

# Milling Spindles for Aerospace Machining Applications

## GMN Spindles meet the demands

A wide variety of materials (aluminium, titanium, superalloys, etc.) are utilized in today`s aerospace manufacturing industry. Successful machining of these materials requires that the spindle and multi-axis machining center are designed to meet the demands of the material being machined.

### Aluminium Alloys

Aluminum alloys require high power and cutting speeds for aggressive material removal rates. High torque is not required.

Milling spindles for this application are, e. g.:

#### HCS 170 - 40000/100

- Maximum speed: 40,000 rpm
- Maximum output (S1-100%): 100 kW at 25,000 rpm
- Tool interface: HSK-63

#### HCS 230 - 30000/120

- Maximum speed: 30,000 rpm
- Maximum output (S1-100%): 120 kW at 13,800 rpm
- Tool interface: HSK-63/-80

### Titanium Alloys

To successfully machine titanium alloys, high torque and cutting forces are required at relatively slow speeds. High spindle stiffness and rigidity are critical to handle the high cutting loads.

Milling spindles for this application are, e. g.:

#### HCS 270 - 4000/58

- Maximum speed: 4,000 rpm
- Maximum torque (S6-40%): 720 Nm at 1,000 rpm
- Tool interface: HSK-100

#### HCS 330 - 3000/67

- Maximum speed: 3,000 rpm
- Maximum torque (S6-40%): 1,050 Nm at 800 rpm
- Tool interface: HSK-125

#### HCS 380 - 3000/110

- Maximum speed: 3,000 rpm
- Maximum torque (S6-40%): 2,200 Nm at 600 rpm
- Tool interface: HSK-160

### Superalloys (Turbine Components)

High power and extremely high torque are not required to machine superalloy turbine blades, vanes and blisks. High speed and effectual high torque will result in rapid material removal rates and quality surface finishes. Adequate torque will allow the spindles to perform roughing operations in the lower speed ranges.

Milling spindles for this application are, e. g.:

#### HCS 120 - 45000/15

- Maximum speed: 45,000 rpm
- Maximum torque (S1-100%): 6 Nm at 24,000 rpm
- Tool interface: HSK-40

#### HCS 120 - 75000/10

- Maximum speed: 75,000 rpm
- Maximum torque (S1-100%): 1.3 Nm up to 75,000 rpm
- Tool interface: HSK-25



HCS 230 - 30000/120



HCS 270 - 4000/58



HCS 120 - 75000/10