

11

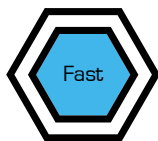
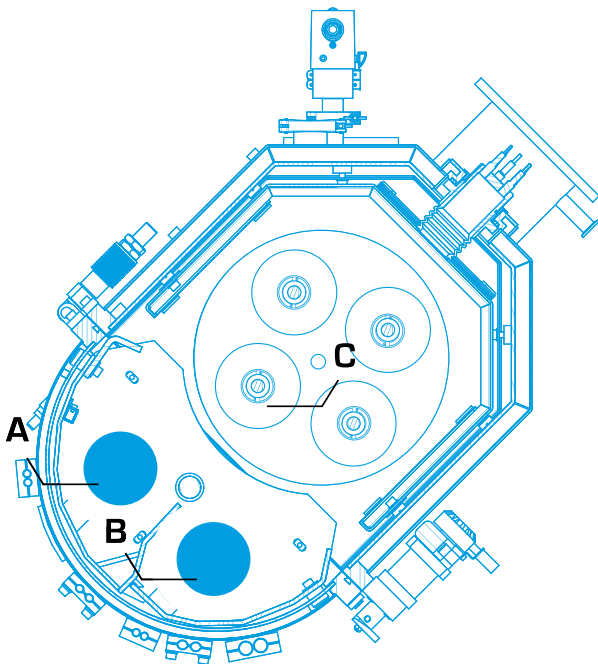
Smart Speed Unit



PLATIT® 11 - Series

111 Smart Speed Unit

- A** LARC® PLUS Cathode
- B** LARC® PLUS Cathode
- C** Carousel



The Pi111 PLUS G3 represents the third generation of a compact PVD coating unit from PLATIT. Its key features are fast cycle times, easy operation and user-friendliness at a favorable price – without compromising coating performance. Having two rotating cathodes utilizing ARC technology, the unit deposits selected PLATIT Signature Coatings at a consistently high level of quality. It is the ideal choice for customers looking to enter the coating world or wanting to add a fast low-volume PVD system to their fleet of machines.

AR



Technologies applied:

- 2 × LARC® PLUS (Lateral Rotating PLUS Cathode) for ARC deposition

Advantages of LARC® PLUS compared to LARC®:

- Improved target utilization (up to 30%)
- Enhanced magnetic-field system, thus increased deposition rate
- Quick cathode exchange

PLATITE®



Targets
2



Signature Coatings



Cycle
≥ 4 h



Max. Load
160 kg



Solution
Turnkey



Service
Worldwide



111 Smart Speed Unit

Specifications

Etching technologies applied:

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

Load and cycle times:

- Max. coating volume: 353 × H 498 [mm]
- Max. coating height with defined coating thickness: 414 mm
- Max. load: 160 kg

4–5 batches / day for*:

Shank tools (2 µm):	ø 8 × 70 [mm]	288 pcs.	4–5 h
Inserts (3 µm):	ø 12 × 4 [mm]	2736 pcs.	5–6 h
Hobs (4 µm):	ø 80 × 180 [mm]	8 pcs.	6–7 h
Hobs (4 µm):	ø 75 × 100 [mm]	40 pcs.	6–7 h

* Average cycle times in an ongoing production with max. number of cathodes in use.

Modular carousel systems:

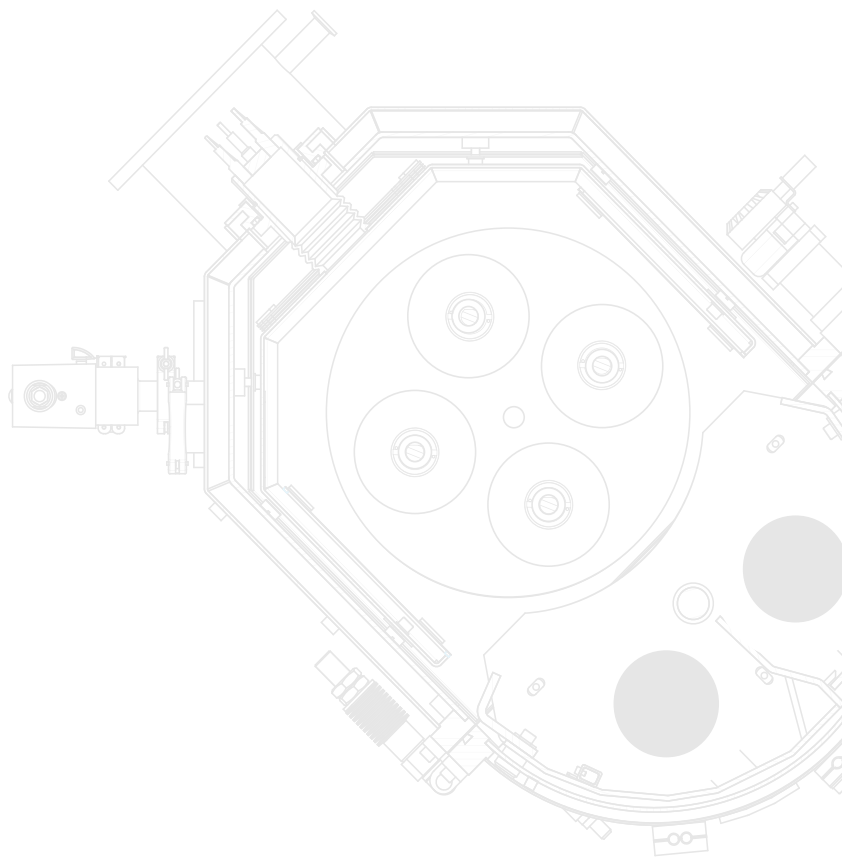
- Dual-rotation kicker carousel or triple-rotation gearbox system

Software:

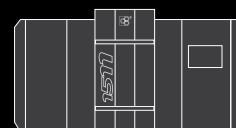
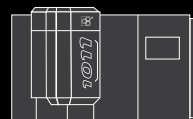
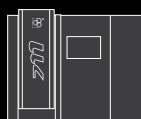
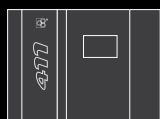
- Simple use and maintenance
- PLATIT SmartSoftware (PC and PLC system)
- Modern control system with touch screen
- Data recording and real-time display of process parameters and flow
- Manual and automatic process control
- Remote diagnostics and maintenance

Machine dimensions:




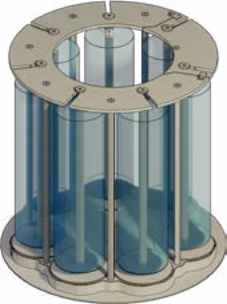

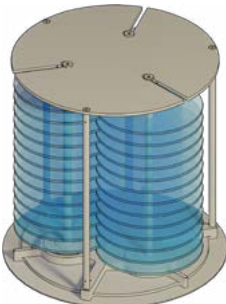
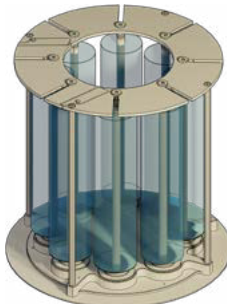

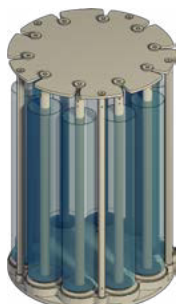
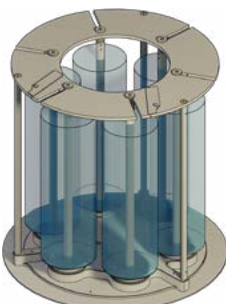
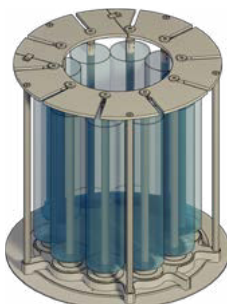
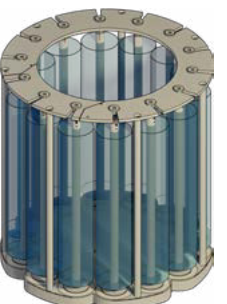
- Footprint: W 2,000 × D 1,550 × H 2,250 [mm]



11-SERIES ACCESSORIES



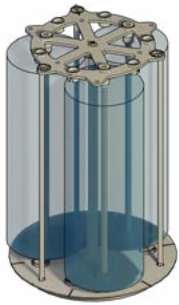
Carousels

	111	411		
Max. coatable height	498 mm	500 mm		
	 <p>Single rotation D ≤ 355 mm</p>	 <p>Single rotation D ≤ 500 mm for saw blades, D ≤ 460 mm for molds & dies</p>	 <p>4 asymmetric axes D3 ≤ 183 mm, D1 ≤ 250 mm</p>	 <p>7 axes for triple rotation for gearboxes D ≤ 143 mm</p>
	 <p>4 axes for continuous triple rotation for gearboxes D ≤ 143 mm</p>	 <p>3 axes for saw blades with overlap D ≤ 285 mm</p>	 <p>4/8 axes D4 ≤ 215 mm / D8 ≤ 115 mm</p>	 <p>6/12 axes D6 ≤ 145 mm / D12 ≤ 100 mm</p>
	 <p>10 axes for continuous double rotation D ≤ 77 mm</p>	 <p>3/6 axes D3 ≤ 220 mm / D6 ≤ 150 mm</p>	 <p>5/10 axes D5 ≤ 175 mm / D10 ≤ 94 mm</p>	 <p>14 axes D ≤ 85 mm</p>

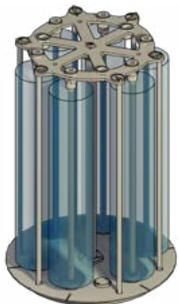
Exemplary illustrations

711

805 mm



3 axes for kicker
 $D \leq 270$ mm



6 axes for kicker or gearboxes
 $D \leq 150$ mm



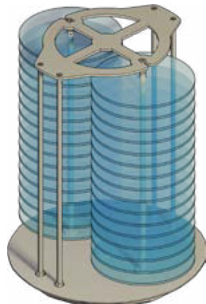
9 axes for kicker
 $D \leq 95$ mm

1011

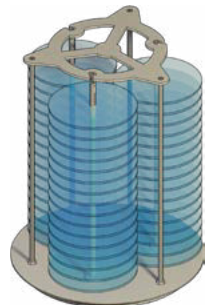
805 mm



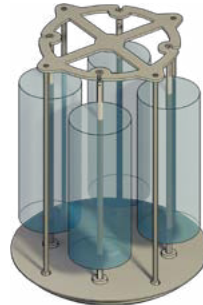
Single rotation
 $D \leq 700$ mm



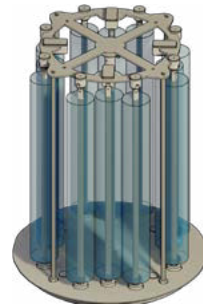
2 axes for saw blades with overlap
 $D \leq 450$ mm



3 axes for saw blades
 $D \leq 420$ mm with overlap,
 $D \leq 250$ mm without overlap



4 axes for kicker
 $D \leq 270$ mm



4/8/12 axes for kicker
 $D \leq 170$ mm



10 axes for gearboxes
 $D \leq 143$ mm

HOLDERS



Disc with gears



Gearbox with triple rotation



Quad gearbox for quad rotation

Loading capacities

Pi111

Tool type	Tool diameter	Tool length	Satellites	Discs / satellite	Holders / disc	Tools / holder	Tools / disc	Tools / batch	Holder type
Shaft Tool	6 mm	50 mm	4	4	5	9	45	720	G
	6 mm	50 mm	4	4	8	4	32	512	D
	6 mm	50 mm	4	4	18	1	18	288	A
	8 mm	60 mm	4	4	18	1	18	288	A
	10 mm	70 mm	4	4	18	1	18	288	A
	20 mm	100 mm	4	3	12	1	12	144	A
Insert	12 mm	4 mm	4	38	18	1	684	2,736	C
Hob	80 mm	100 mm	4	4	1	1	1	16	F
	75 mm	100 mm	10	4	1	1	1	40	F

Pi411

Tool type	Tool diameter	Tool length	Satellites	Discs / satellite	Holders / disc	Tools / holder	Tools / disc	Tools / batch	Holder type
Shaft Tool	6 mm	50 mm	7	4	5	9	45	1,260	G
	6 mm	50 mm	7	4	8	4	32	896	D
	6 mm	50 mm	7	4	18	1	18	504	A
	8 mm	60 mm	7	4	18	1	18	504	A
	10 mm	70 mm	7	4	18	1	18	504	A
	20 mm	100 mm	7	3	12	1	12	252	A
Insert	12 mm	4 mm	7	38	18	1	684	4,788	C
Hob	80 mm	100 mm	7	4	1	1	1	28	F
	80 mm	100 mm	14	4	1	1	1	56	F

PL711

Tool type	Tool diameter	Tool length	Satellites	Discs / satellite	Holders / disc	Tools / holder	Tools / disc	Tools / batch	Holder type
Shaft Tool	6 mm	50 mm	6	5	5	9	45	1,350	G
	6 mm	50 mm	6	6	8	4	32	1,152	D
	6 mm	50 mm	6	6	18	1	18	648	A
	8 mm	60 mm	6	5	18	1	18	540	A
	10 mm	70 mm	6	5	18	1	18	540	A
	20 mm	100 mm	6	4	12	1	12	288	A
Insert	12 mm	4 mm	6	38	18	1	684	4,104	C
Molds & dies	160 mm	130 mm	3	4	1	1	1	12	F
Sliding parts with DLC2	25 × 10 mm	130 mm	3	4	4	1	4	48	F

PL1011

Tool type	Tool diameter	Tool length	Satellites	Discs / satellite	Holders / disc	Tools / holder	Tools / disc	Tools / batch	Holder type
Shaft Tool	6 mm	50 mm	4	7	15	4	60	1,680	E
	6 mm	50 mm	4	7	42	1	42	1,176	B
	8 mm	60 mm	4	7	36	1	36	1,008	B
	10 mm	70 mm	4	6	30	1	30	720	B
	20 mm	100 mm	4	5	23	1	23	460	B
Insert	12 mm	4 mm	4	2 × 35	42	1	1470	11,760	C
Hob	140 mm	100 mm	10	6	1	1	1	60	F
	80 mm	100 mm	12	6	1	1	1	72	F

Holder type:

A Tool in a sleeve, driven by a gearbox

B Tool in a sleeve, driven by a kicker

C Insert with a hole, speared on a rod

D Tool in a revolver, driven by a gearbox

E Tool in a revolver, driven by a kicker

F Hob on a satellite / rod

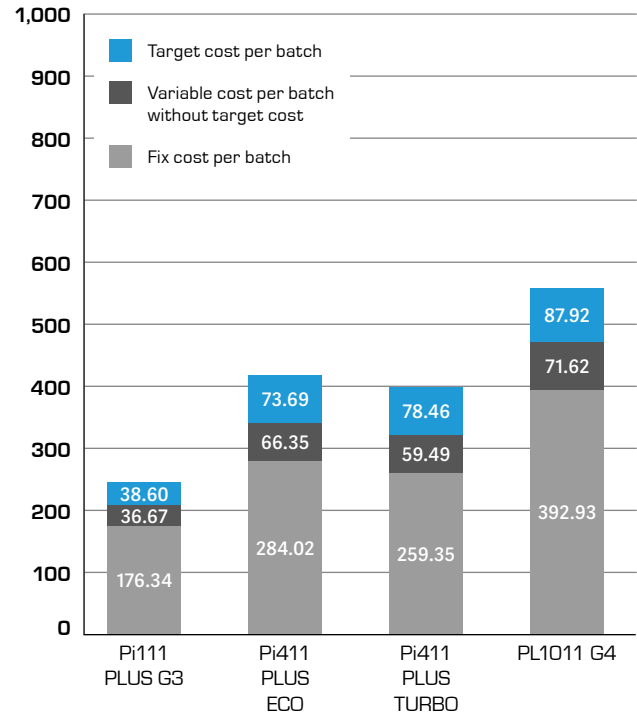
G Tool in a sleeve, driven by a quad gearbox

Process cost comparison

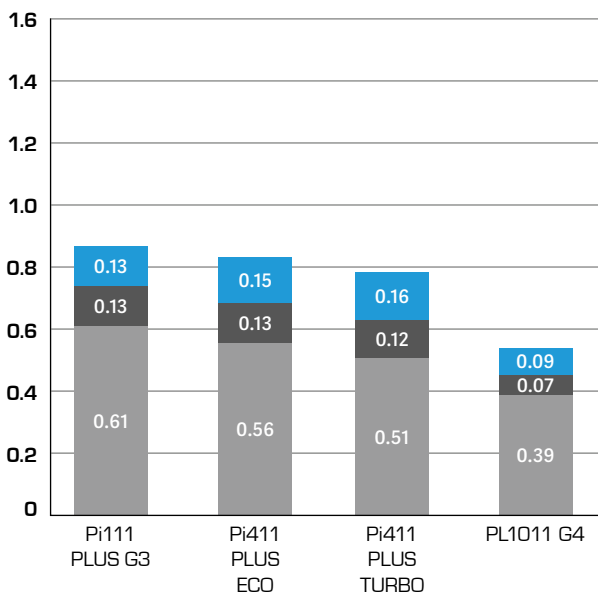
When calculating an investment in a PVD coating turnkey system, there are several variables to be taken into consideration. On this page we give you further insights about how fixed and variable costs add up for different PLATIT coating systems. We are using the case of a German SME coating 10 × 70 mm shank tools with three different coatings – AlTiN, Omnis and TiXCo3.

The diagram on the right visualizes that the majority of the batch costs of a PVD system are determined by the fixed costs. The main cost drivers are depreciation costs for the investment and the personnel costs for the operators. The variable costs, on the other hand, typically amount to less than one sixth of the total operating costs. In particular, the cost of the targets account for only 15–20% of the total cost per batch.

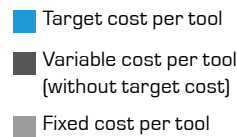
Cost per batch [CHF]:



Cost per tool [CHF]:



The diagram on the left visualizes the breakdown of cost per tool in different PLATIT coating systems. As it is shown in the diagram, the cost per tools decrease significantly in large-sized PVD coating units due to scale effects.



Detailed case description:
 German tool manufacturer, 10 × 70 mm shank tools
 Coatings: AlTiN (40%), Omnis (40%), TiXCo3 (20%)
 Costs included:
 Fixed costs: Investment in PVD system incl. production accessories, depreciation (8 years, 240 working days per year), operator wages, rent and maintenance
 Other variable costs: energy and chemicals



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