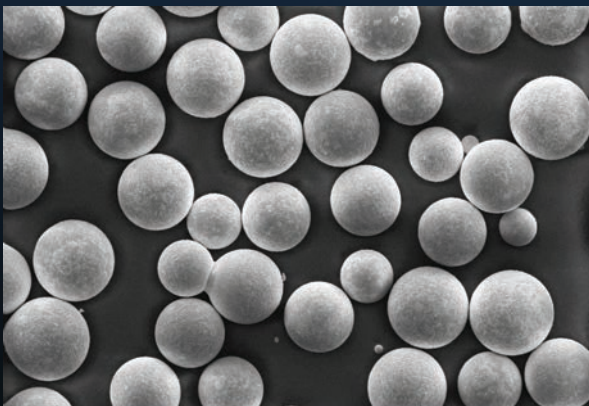


ATO Lab plus throughput reaches several hundred grams of metal powder per hour with a particle size from 20 to 120 μm , with optional subsequent procedures leading to the separation of desired powder fractions.

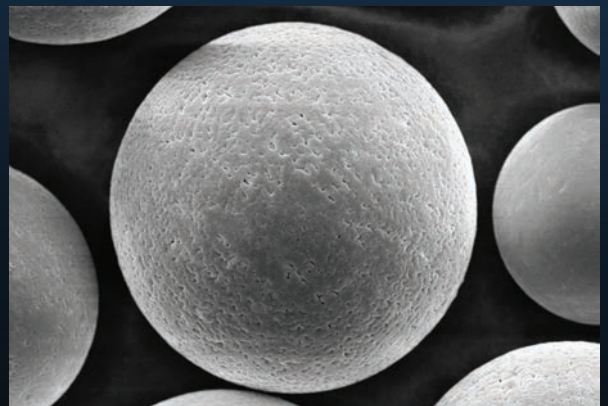
ATO Lab+

H I G H - E N D A T O M I Z A T I O N I N Y O U R L A B O R A T O R Y

ATO Lab plus has been designed by industry-oriented researchers aiming to overcome traditional atomization limitations. ATO Lab plus 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 the investment.



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




A spherical IN718 powder particle produced in ATO Lab plus

N E X T G E N E R A T I O N A T O M I Z E R


ATO Lab plus 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.



K E Y F E A T U R E S

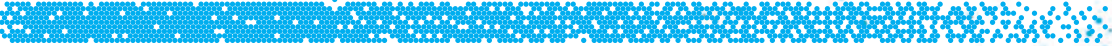
- 
- Highest quality powders
 - Process flexibility
 - No limitations in minimum powder quantity
 - Wide range of alloys
 - Cost-effective production
 - Affordable price
 - Scalable system structure

S O F T W A R E



Software quality lies at the heart of every user experience. Our team is aware of it and that is why we have equipped ATO Lab plus with our dedicated, versatile and user-friendly software. The operator can execute the process using a conveniently placed touch screen. The purpose was to build a handy control system allowing for the independent adjustment of every process parameter, including the ultrasonic and melting units.

ATO LAB PLUS - ADDITIONAL CAPABILITIES



New, highly advanced version ATO Lab plus with a vacuum pump system for quick preparation of the right atmosphere and an extremely low oxygen level to achieve the best possible chemical purity of the materials. Well sealed process chamber allows us to produce reactive metal powders and their alloys, such as: titanium or aluminum.

DEDICATED MODULES OF FEEDING SYSTEMS



ATO LAB PLUS allows to increase productivity. It can be configured with one of several modules of feeding systems dedicated to different types of input materials:

- Single Rod Feeding System (SRFS)
- Multi Rod Feeding System (MRFS)
- Induction Melting Feeding System (IMFS)



A F F O R D A B L E P R I C E

In comparison with currently available atomization units, ATO Lab plus has considerably lower media consumption. The cost-effective process is not only smooth and rapid, but also economical. Its compact size and unique technical solutions enabled 3D Lab to offer a highly competitive price for ATO Lab plus.

A T O P O W D E R C A N A L S O B E U S E D I N T H E F O L L O W I N G A R E A S :

- **Brazing**
- **Powder spraying**
- **Filters and foams**
- **Conventional powder metallurgy**
- **Laser cladding**
- **Chemical synthesis**
- **Catalysis**

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 NEXT STAGE

Focused power sources make it possible to overcome the material melting point limitation. ATO Lab plus can use even very brittle or soft input material, as various dedicated feeding system modules are available to suit any input material shape. Perfect for usage in small to medium-sized companies, new material development projects and research institutions.

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

RECIRCULATION PUMP

gas-tight design keeps atmosphere oxygen-free during the process

PROCESS CHAMBER

designed to minimize powder left and keep compact size of the machine

TIG TORCH

welding arc is formed by an electrode and is maintained in a shielding gas covering

ULTRASONIC TRANSDUCER

the "vibration engine" brings energy necessary for melt atomization

TIG WELDING SOURCE

robust power supply guarantees stable process while efficient IGBT inverter minimize energy loss

ULTRASONIC GENERATOR

powers up the transducer, advanced control system allows for full process monitoring

SONOTRODE

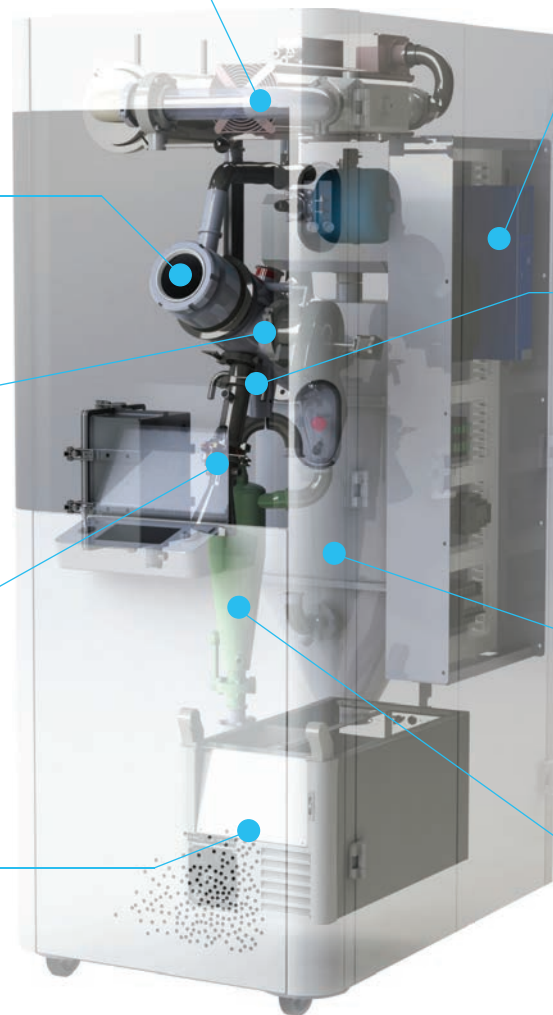
the very heart of the machine, built with patent pending technology and state-of-the-art nanoalloys, provides unique process flexibility

FILTERS

designed to remove excessive fumes and allows to recirculate inert gas

CYCLONE

the element responsible for powder collection, it separates powder from inert gas



SPECIFICATION

GENERAL INFORMATION	ATO Lab plus
process	metal powders production
technology	ultrasonic atomization
melting method	TIG / Induction
sonotrode type	half-wave nanoalloy sonotrode - patent pending
inert gas flushing method	vacuum pump
cooling method	liquid
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
powder collecting system	cyclone
protective atmosphere preparation time	↓ 5 min.
input material	any shape*
certification	CE

PARAMETERS

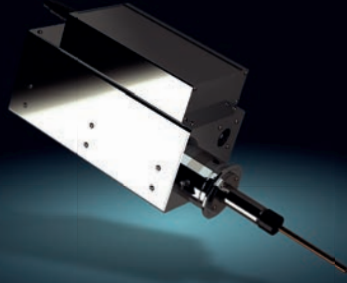
ultrasonic frequency	35kHz (+ upgrade to higher frequency)
O2 level (delta)	↓ 150 ppm
system throughput	up to 0.3 l/h
machine weight (uncrated)	700 kg.
size (HxWxD)	1997 x 1070 x 1539 [mm]

REQUIREMENTS

air supply	compressed air station
inert gas	Argon
power supply requirements / consumption	400V, 10 KVA / 3 phase
cleaning unit	ultrasonic cleaner
powder recycling system	sieving unit
water cooling	external chiller

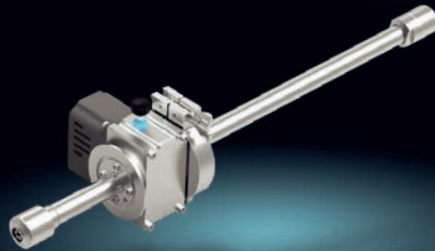
* SRFS, MRFS, IMFS modules

SINGLE ROD FEEDING SYSTEM



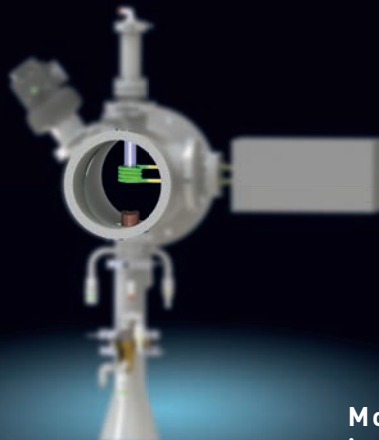
Module with the ability
to atomize cast rods

MULTI ROD FEEDING SYSTEM



Module for multiple rod usage
in a single process

INDUCTION MELTING FEEDING SYSTEM



Module for atomizing materials
in any shape



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