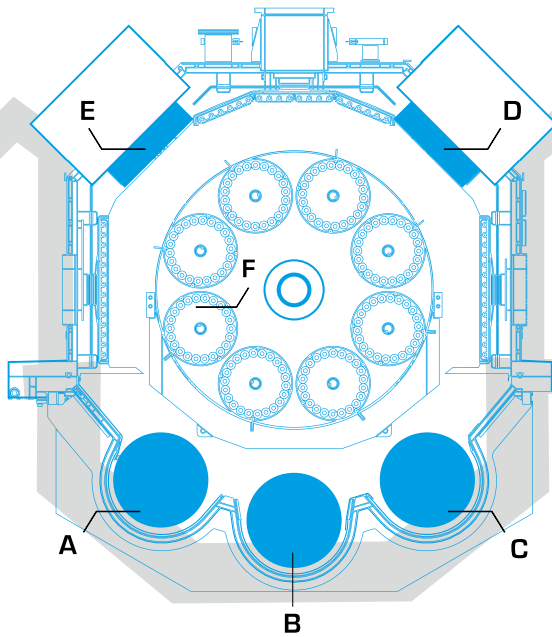


# 1511

Big Combo Unit

# 1511 Big Combo Unit



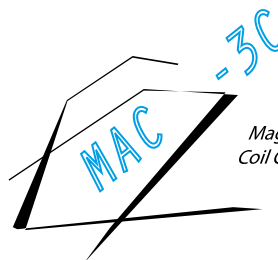
- A** LARC® XL Cathode
- B** LARC® XL Cathode
- C** LARC® XL Cathode
- D** Planar Cathode
- E** Planar Cathode
- F** Carousel



The Pi1511 is a high-volume PVD coating unit. It combines three rotating PLATIT LARC® XL cathodes positioned inside the door with two Planar ARC cathodes in the back of the chamber. The combination of round cathodes with high-performing Planar cathodes allows for the deposition of PLATIT Signature Coatings with familiar flexibility. The LARC® XL cathodes have a very long lifespan and thus guarantee high productivity at a low cost per tool.

**Technologies applied:**

- 3 × LARC® XL (Lateral Rotating XL Cathode) inside the door and 2 × Planar cathode with ARC technology in the back
- MAC-3C (Magnetic ARC Confinement – Coil Current Compensation) for automated magnetic field adjustment
- Quick cathode exchange
- Deposition of PLATIT Signature Coatings



*Magnetic ARC Confinement - Coil Current Compensation*



**Targets**  
2



**Targets**  
3



**Signature Coatings**



**Cycle**  
≥ 7 h



**Max. Load**  
750 kg



**Solution**  
Turnkey



**Service**  
Worldwide



# 1511 Big Combo 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 batches / day for\*:

<b>Shank tools (2 <math>\mu</math>m):</b>	$\varnothing$ 10 × 70 [mm]	1080 pcs.	7h
<b>Inserts (3 <math>\mu</math>m):</b>	$\varnothing$ / $\square$ 20 / 14 × 6 [mm]	7200 pcs.	7.5h
<b>Hobs (4 <math>\mu</math>m):</b>	$\varnothing$ 80 × 180 [mm]	48 pcs.	7.5h

\* Average cycle times for a typical coating mix in a production environment.

### Modular carousel systems:

- 1 to 12 axes

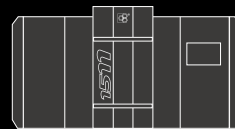
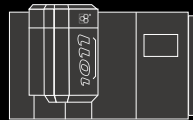
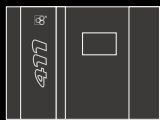
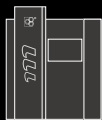
### Software:

- 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: W 4900 × D 2200 × H 2450 [mm]

# 11-SERIES ACCESSORIES



# Carousels

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

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
<b>Shank tool</b>	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
<b>Insert</b>	20 mm	6 mm	4	2	36	30	1080	8640	C
<b>Hob</b>	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
<b>Shank tool</b>	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
<b>Insert</b>	20 mm	6 mm	10	2	12	30	360	7200	C
<b>Hob</b>	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

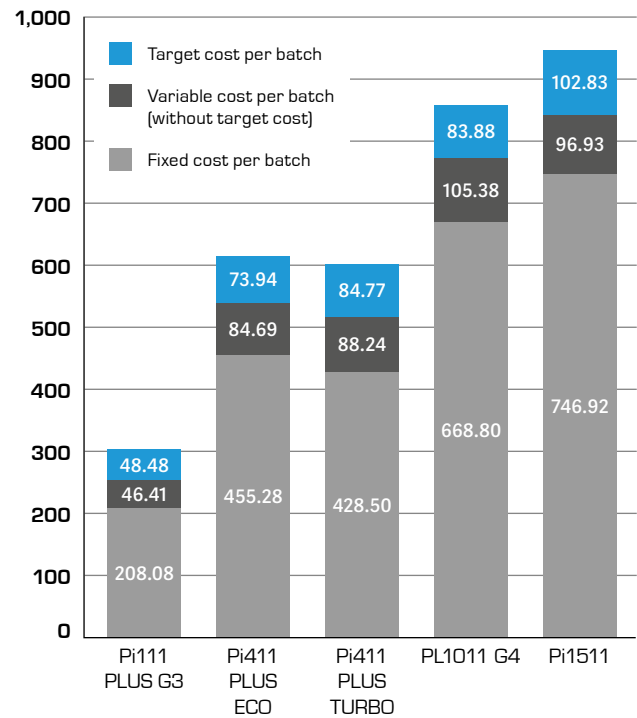
**G** Tool in a sleeve, driven by a quad gearbox

# Process cost comparison

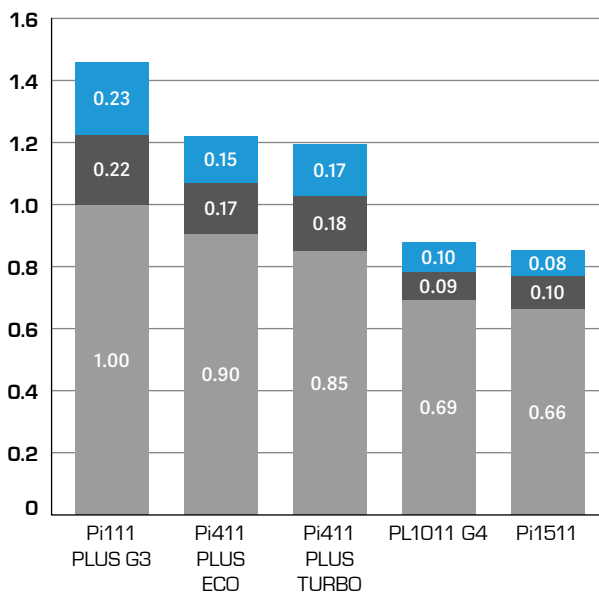
When calculating an investment in a PVD coating system, there are several variables to be taken into consideration. On this page we give you further insights about how fixed and variable costs add up for different PLATIT coating systems. We are using the case of a German SME coating 10 × 70 mm shank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

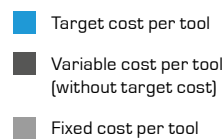
Cost per batch [CHF]:



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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COMPENDIUM

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