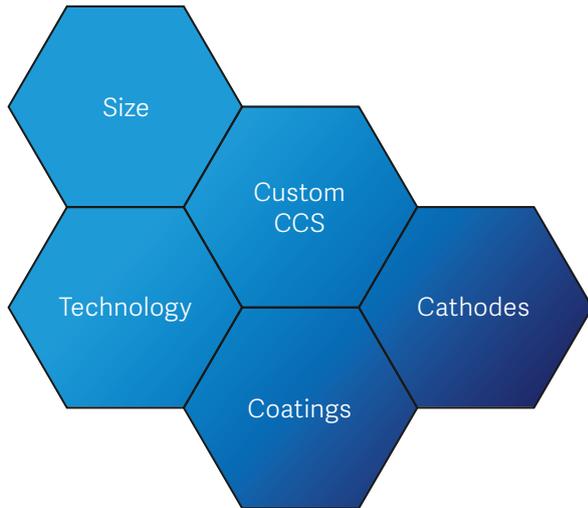




CUSTOM COATING SOLUTIONS

CCS – Custom Coating Solutions

PLATIT's Custom Coating Solutions meet any special requirements. They are user-defined in every respect:

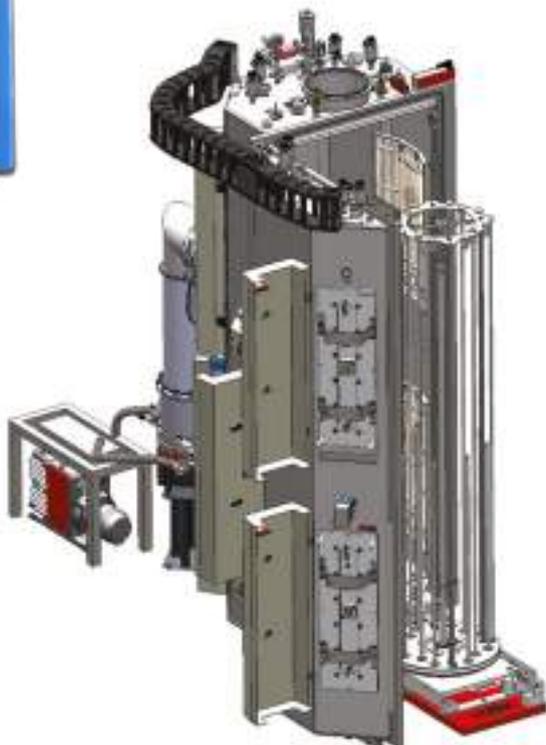


Engineers and technicians from PLATIT in the CCS (Custom Coating Solutions) division in Switzerland advise customers and design, develop, manufacture and program systems according to the individual requirements. They develop solutions in close exchange with customers and accompany them over the years by providing support and supplying spare parts.

For this purpose, PLATIT has established a network of companies for cooperation in the production of components. PLATIT also manufactures special holders as well as handling devices and works together with various partners to offer peripheral equipment adapted to the Custom Coating Solutions.

For inspiration, the following pages show different sample applications for which PLATIT has already developed, manufactured and delivered coating systems.





CCS for Saw Bands

The biggest challenge in the handling as well as coating of saw bands is their size as they are wound on a tool carrier, the coil. Due to circumferential speed, layer growth can result in varying coating thickness.

PLATIT has mastered this problem by developing and manufacturing a Custom Coating Solution:

- To improve the handling, the coating chamber door opens sideways; the opened chamber door can be swiveled by 90° so the loading and unloading can take place from the left-hand side
- The coil is arranged at a certain angle to the deposition technology to ensure a constant coating thickness distribution
- The LGD® (Lateral Glow Discharge) process is used for etching and improved coating adhesion
- To guarantee a uniform coating, the teeth and the back of the saw band are coated by different cathode types
- The coating process takes place at a maximum temperature of 500 °C to ensure that the physical and chemical properties of the saw band remain unchanged
- Coating increases the lifespan of saw bands and improves the cutting performance during sawing; the development of tool wear is reduced

Sample Custom Coating Solution_Pi603

In order to meet the product-specific requirements, PLATIT has designed a turnkey system with a PVD coating unit operating at a high vacuum as well as a tailor-made single-chamber cleaning system. The saw bands are wound as a coil and are both cleaned and coated with the same product carrier to avoid additional effort.

The Pi603 was built in 2006 and is still working perfectly today. PLATIT's design proved to be very user-friendly. Even customers who are not experienced with such technologies can operate this unit with ease. Pursuant to the open-source principle, PLATIT has transferred its knowledge to the customers so that they can benefit from the advantages of LARC® cathodes and flexibly combine as well as develop their own coatings.

Specifications_Sample Custom Coating Solution Pi603

Technologies applied:

- 3 × LARC® cathode by PLATIT with ARC technology
- 1 × Planar ARC cathode for uniform coating of the backs of saw bands

Etching technologies applied:

- LGD®
- Plasma etching with argon, glow discharge
- Metal ion etching (Ti, Cr)

Load and cycle times:

- 2 batches/day with a batch time of 7.5–9 h
- Saw band diameter up to 1360 mm
- Inner packing diameter: 560 mm
- Saw band height up to 100 mm
- Saw band weight incl. carrier up to 600 kg

Software:

- Simple use and maintenance
- PLATIT SmartSoftware (PC and PLC system)
- Modern control system with touch screen
- Data recording and real-time display of process parameters and flow
- Manual and automatic process control
- Remote diagnostics and maintenance

Machine dimensions:

- Footprint: W 5900 × D 6450 × H 3100 [mm]



Targets 3	Targets 1	Cycle ≥ 7.5 h	Max. Load 600 kg	Solution Turnkey	Service Custom

CCS for Saw Blades

When it comes to coating saw blades, the biggest challenge is to find a coating unit that can efficiently coat large quantities in a single batch at a high level of quality without damaging the saw blades. Due to their high content of heat-sensitive steel, accurately controlling the process temperature is essential. If the process temperature is too high, the saw blade deforms and thus loses its cutting force.

PLATIT designs special coating units to meet these challenges:

- The PVD unit has a temperature control system for coating saw blades; the temperature is kept within a very narrow range
- The use of ARC power supplies on alloyed targets improves the deposition rate and coating distribution, ensures uniform erosion and extends the target material's lifespan
- Pulsed cathodes and improved ARC distribution produce smoother coatings
- The coating chamber is suitable for large tools and substrates
- The modular carousel design provides maximum loading flexibility



A rail system ensures that the carousel trolley is always correctly aligned with the chamber, thereby making the loading and unloading of loads of up to 1800 kg easy. The height of the custom-designed carousel trolley can be adjusted at the touch of a button.



Sample Custom Coating Solution_PL2011

For the coating of large saw blades up to a \varnothing of 1423 mm (56"), PLATIT has built a high-capacity coating unit. A custom-designed carousel with 6 configurations allows for maximum loading flexibility while maintaining the quality of the coating. Tools with a small or large diameter or mixed loads can be coated in one batch.

The unit is equipped with two doors to provide:

- Optimal access to the chamber
- Simplified maintenance of both the machine and the cathodes
- Simplified batch management since a completed batch can be removed through one door and the next batch loaded immediately via the other door

Specifications_Sample Custom Coating Solution PL2011

Technologies applied:

- 6 × Planar ARC cathode, 4 of which pulsed with ARC power supplies

Etching technologies applied:

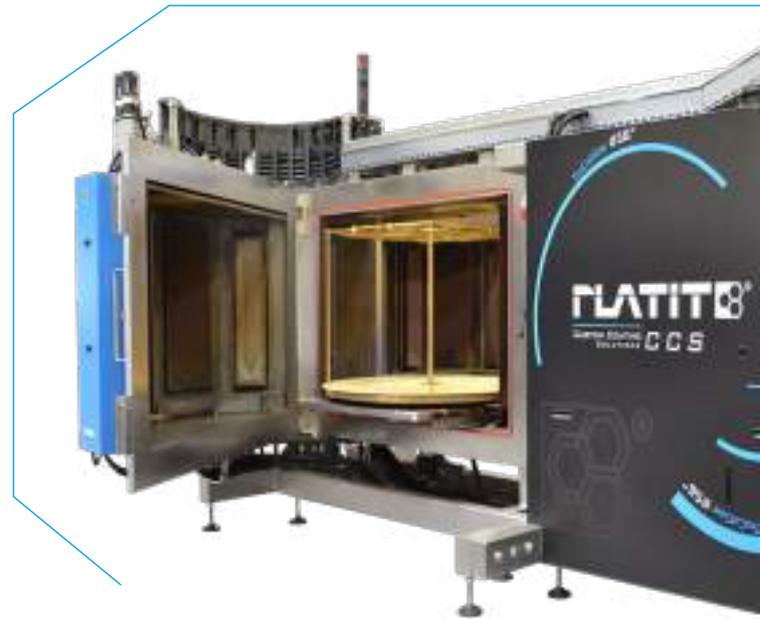
- LGD® (Lateral Glow Discharge) with 2 cathodes with a shutter and 2 cathodes acting as anodes
- Plasma etching with argon, glow discharge
- Metal ion etching (Ti, Cr)

Load and cycle times:

- Coating volume up to \varnothing 1400 × H 700 [mm]
- Load up to 1800 kg

Software:

- Simple use and maintenance
- PLATIT SmartSoftware (PC and PLC system)
- Modern control system with touch screen
- Data recording and real-time display of process parameters and flow
- Manual and automatic process control
- Remote diagnostics and maintenance



2–5 batches / day for*:

Saw blades	\varnothing 250 [mm]	250 pcs.	8–9 h
Saw blades	\varnothing 350 [mm]	200 pcs.	8–9 h
Saw blades	\varnothing 460 [mm]	150 pcs.	8–9 h
Saw blades	\varnothing 650 [mm]	75 pcs.	8–9 h
Saw blades	\varnothing 1423 [mm]	20 pcs.	8–9 h

* Average cycle times for a typical coating mix in a production environment. Similar distance from cutting edges to target in all configurations. Reconfiguring is easy and quick.

Machine dimensions:

- Footprint: W 8000 × D 5800 × H 2350 [mm]



CCS for Rollers and Broaches

Because of their weight, large sizes and special geometry, rollers and broaches are difficult to handle and not suitable for coating in standard coating units. The coated surface must be defect free and prevent the workpiece material sticking on the tool.

PLATIT develops Custom Coating Solutions tailored to special applications:

- The unit is set to lower system temperatures for heat-sensitive tools and machine components made of high-speed steel
- The vacuum system is further developed for steady coating thickness distribution for large chamber volumes
- Smoothest surface and micro-hardness uniformity of the coating is enabled by pulsed DC coating technology
- The design and handling concept can be flexibly adapted to the weight and size of the tools, ensuring easy operation and maximum user comfort; target change is uncomplicated

Sample Custom Coating Solution_Mega-PiMS

PLATIT has designed a Custom Coating Solution with simplified loading in which the rollers are positioned horizontally. The cathode is located at the bottom of

the coating chamber. PLATIT's SPUTTER technology is used to guarantee smooth coatings for high-gloss-polished or textured surfaces.



Specifications_Sample Custom Coating Solution Mega-PiMS

Technologies applied:

- 1 x SPUTTER cathode
- 1 x anode on the opposite side

Etching technologies applied:

- LGD® (Lateral Glow Discharge)
- Plasma etching with argon, glow discharge

Load:

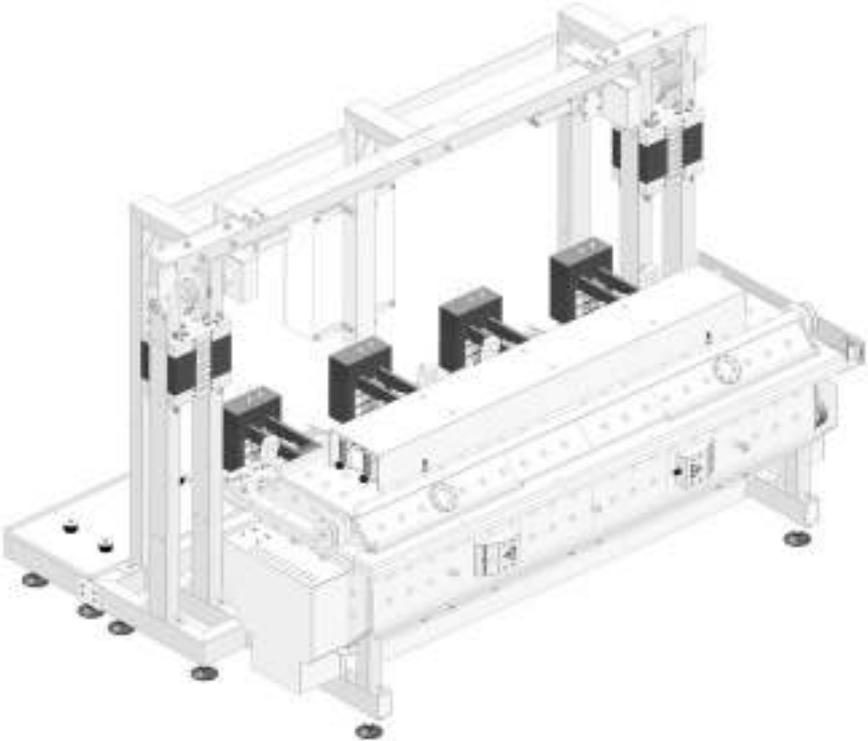
- Coating volume up to $\varnothing 600 \times L 3000$ [mm]
- Coating volume with defined coating thickness up to $\varnothing 600 \times L 2000$ [mm]
- Load up to 1000 kg; higher weight upon request

Software:

- Simple use and maintenance
- PLATIT SmartSoftware (PC and PLC system)
- Modern control system with touch screen
- Statistics and help function via user interface
- Data recording and real-time display of process parameters and flow
- Manual and automatic process control
- Remote diagnostics and maintenance

Machine dimensions:

- Footprint (coating unit with electrical cabinet):
 W 4100 x D 2900 x H 2700 +
 W 1900 x D 1100 x H 2200 [mm]



Targets
1



Max. Load
1000 kg



Solution
Turnkey



Service
Custom



CCS for extra-long Broaches

Sample Custom Coating Solution_PL2511

PLATIT has designed a Custom Coating Solution for coating extra-long broaches. The coating unit and loading system are embedded into a special foundation in the production hall. The coating solution is

highly flexible, allowing for the loading of homogenous loads of tools or mixed loads with broaches, punches, big forming and stamping tools and even molds and dies in one batch.

Specifications_Sample Custom Coating Solution PL2511

Technologies applied:

- 6 × Planar ARC cathode

Etching technologies applied:

- Plasma etching with argon, glow discharge
- Metal ion etching (Ti, Cr)

Load:

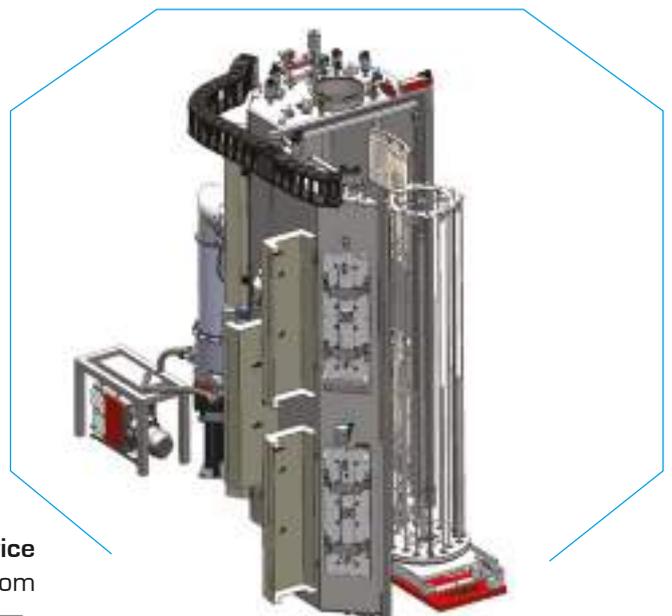
- Coating volume with defined coating thickness:
 $\varnothing 700 \times H 700$ to 2500 [mm]
- Length of a broach up to 2500 mm
- Load up to 2000 kg, heavier loads on request

Carousel systems:

- Single, double and triple rotation in a carousel

Software:

- Simple use and maintenance
- PLATIT SmartSoftware (PC and PLC system)
- Modern control system with touch screen
- Data recording and real-time display of process parameters and flow
- Manual and automatic process control
- Remote diagnostics and maintenance



Targets
6



Max. Load
On request



Solution
Turnkey



Service
Custom



CCS for Coin Minting Dies

When coating stamps, punches and coin minting dies, ensuring surface quality is essential. These surfaces require smooth, dustless coatings with excellent adhesion to accurately replicate highly detailed relief structures. The requirements increase when minting dies are used to produce proof coins, where temperature-sensitive materials are often used. They have narrow tolerances and can only be coated within a certain temperature range.

PLATIT fulfills these requirements with its Custom Coating Solution:

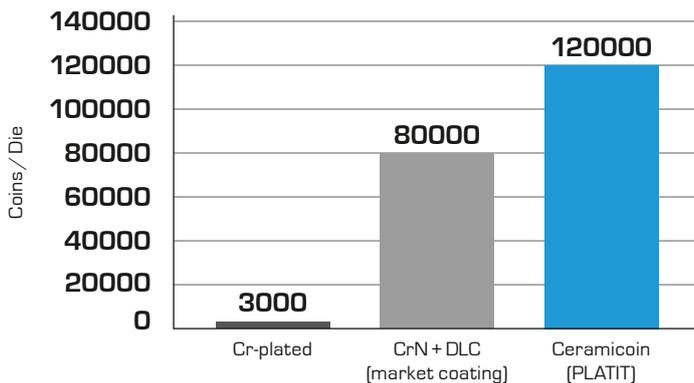
- The surface to be coated faces downwards to keep it dust-free; the target is placed on the underside of the coating chamber
- SPUTTER technology from PLATIT, supported by LGD® (Lateral Glow Discharge) guarantees smooth coatings with very good adhesion; thus, there are no droplets and no layer defects
- The temperature is kept within a narrow range

Sample Custom Coating Solution_S-MPuls

For coin minting dies, PLATIT has developed a Custom Coating Solution for high-quality coatings with a good amorphous structure as well as high density, surface quality and reproduction accuracy.

Quality Features of PVD Coin Die Coatings

- Surface quality
- Smoothness
- Replication of every detail
- Durability
- Coating adhesion
- Extended die life



Advantages of PVD technology compared to Cr-plating

- No hexavalent chromium
- No chemicals
- No fumes
- No toxic waste
- No noise
- No contamination
- No risk for your health

CCS for Coin Minting Dies

Specifications_Sample Custom Coating Solution S-MPuls

Technologies applied:

- 1 × DC-pulsed magnetron SPUTTER cathode with a rotating magnetic field
- SPUTTER source arranged at the bottom of the chamber

Etching technologies applied:

- LGD®
- Plasma etching with argon, glow discharge, with auxiliary anode

Load and cycle times:

- 4–6 batches/day with a batch time of 3.5 h
- Coating diameter with defined coating thickness: \varnothing 70–250 [mm]
- Substrate holder: \varnothing 300 mm, varying customer-specific versions possible
- Load up to 20 kg

Software:

- Simple use and maintenance
- PLATIT SmartSoftware (PC and PLC system)
- Modern control system with touch screen
- Statistics and help function via user interface
- Data recording and real-time display of process parameters and flow
- Manual and automatic process control
- Remote diagnostics and maintenance

Machine dimensions:

- Footprint (coating unit with electrical cabinet):
W 945 × D 1403 × H 2068 +
W 608 × D 1369 × H 2068 [mm]

CCS
S-MPuls



Targets
1



Cycle
≥ 3.5 h



Max. Load
20 kg



Solution
Turnkey



Service
Custom





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