



# Retrofit Kits for 3D.

Customer Service Sales Booklet

Innovations for a **better world.**

**BUHLER**

# Retrofit Solutions for 3D Machines



## Customer Support and Services.

Always on hand to sustain your business.

- Bühler Leybold Optics provides retrofits for complete machines and upgrades of control systems on old systems.
- Bühler's worldwide customer service as well as the fast delivery of replacement and wear-and-tear parts are just two important aspects of customer support. Preventive maintenance and inspection together with machine re-conditioning and upgrading round-off the after-sales services.

# Retrofit Solutions

## General Retrofit Solutions for Bühler 3D Machines.

### Solution:

- Monomer supply box, with flow controller, tempering of monomer and monomer level detection
  - Exchange of SSV, Hüttinger Scalo or Tig against actual NEW “True Plasma”
  - Exchange SV630F with actual new SV630B
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### Added value:

- ECO-Mode (electrical power saving) in stand by: power saving up to 30%
- Upgrade from Beckhoff -Windows NT or XP based PC systems to Windows<sup>®</sup>7
- Upgrade of Siemens PLC system to Windows based PC system
- Implementation of process “Haze No More“



# Retrofit Solutions

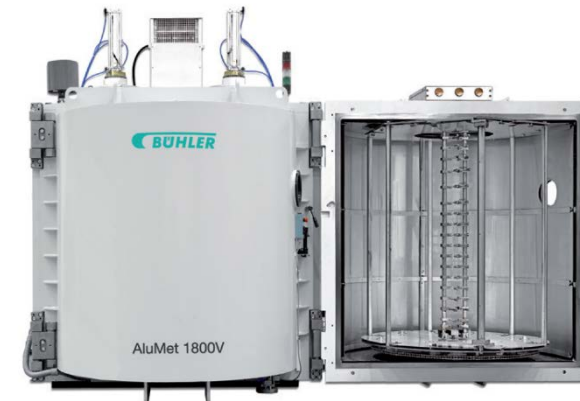
## AluMet 1800V.

### Solution:

- Cold trap spiral => helix (improved H2O pumping)
- Diffusion pump HS20 <=> DIP 20t or 30t
- MF-Glow process: Hüttinger TIG10  
=> Advanced Energy PEII5K
- Installation of LeyboldOptics DC glow discharge system
- Stand alone DC or MF (40kHz) power supplies, with or without feed through and electrodes
- Manual operated monomer / gas supply system for glow discharge processes

### Added value:

- New control system
- Overhaul of old horizontal LO-systems (BALZERS: BAH or old LeyboldOptics A machines)
- New electrical system (Beckhoff) and new pump sets + glow process (Top Coat)
- Diverse filament fixtures for easy and stabilized production
- Higher output and latest technology products



# Retrofit Solutions

## CompactMet GEN1/2 to GEN3.

### Solution:

- Wipe out function (V4.8) for improved cold trap function (remove maximum of H<sub>2</sub>O)
- Program pre-selection via additional push bottoms at each door
- New plasma electrode for CompactMet
- New electrode design
- New evaporator design
- New feed through V1 and cold trap valve (cartridge system for fast maintenance)



### Added value:

- Stabilized production
- Less maintenance necessary
- Reduced complexity due to less and simple components

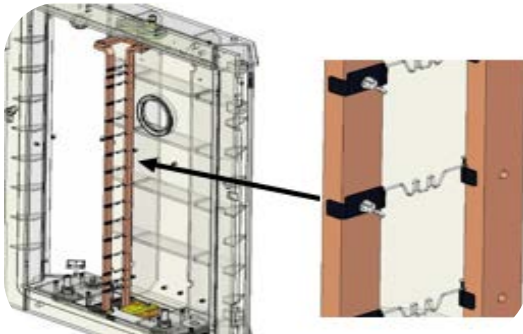


# Retrofit Solutions

## CompactMet.

### Optimized Aluminum evaporator:

- Less vibration: less breaking of filaments
- Simple and safe clamping mechanism: best electrical contact, suitable for different shapes of filaments



### DIP 20000 instead of DIP 12000

- Pump speed to 1-EXP-5mBar in 5-6min at empty/ clean chamber
- Faster cycle time
- Increased productivity



# Retrofit Solutions

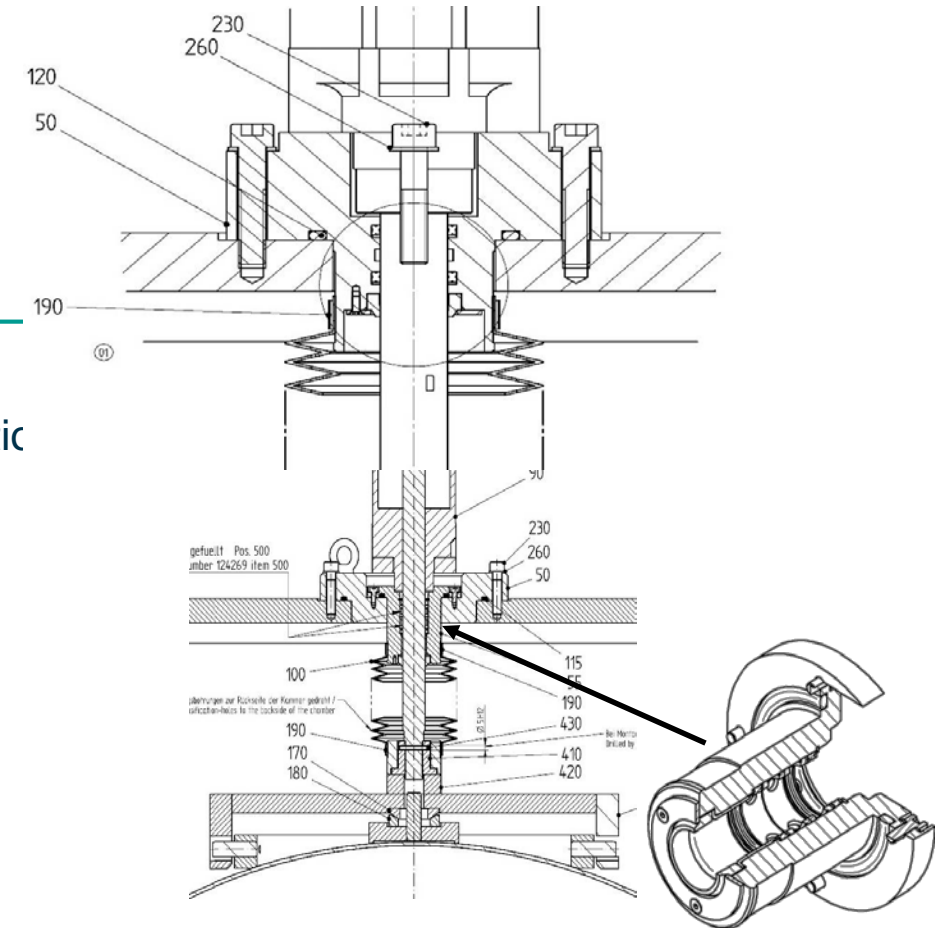
## CompactMet: Optimized Vacuum feed through cold trap valve V.3.2.

### Solution:

- Bigger flange allows complete disassembly of the pneumatic cylinder
- Separate sealing and bushing unit (can be exchanged in one piece)
- Sealing unit can be stock part
- Same sealing unit of cold trap and of diffusion pump valve feed-through

### Added value:

- Increased lifetime of sealing due to better mechanical protection and lubrication
- Easy disassembly and reassembly of wear parts (e.g. x-rings)
- Less replacement time, less machine downtime and less spare parts
- Easy maintenance





# Retrofit Solutions

## CompactMet: Optimized Vacuum feed through diffusion pump valve V.1.1.

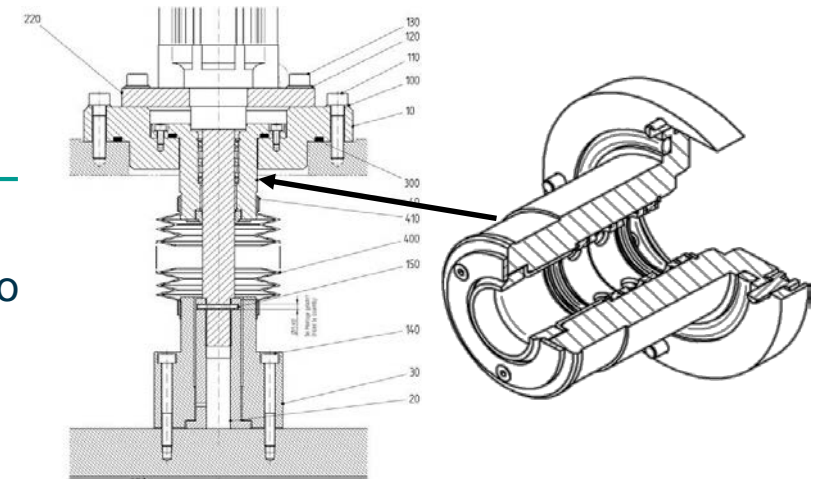
### Solution:

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# Retrofit Solutions

## PylonMet.

### Solution:

- Retrofit of automatic door movement
- MF-Glow process: Hüttinger TIG10 => AE PEII5K
- Door side recipe mapping
- HS20

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### Added value:

- Change from “safety mats” to touch free scanner system
- Clocked water for target tempering (avoiding of moisture)
- Higher safety (no steps in operator area)
- Reduced operating costs



# Retrofit Solutions

## DynaMet 4V.

### Solution:

- Retrofit TMP 1000C to Pfeiffer HiPace 2300 incl. software and circuit diagram
- Overhaul: Main drum / Lock feed through / incl. installation
- Upgrade: RFG 3001 or RFDS against successor Advanced Energy “Paramount 13,56”
- Upgrade: old Alan Bradley control system to actual Beckhoff WIN7 based system
- Upgrade handling: pneumatic to electro mechanical gear box incl. software and circuit diagram
- Upgrade: SSV60/75 or TIG90 or Scalo to actual “TruPlasma” power supplies with 2khz Arc management

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### Added value:

- Stabilized production



# Retrofit Solutions

## TruPlasma Generation for PylonMet and DynaMet.

### Solution:

- Necessary power supplies for one D4V installed in a cabinet with a rack system, plus additional components for interface, cooling water supply and power distribution
- Cabinet:
  - 19" rack system
  - Height: 2000mm + 200mm socket
  - Width: 600mm
  - Depth: 800mm

### Added value:

- Improved power supply for PylonMet and DynaMet machines
- Stabilized production

Installation and setup time of the interface: 1 week

2x DC 3060  
and  
4x DC 3030  
installed in  
cabinet



# Retrofit Solutions

## Retrofits of Non-Bühler systems.

### Key benefits:

- Continuous usage of latest substrate holders / tools etc.
- Latest state of the art PC “Windows7®”- based & Monitoring System (CompactMet)
- Complete new electrical system
- Spare parts availability
- Latest safety devices CE (if required)
- **Stabilized production**
- **Bühler support via remote possible**

**Bühler Leybold Optics  
offers upgrades of  
complete electrical systems  
incl. Galileo software and  
upgrades of similar  
machines.**

**Examples for  
Retrofits of  
Non-Bühler  
systems**



# Retrofit Matrix for 3D Machines

# Retrofit Matrix for 3D Machines.



CompactMet			Ⓜ				
AluMet	Ⓜ						
DynaLine							Ⓜ
DynaMet				Ⓜ	Ⓜ	Ⓜ	
PylonMet			Ⓜ				

AluMet 1800 V	CompactMet	PylonMet 1V / VXL	DynaMet 4V	DynaMet 3H	DynaMet 2H	DynaLine 4V / 5V
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Beckhoff PLC/S7 I/Os/Intouch 10/ Win7	✓	—	✓	✓	✓	—	—
Beckhoff/ Intouch 10/Win 7	—	—	—	✓	✓	✓	✓
Allan Bradley PLC 5/ Intouch 9/ Win XP	—	—	—	—	—	—	—
Beckhoff/WPF/Win7 Flash PC	—	—	—	—	—	—	—
Beckhoff PLC/S7 I/Os/WPF/Win7 Flash	—	—	—	—	—	—	—
Allan Bradley PLC 5/ Intouch 9/ Win XP	—	—	—	✓	—	—	—

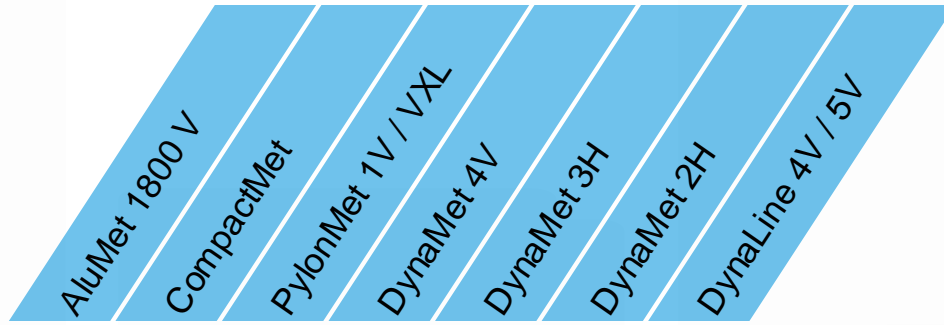


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# Retrofit Matrix for 3D Machines.



CompactMet			Ⓜ				
AluMet	Ⓜ						
DynaLine							Ⓜ
DynaMet				Ⓜ	Ⓜ	Ⓜ	
PylonMet			Ⓜ				



Beckhoff/ WPF/ Win7 Flash PC	—	—	—	—	—	—	—
Beckhoff PLC, I/Os/ Intouch 10/ Win7	—	—	—	↙	↙	—	—
Feed through V1	—	↙	—	—	—	—	—
Feed through cold trap valve	—	↙	—	—	—	—	—
Optimized aluminum evaporator	—	↙	—	—	—	—	—
TruPlasma Generation	—	—	↙	↙	↙	↙	—



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# Consumables for 3D Machines

# Retrofit Solutions Filaments.

## Solution:

- Bühler Leybold Optics offers a wide range of filaments in standard and customized shapes and sizes
- Types: W-shape or spiral shape

## Key benefits:

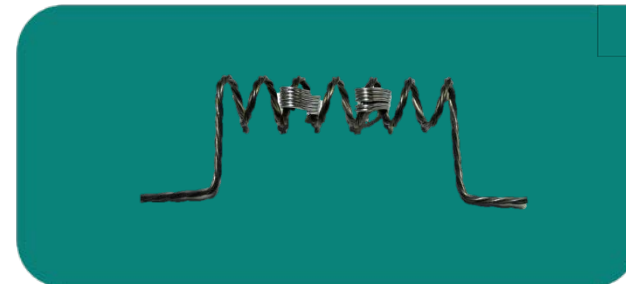
- Customized parts meeting highest quality expectations
- Reliable and highest quality standard products
- Process technology support

We develop tailored and optimized products to suit your specific applications upon request.

Spiral  
shape



W-  
shape



# Retrofit Solutions Targets.

## Solution:

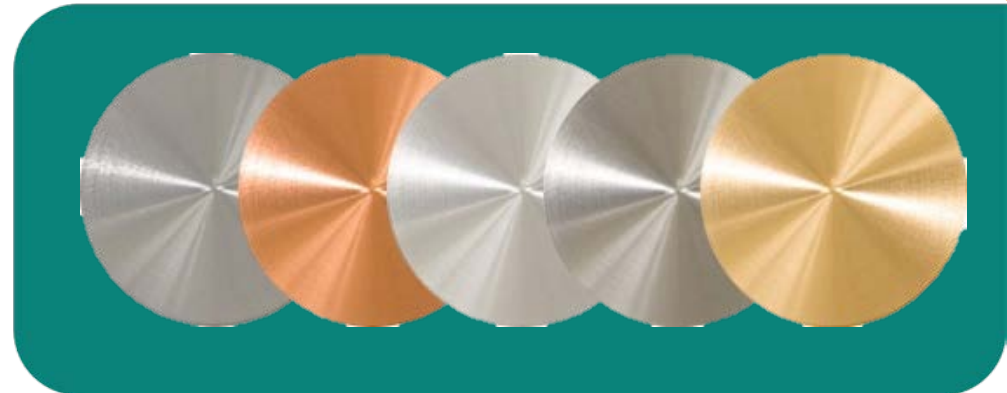
- All sizes can be tailor-made as per customer's standard
- Bonding service
- Backing plate manufacturing
- Sputtering targets offered include: pure metals, precious metals, oxides and fluorides

## Key benefits:

- Customized parts meeting highest quality expectations
- Reliable and highest quality standard products
- Broad product range and high quality sputtering targets

**We develop tailored and optimized products to suit your specific applications upon request.**

**Targets**

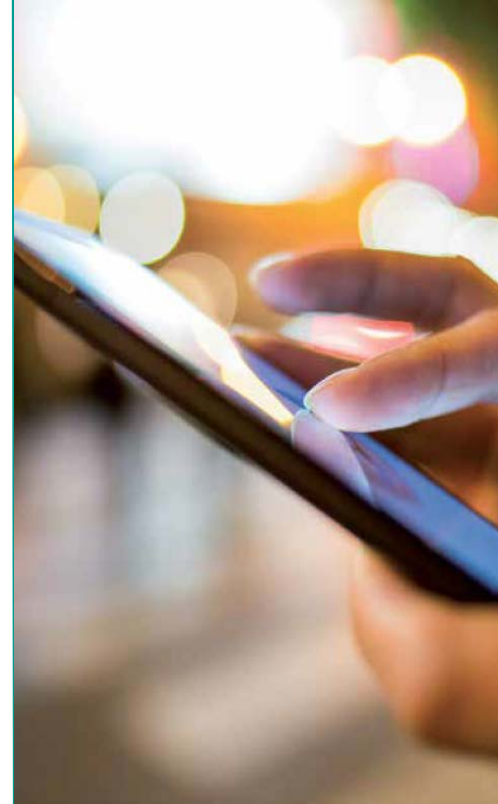


# Retrofit Solutions Glipoxan.

## Solution:

- For the production of a corrosion-resistant coating
- For high reflectivity on the surface of workpieces, especially reflector inserts formed from plastic
- Processed in a vacuum chamber with a glow-discharge cathode and an evaporator

We develop tailored and optimized products to suit your specific applications upon request.



# Retrofit Solutions

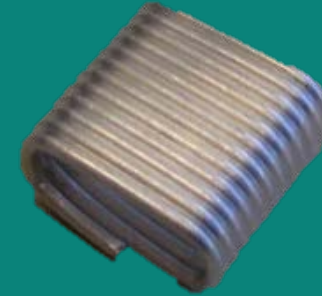
## Aluminum wires and coils.

### Key benefits:

- Aluminum wires with different impurity levels
- Offer an excellent electrical conductivity
- High corrosion resistance and good weldability
- Tensile strength
- High formability

We develop tailored and optimized products to suit your specific applications upon request.

Wire



Coil





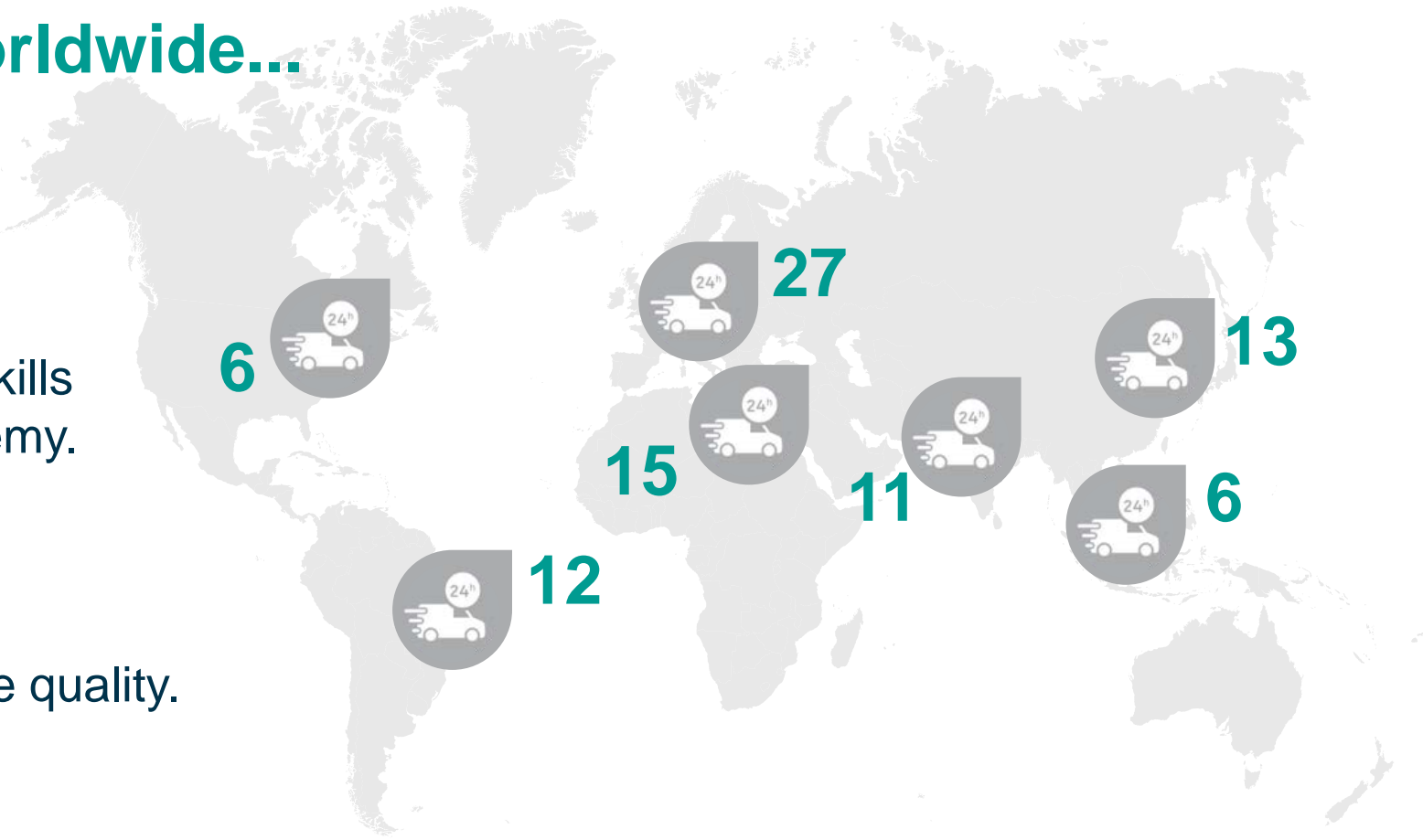
# In the Region for the Region.

Differentiation through expansion of global service network.

## 90 service stations worldwide...

... for customer service along the entire lifecycle of their solutions.

- Continued investment in our skills on-site with our Service Academy.
- Ongoing initiatives for the reduction of our reaction time for customer enquiries.
- Commitment to highest service quality.



**Engineering Customer Success.**

Bühler 2017

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