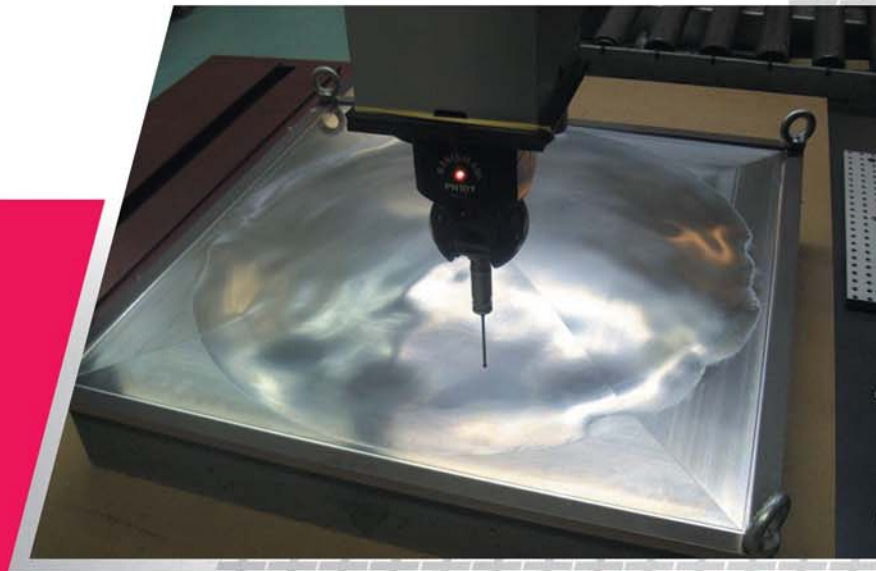
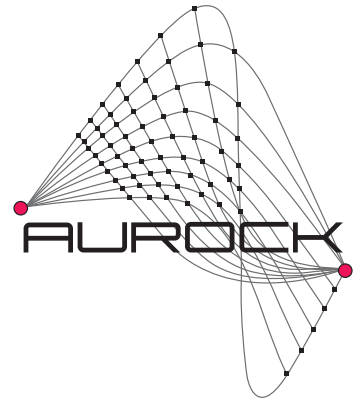


Composite mould tool with low thermal expansion



Aurock has developed two new technologies with low Coefficient of Thermal Expansion (CTE) to manufacture tools used to make composites:

- ✓ BEFICO: a solution based on coated refractory castable
- ✓ OCBM: an hybrid solution combining Pernifer® and refractory castable

As an alternative to tools made only of alloy with low CTE (Invar® or Pernifer®), our solutions combine the keys for reducing dimensional inaccuracies and residual stress levels. They can be used in all open mould process from room temperature to 420°C for OCBM and up to 250°C for BEFICO.

BEFICO Solution

The BEFICO tools are made of refractory castable (silicon carbide-based) with good thermal and mechanical properties on the used temperature range. The coating is laid down on the moulding surface and allows working with release and finishing agents used for metallic mould in aeronautics. This solution is patented.



BEFICO Tool after unmolding



Example of a complex carbon/epoxy part formed on BEFICO tool

BEFICO tools characteristics

- CTE matching CTE of composites parts
- Work with release and finishing agents typically used for metallic tools
- Possibility to design complex shapes and large parts
- Dimensional accuracy: +/- 0.2 mm/m

OCBM Solution

The OCBM tools are made of a Pernifer36® sheet supported by a refractory castable part. The mass of Pernifer36® is reduced and only a quick step of machining is required to ensure the dimensional accuracy of functional surfaces.



OCBM Tool for satellite antenna



Antenna in carbon/Epoxy

OCBM tools characteristics

- CTE matching with CTE of composites parts
- Dimensional accuracy of moulding surface tailored to your needs
- Tool durability similar to massive alloy tools

Thermal properties of tooling materials (20 to 100°C)

Material	Coefficient of thermal expansion (10 ⁻⁶ /K)	Thermal conductivity (W.m ⁻¹ .K ⁻¹)	Thermal diffusivity (mm ² /s)
BEFICO	5	10.9	6.56
OCBM	1	13	3.3
Alu 6061T6	23.6	167	69
Steel 1018	11.5	50.9	13.4
Glass/Epoxy 50%	11 - 16	3.2 - 4.3	2.2
Carbon/Epoxy 50%	3.6 - 7.2	3.5 - 6	3.3
Invar 36	1	10	2.3
Invar 42	4.5	10.5	2.6
Carbon foam	2.3	0.3	0.75



Think differently !

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