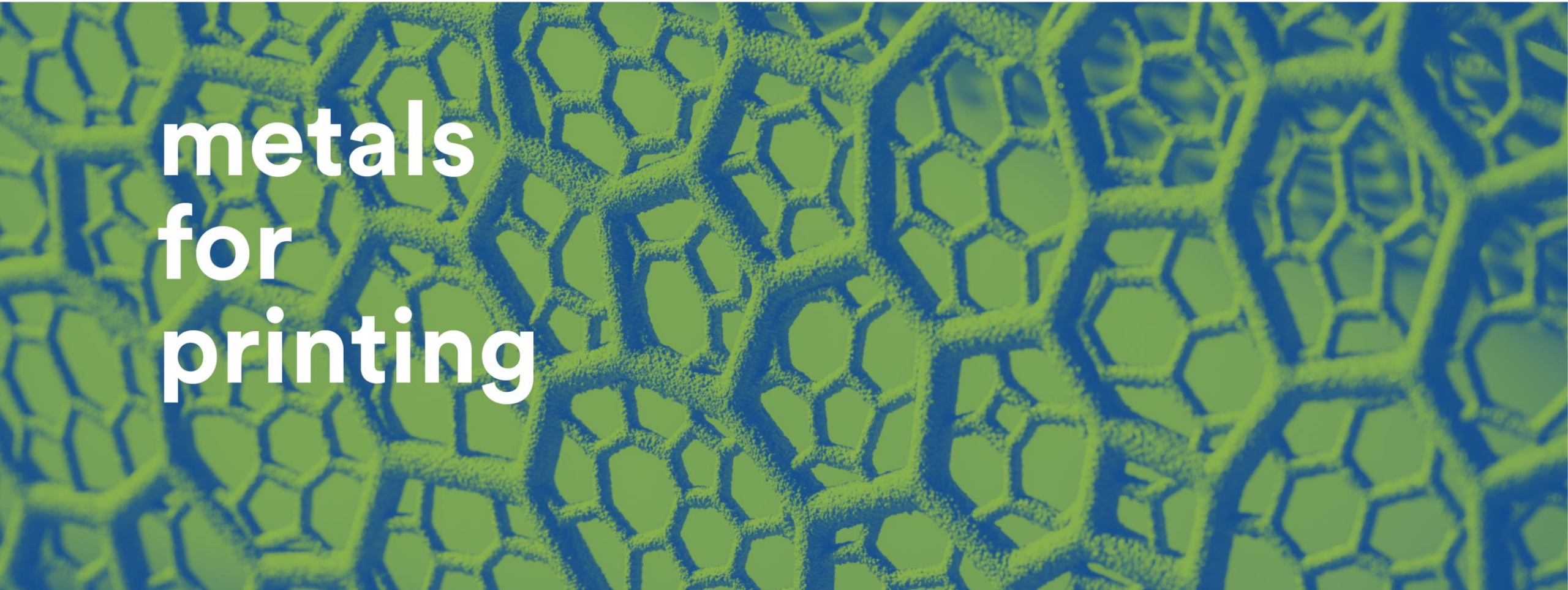
www.metals4printing.com

m4p



metals for printing

Who we are...

Established in late 2015 in Magdeburg as a Start-up with the vision and mission to setup a reliable Supply Chain for Metal Powders for Additive Manufacturing

Material

Metal powder for additive manufacturing

L-PBF / E-PBF / LMD / BJ

My story...

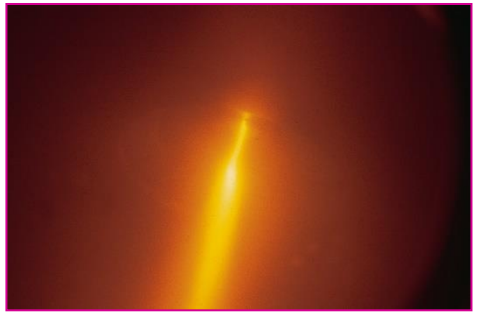
Cogne Acciai Speciali

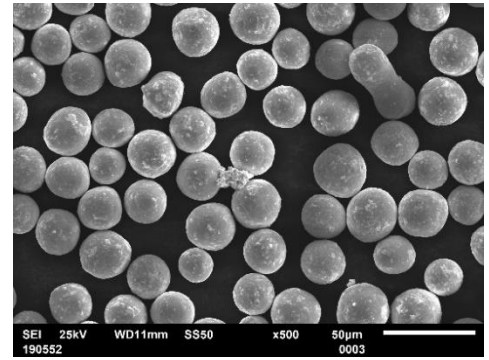
Quality dept.

Valve Steel
…and
powders

R&D manager
…and
powders

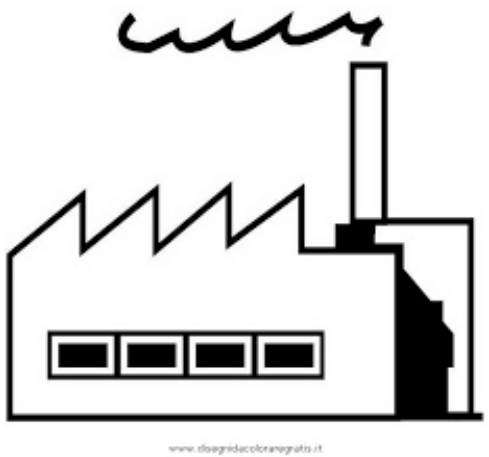
Gas Atomisation Powder Plant



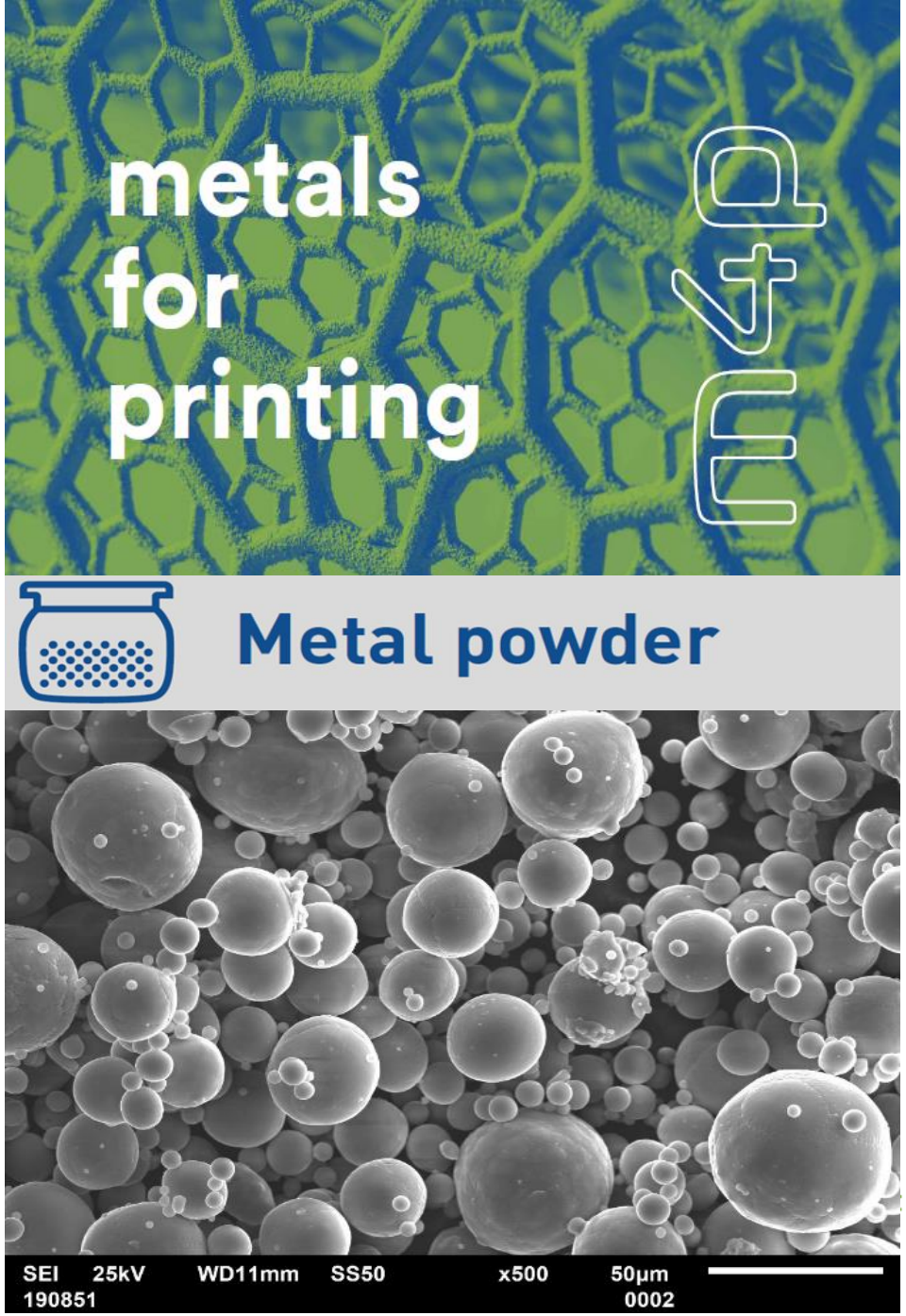


and after more than 20 years….

My story...



From a **BIG old-fashioned** company to a **small** but **innovative** and **future oriented** reality focused on……



The TEAM

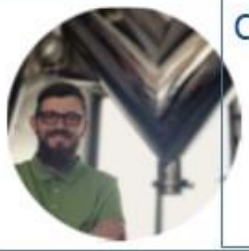
Priyanshu Bajaj
Regional Manager
APAC
2021

Chiara Andrianopoli
Sales Manager
Italy
2021

Manuela Grabenweger
Laboratory
AT
2018

Bastian Kallenbach
Development Engineer
AT
2020

Andreas Pelz
Managing Director
DE
2015



Christopher Thun
Production
DE
2019

Anja Büttner
Teamleader Prod.
DE
2018

Harald Kaltenbacher
Production
AT
2019

Nicolai Rettenmaier
Digital marketing
DE
2023

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Burghardt Klöden
Business Develop.
Global
2023

Philipp Tschertou
General Manager
AT
2018

Fedor Dursinov
Production
DE
2022

Souvik Roy
R&D, software
DE
2022

Patrick Meinhardt
Teamleader QS
DE
2021

Chris Stiebert
Customer Service Manager
DE
2018

David Pammer
Sales Manager
CEE
2023

What unites us is the passion for innovation…

Young growing family with international approach and cultural diversity

m4p

Metal powder

Various Services:

- Material Development
- Material Consultation
- Laboratory Analysis
- Material Recycling
- AM - Training
- Special Service

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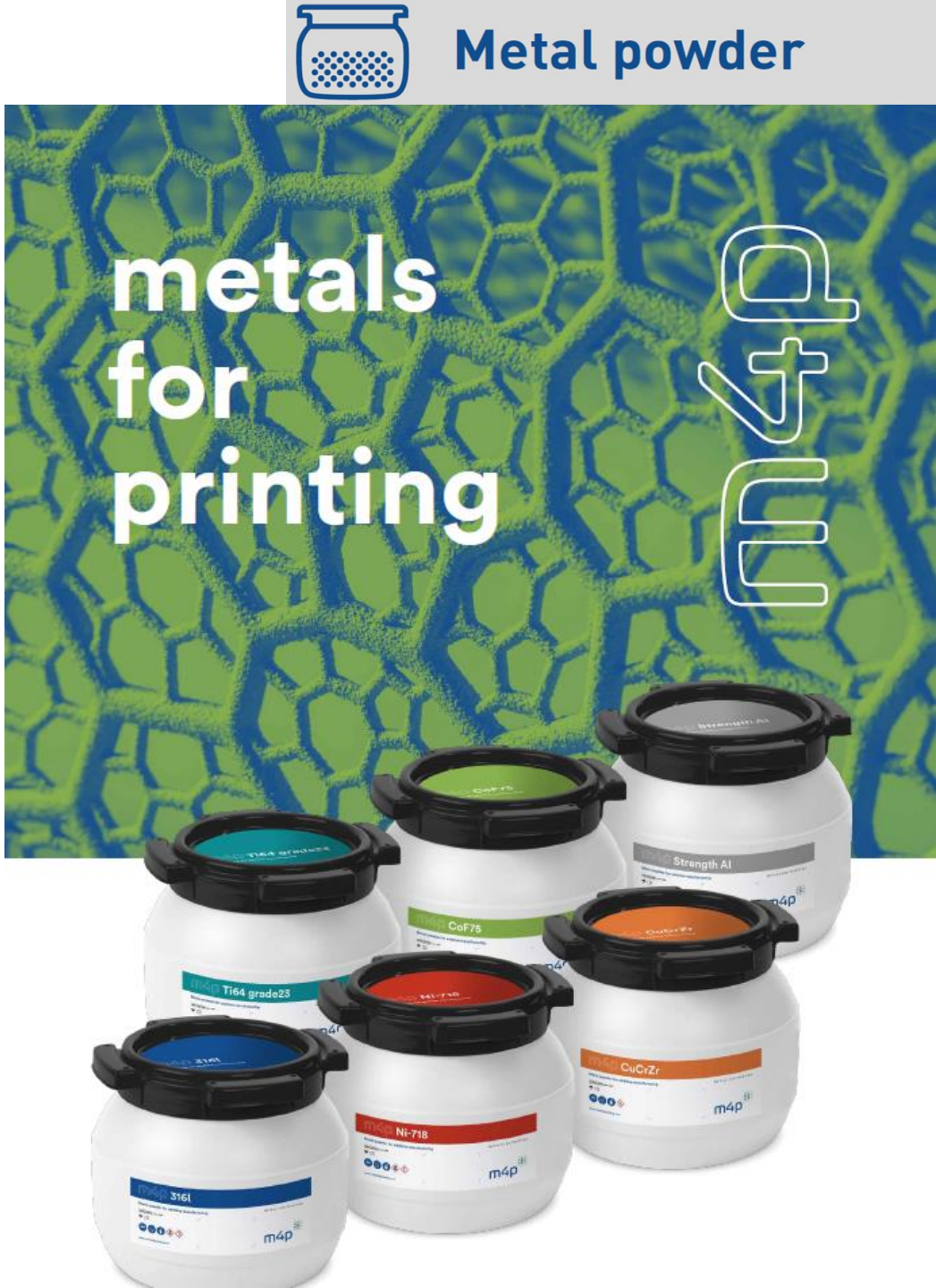
Material Portfolio….

- All relevant Material Families: Fe, Al, Cu, Ti, Ni, Co, W
- > 110 Powder Specs in the Portfolio
- > 50 Items on stock
- Available in different PSD
- Materials for all relevant Metal AM technologies: L-PBF, EBM, DED, BJ
- Customized Materials available



The m4p story...

Material Consultation & Material Development

Fe-Base

- tool steels – **m4p™ Fe-2343 (H11), m4p™ Cxplus or m4p™ type52 (**1.4452 Ni free**)**
- soft-magnetic materials – **FeSi 3 or 6,5%**
- low alloyed steels – **m4p™ Fe-7225** (42CrMo4) or **m4p™ Fe-7131** (16MnCr5)
- oxidation resistant steels - **m4p™ Fe-4828** (309L) or **m4p™ type62-DX** or **m4p™ type10-SDX ...**

Case study with PUNTOZERO - Ball Control Valve Trim

Component redesigned for AM in a single piece with an internal structure designed to follow the flow and the outside structure thought to stiffening the component by minimizing the use of material and ensuring a perfect seal of the system even with high pressure levels.

Cu-Base

Courtesy: Additive Drives GmbH

- highest conductivity - **m4p™ PureCu**
- increased strength - **m4p™ CuNiSiCr**
- High electrical and thermal conductivity - **m4p™ CuCrZr**
- Brass **m4p™ CuZn42** and Bronze **m4p™ Brz10**

The m4p story...

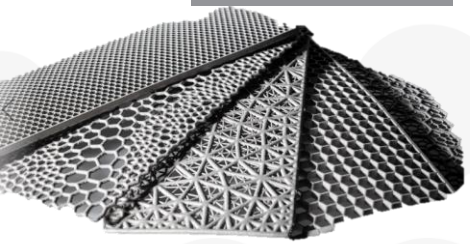
Material Consultation & Material Development

Case study with PUNTOZERO - Bike frame

Lighter and stiffer new frame design manufactured with as few components as possible:

- 60% weight reduction and same stiffness
- Simplified assembly: only 5 parts, compared to 21 parts for the original design, reducing the risk of errors or defects

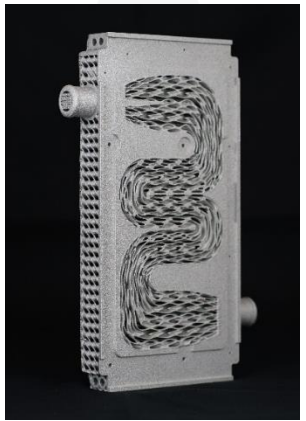
Al-Base



High quality **m4p™ AlSi10Mg**

- increased strength - **m4p™ StrengthAl**
- increased warm-strength - **m4p™ ResistAl**
- High thermal conductivity and good strength - **m4p™ AlSi9Cu3**
- increased conductility - **m4p™ PureAl**

Case study with PUNTOZERO – Leverage
Static and fatigue tests carried out by **TEC EUROLAB**



Case study with PUNTOZERO - Heatsink

Mass reduction and improvement of heat exchange with the electric motor inverters, without penalizing the power absorbed by the water pump and the mechanical strength of the assembly

Weight reduction: -30%
Exchange surfaces: + 300%

The m4p story...

Material Consultation & Material Development

Ti-Base

m4p™ Ti64 gr.23 and gr.**5** - **m4p™ Ti gr.2**

- High specific strength
- High ductility
- Corrosion resistance

Ni-Base

m4p™ Ni-718 , Ni-625, Ni-X, Ni-939

- High teperature resistance
- High creep resistance
- High corrosion resistance
- Good fatigue behavior

Co-Base

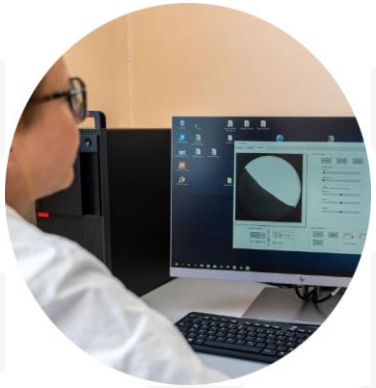
m4p™ CoF75 for industrial and medical application

- High wear resistance even at high temperature

The m4p story...

LABORATORIES

POWDER ANALYSIS



Chemistry
- Elemental Analysis ICP-OES
- O/N – Inert Gas Fusion (LECO)
- C/S - Induction Furnace Combustion (LECO)
- SPECTRO XRF
- SEM-EDX

Particle Size
- Dynamic Image Analysis (Camsizer X2)
- Sieve Anlysis
- Laser Diffracation (Malvern)

Particle Shape
- Quantitative Particle Shape An. (Camsizer X2)
- SEM Scanning

Powder Density
- Apparent Density (Hall/Carney/Scott)
- Tap Density
- Powder Cross Section (CT)

Powder Flowability
- Hall/Carney Flow
- Granudrum - Avalange Angle & Cohesive
- Angle of repose
- Moisture Analysis – Karl Fischer Titration

Powder Purity (Contamination)
- SEM-EDX Scanning
- Micro CT

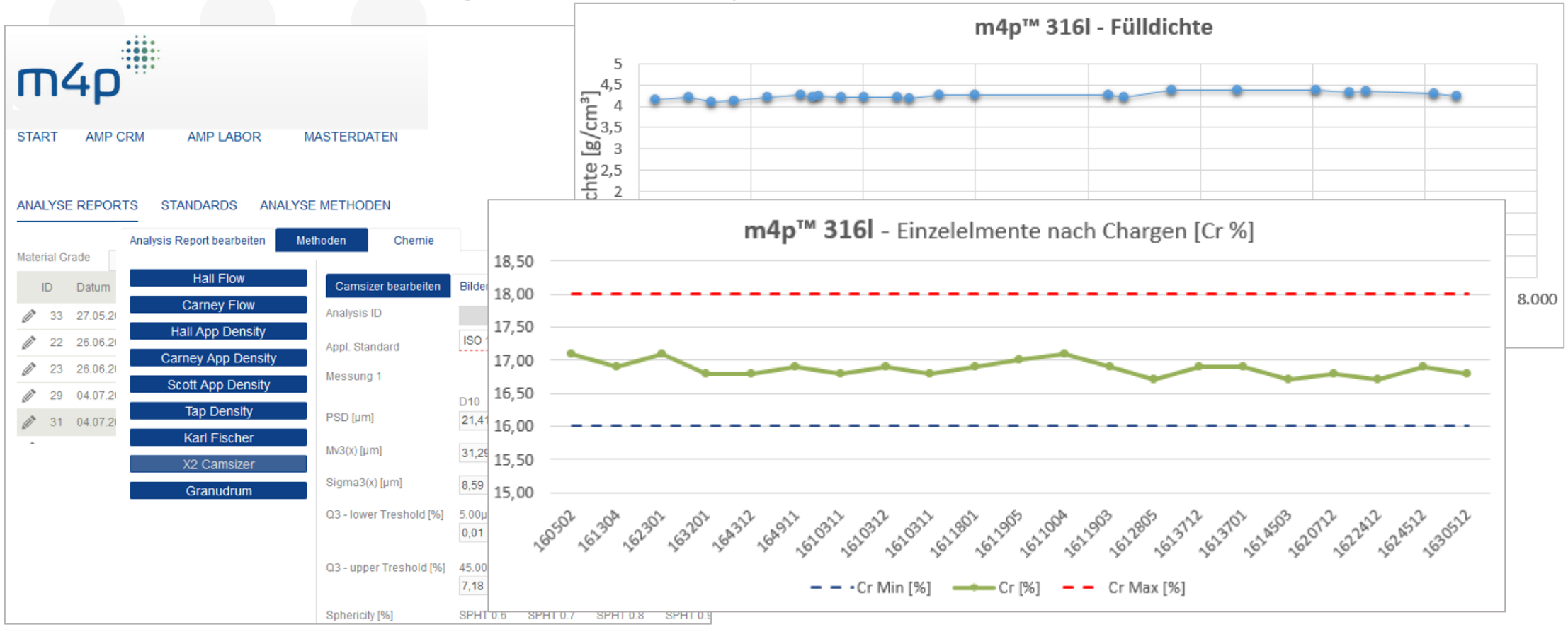
AM PROCESS SUPPORT

- Material validation – EOS M290 (M400)
- Parameter Development
- Training & Education

The m4p story...

The digital approach

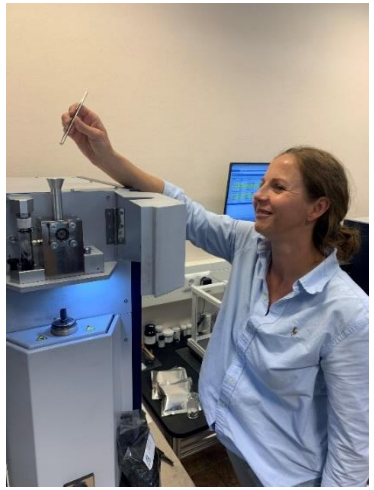
All analysis data is stored in the **m4p Company portal** and enables gapless tracking of all materials at batch level through the entire lifecycle.



Single values & parameters can be traced on batch level

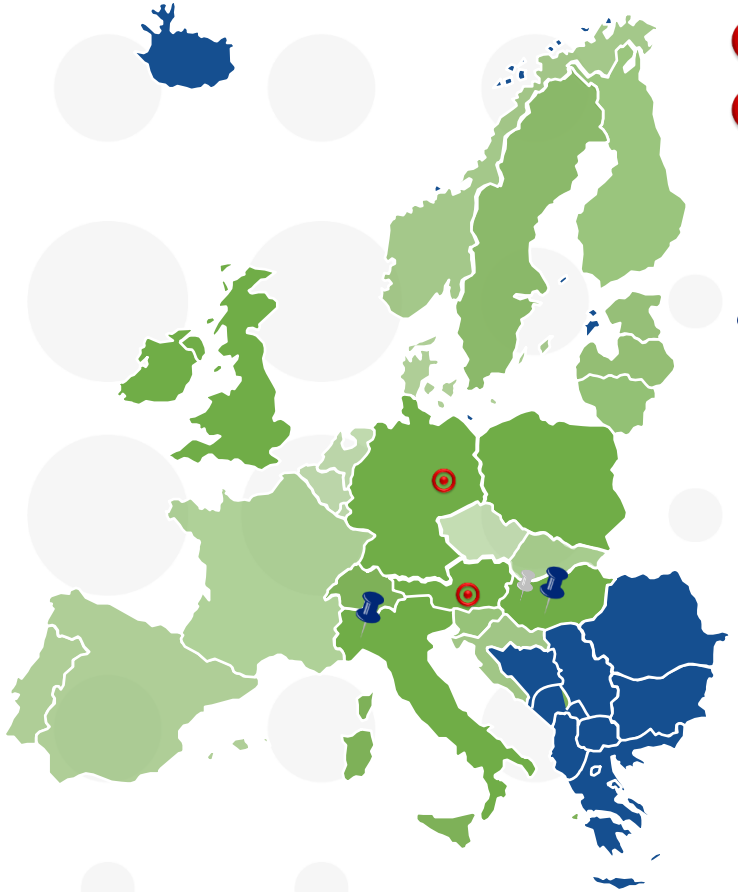
QM: ISO 9001 – Implementation started in 2021 – in progress

The m4p story... Team event in Feistritz on Sep'23

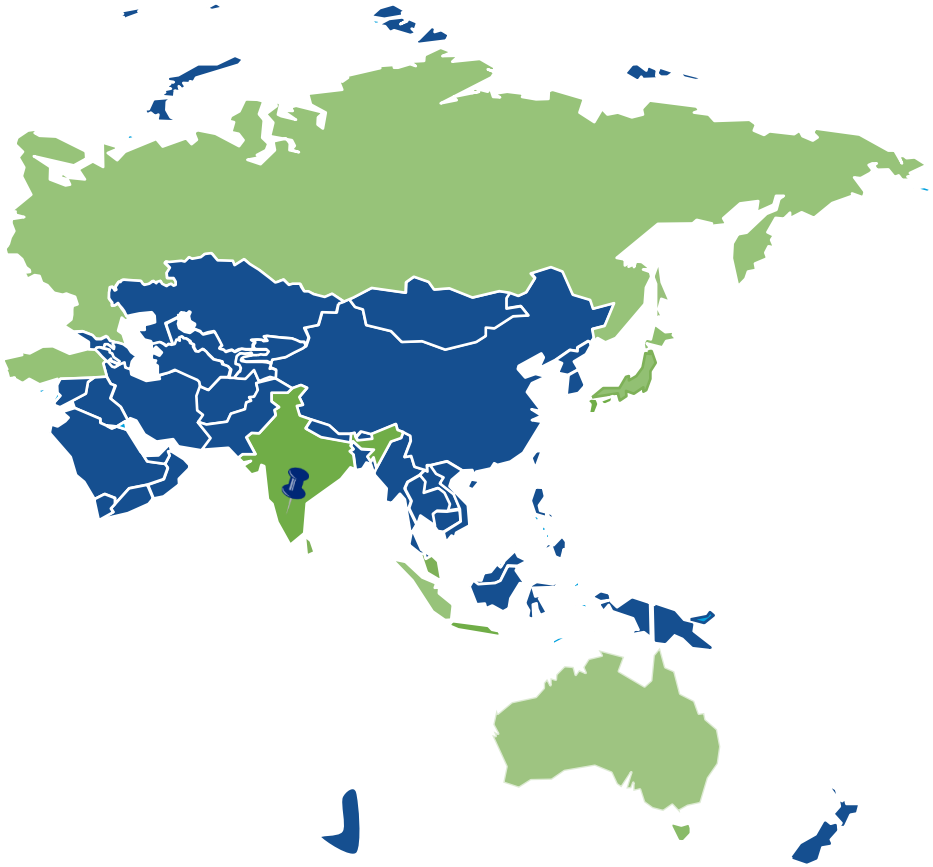


The m4p story...

Rapid regional and global expansion



- **Magdeburg/DE Produktion 2015**
- **Feistritz i.R./AT Produktion 2017**
- **Torino/IT** – Subs - Distribution EU- Sout/West 2020
- **Bangalore/IN** – Subs Distribution APAC 2021
- **Budapest/Hun** – Subs Distribution Central-East Europe 2022



We serve all Countries in Europe and most of APAC countries - US/CA entry planned for 2023

m4p is on the moon…

m4p