



1011

High Volume Unit

1011
G4

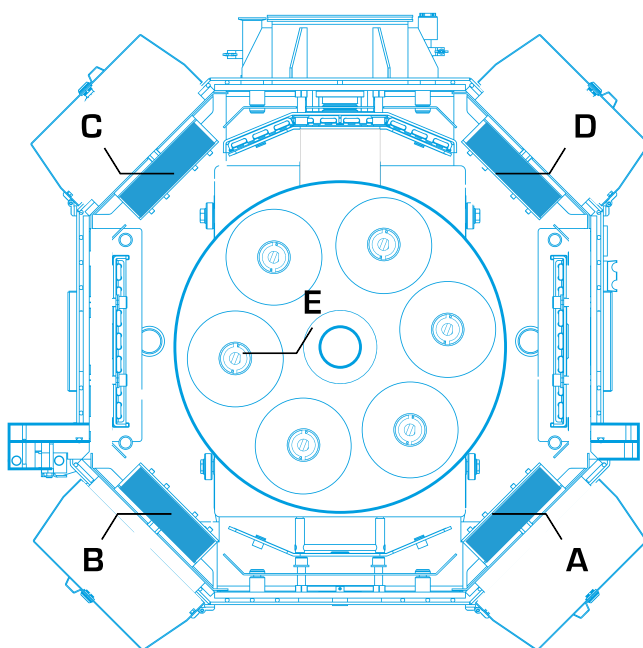
PLATIT® 11 - Series

PLATIT®

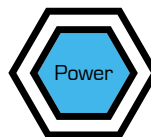
1011 G4 High Volume Unit

As the backbone of every high-volume coating center, PL1011 G4 combines maximum production availability with a user-friendly interface and an efficient maintenance concept. It's equipped with four Planar cathodes utilizing the latest ARC technology for the deposition of all PLATIT standard coatings in consistently high quality.

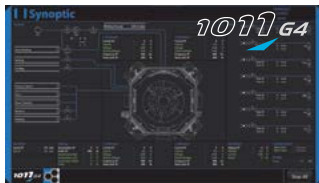
1011 G4



- A** Planar Cathode
- B** Planar Cathode
- C** Planar Cathode
- D** Planar Cathode
- E** Carousel



The PL1011 G4 represents the next generation of a robust PVD coating unit from PLATIT for customers who seek a combination of process reliability and high-quality coatings at a low cost per tool. Its new design speaks for changes and modernization: the simpler construction enables better service; the new technological features such as the Plasma-Nitriding and Double-Pulsed options improve the coating properties and process for various applications.



Technologies applied:

- 4 × Planar cathode using ARC technology for depositing
- Double-Pulsed
- Plasma-Nitriding

FLATITE®



Targets
4



Signature Coatings



Double Pulsed



Plasma Nitriding



Cycle
≥ 5.5 h



Max. Load
750 kg



Solution
Turnkey



Service
Worldwide



1011 G4 High Volume Unit

Plasma-Nitriding feature

The PL1011 G4 with Plasma-Nitriding features a thermochemical plasma nitriding process integrated in the PVD coating process. After loading, a high vacuum is created, the chamber is heated, then the substrates are nitrided, a proprietary PLATIT etching process is switched on, and only then the suitable PVD coating is deposited.

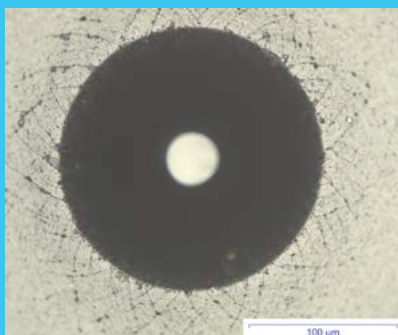
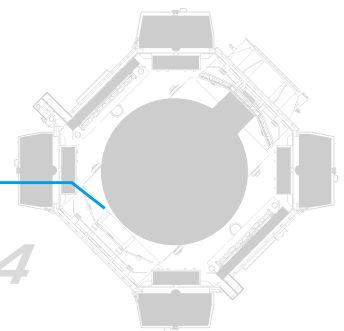
Plasma nitriding builds a hardness gradient underneath the PVD coating to ensure homogeneous transition from the relatively soft substrate to the very hard PVD layer. This transition is the major challenge in metal forming applications with standard cold forming steels such as 1.2379/D2.

Highlights:

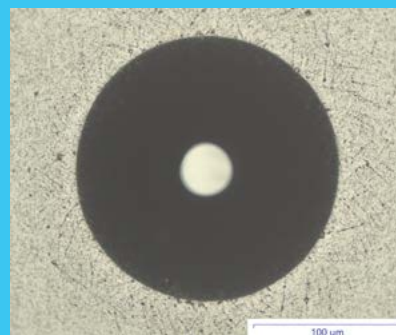
- Better coating adhesion
- Increased substrate surface hardness
- Improved wear resistance as well as resistance to deformation of the nitrided substrate
- Extending production lifetime of molds and dies, in turn lowering tooling costs

Comparison of AlCrN

1011 G4



AlCrN, deposited on standard substrate



AlCrN, deposited on nitrided substrate

Improved coating adhesion and less plastic deformation due to increased substrate hardness.

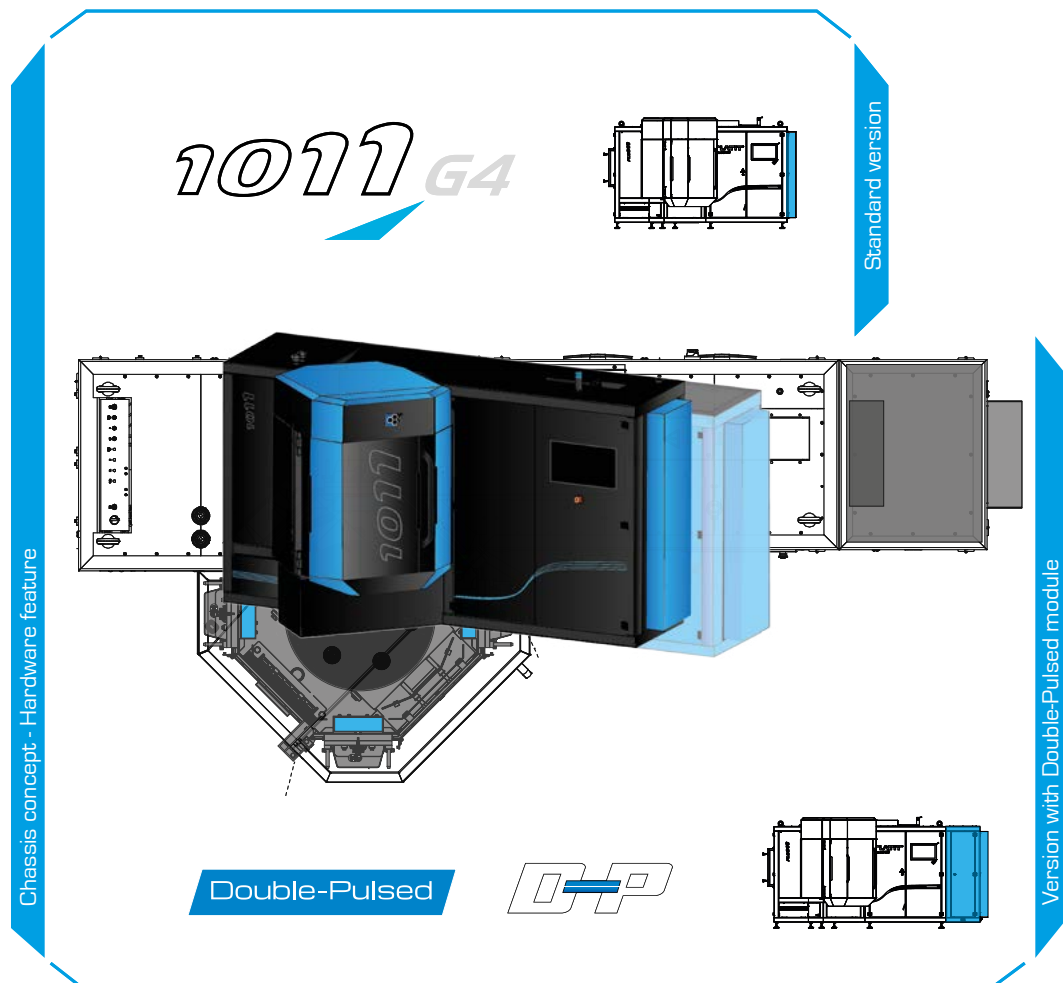
Double-Pulsed feature

PLATIT PL1011 G4 with Double-Pulsed feature is intended for customers with large coating volumes demanding the highest possible throughput. While faster deposition rates often result in rougher coatings, PL1011 G4 Double-Pulsed does not sacrifice either coating quality or surface finish, keeping all the advantages of ARC processes.

With an extended power supply bank, PL1011 G4 Double-Pulsed allows eight ARC power supplies to run simultaneously in both DC and pulsed modes, with a wider race track on the target leading to an improved target utilization.

Highlights:

- Advanced ARC technology results in high productivity with 30% faster coating deposition time
- Excellent coating quality and surface finish
- Improved target utilization



1011 G4 High Volume 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: $\varnothing$ 715 × H 805 [mm]
- Max. coating height with defined coating thickness: 711 mm
- Max. load: 750 kg; higher weight upon request

3–4 batches / day for*:

Shank tools (2 µm):	$\varnothing$ 10 × 70 [mm]	1008 pcs.	5.5–7 h
Inserts (3 µm):	$\varnothing$ / □ 20 / 14 × 6 [mm]	8640 pcs.	6.5–7.5 h
Hobs (4 µm):	$\varnothing$ 80 × 180 [mm]	48 pcs.	6.5–7.5 h

* Average cycle times for a typical coating mix in a production environment.
Faster coating times with PL1011 G4 Double-Pulsed

Modular carousel systems:

- 1 to 12 axes

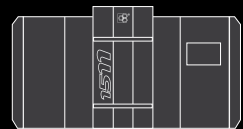
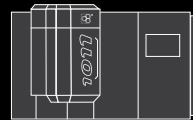
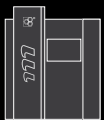
Software:

- PLATIT SmartSoftware (PC and PLC 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
- Newly designed recipe editor

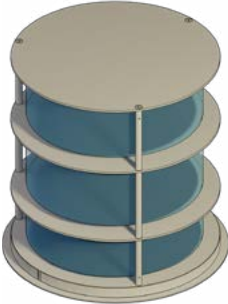
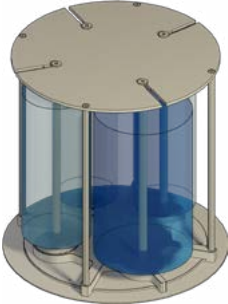
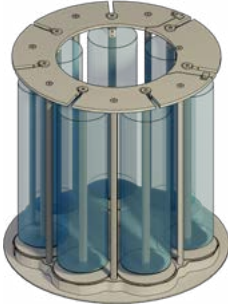
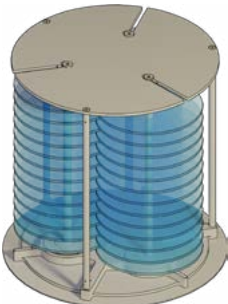
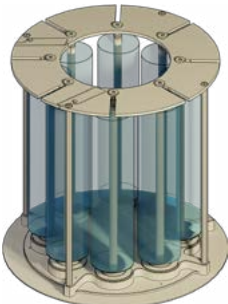
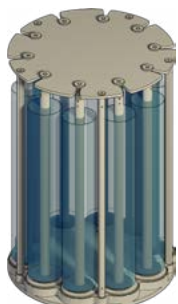
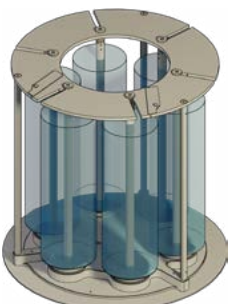
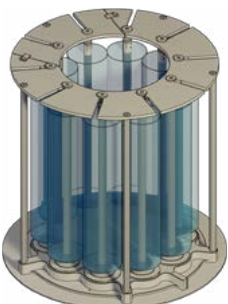
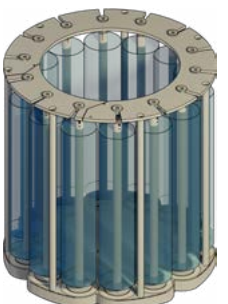
Machine dimensions:

- Footprint: W 4000 × D 2250 × H 2350 [mm]
- Footprint Double-Pulsed option:
W 4700 × D 2250 × H 2350 [mm]

11-SERIES ACCESSORIES



Carousels

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

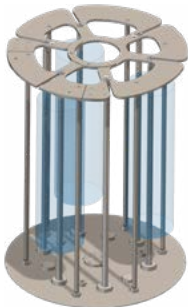
Exemplary illustrations

711

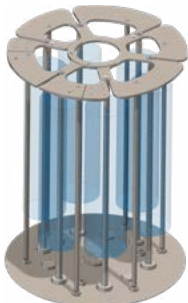
800 mm



Double rotation
D ≤ 540 mm



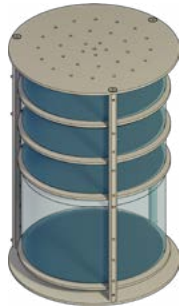
3 axes for kicker
D ≤ 160 mm



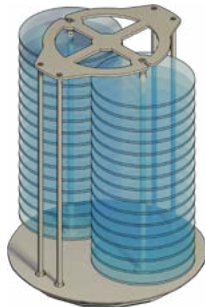
**6 axes for kicker
or gearboxes**
D ≤ 143 mm

1011 / 1511

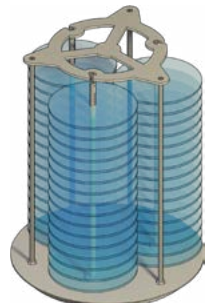
805 mm



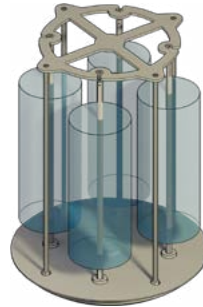
Single rotation
D ≤ 700 mm



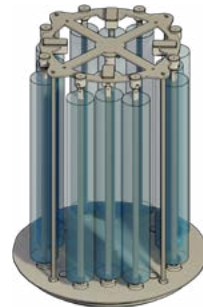
**2 axes for saw blades
with overlap**
D ≤ 450 mm



3 axes for saw blades
D ≤ 420 mm with overlap,
D ≤ 250 mm without overlap



4 axes for kicker
D ≤ 270 mm



4/8/12 axes for kicker
D ≤ 170 mm



10 axes for gearboxes
D ≤ 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
Shank tool	6 mm	50 mm	1	5	28	4	112	560	E
	6 mm	50 mm	1	5	52	1	52	260	B
	8 mm	60 mm	1	4	52	1	52	208	B
	10 mm	70 mm	1	4	52	1	52	208	B
	20 mm	100 mm	1	3	28	1	28	84	B
Insert	20 mm	6 mm	1	1	28	40	1120	1120	C
Hob	68 mm	120 mm	1	1	12	3	36	36	F
	80 mm	120 mm	1	1	6	3	18	18	F
	80 mm	180 mm	1	1	6	2	12	12	F

Pi411

Tool type	Tool diameter	Tool length	Satellites	Discs / satellite	Holders / disc	Tools / holder	Tools / disc	Tools / batch	Holder type
Shank tool	6 mm	50 mm	7	4	5	9	45	1260	G
	6 mm	50 mm	7	5	8	4	32	1120	D
	6 mm	50 mm	7	5	18	1	18	630	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	20 mm	6 mm	7	1	15	28	420	2940	C
Hob	80 mm	120 mm	14	3	1	1	1	42	F
	80 mm	180 mm	14	2	1	1	1	28	F

PL711

Tool type	Tool diameter	Tool length	Satellites	Discs / satellite	Holders / disc	Tools / holder	Tools / disc	Tools / batch	Holder type
Shank tool	6 mm	50 mm	6	6	8	4	32	1152	D
	6 mm	50 mm	6	6	18	1	18	648	A
	8 mm	60 mm	6	6	18	1	18	648	A
	10 mm	70 mm	6	5	18	1	18	540	A
	20 mm	100 mm	6	4	12	1	12	288	A
Insert	20 mm	6 mm	6	1	15	22	330	1980	C
Molds & dies	160 mm	140 mm	3	4	1	1	1	12	F
Sliding parts with DLC2	25 × 10 mm	150 mm	3	6	4	1	1	72	F

PL1011

Tool type	Tool diameter	Tool length	Satellites	Discs / satellite	Holders / disc	Tools / holder	Tools / disc	Tools / batch	Holder type
Shank tool	6 mm	50 mm	4	8	23	4	92	2944	E
	6 mm	50 mm	4	8	42	1	18	1344	B
	8 mm	60 mm	4	7	42	1	42	1176	B
	10 mm	70 mm	4	6	42	1	42	1008	B
	20 mm	100 mm	4	4	36	1	36	576	B
Insert	20 mm	6 mm	4	2	36	30	1080	8640	C
Hob	80 mm	120 mm	12	6	1	1	1	72	F
	80 mm	180 mm	12	4	1	1	1	48	F

Pi1511

Tool type	Tool diameter	Tool length	Satellites	Discs / satellite	Holders / disc	Tools / holder	Tools / disc	Tools / batch	Holder type
Shank tool	6 mm	50 mm	10	7	5	9	45	3150	G
	6 mm	50 mm	10	8	8	4	32	2560	D
	6 mm	50 mm	10	8	18	1	18	1440	A
	8 mm	60 mm	10	7	18	1	18	1260	A
	10 mm	70 mm	10	6	18	1	18	1080	A
	20 mm	100 mm	10	5	12	1	12	600	A
Insert	20 mm	6 mm	10	2	12	30	360	7200	C
Hob	80 mm	120 mm	12	6	1	1	1	72	F
	80 mm	180 mm	12	4	1	1	1	48	F

Holder type:

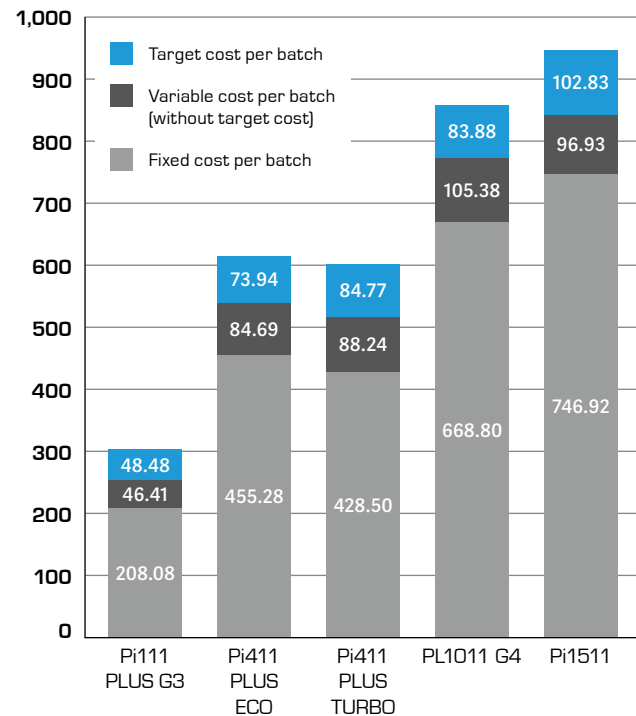
- A Tool in a sleeve, driven by a gearbox
- B Tool in a sleeve, driven by a kicker
- C Insert with a hole, speared on a rod
- D Tool in a revolver, driven by a gearbox
- E Tool in a revolver, driven by a kicker
- F Hob on a satellite / rod
- G Tool in a sleeve, driven by a quad gearbox

Process cost comparison

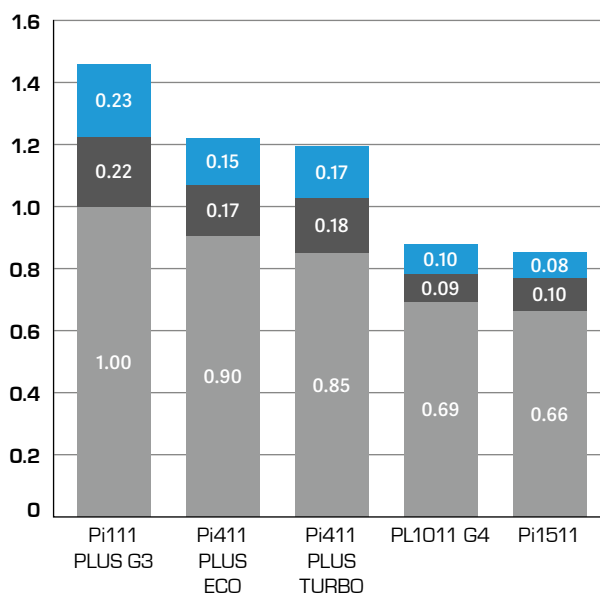
When calculating an investment in a PVD coating system, there are several variables to be taken into consideration. On this page we give you further insights about how fixed and variable costs add up for different PLATIT coating systems. We are using the case of a German SME coating 10 × 70 mm shank tools with three different coatings – AlTiN, AlCrN 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 personnel, depreciation, and rental costs. The variable costs, on the other hand, typically amount to less than a quarter of the total operating costs. In particular, the cost of the targets account for only 10–15 % of the total cost per batch.

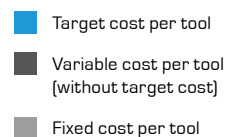
Cost per batch [CHF]:



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 SME
10 × 70 mm shank tools, AlTiN, AlCrN and TiXCo3 PVD coating
Costs included:
Investment costs for turnkey system including chiller, cleaning system and quality control devices, depreciated over 8 years
Salaries, rental costs, energy (incl. gas, targets, water, and cleaning solution)



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