

Custom Gas-Static Spindle

Pre-RFQ Decision Checklist

Use this before committing detailed CAD, a supplier brief, or high-fidelity CAE. The checklist does not calculate a spindle; it tests whether the decision basis is mature enough to brief downstream work.

READY FOR PRE-RFQ REVIEW WHEN:

the machine decision, operating envelope, support-state assumptions and next proof are explicit enough to challenge.

A. MACHINE DECISION

- ☐ **01 Name the decision in one sentence.**
What must be selected, rejected, frozen or proved next?
- ☐ **02 Define the project stage and target decision date.**
Concept, pre-RFQ, supplier brief, CAE, prototype or acceptance planning.
- ☐ **03 State the acceptance boundary.**
What outcome would make the architecture acceptable, conditional or rejected?

B. OPERATING ENVELOPE

- ☐ **04 Bound speed range and duty cycle.**
Include continuous/intermittent duty, direction, ramps and any known dwell points.
- ☐ **05 Bound radial and axial load states.**
Separate nominal, transient and worst credible operating states where known.
- ☐ **06 State gas-supply and thermal constraints.**
Gas, supply pressure, temperature and known plant/interface limitations.

C. MACHINE / SHAFT CONSTRAINTS

- ☐ **07 Define the packaging envelope.**
Available diameter/length, shaft span, tool/process interface and drive constraints.
- ☐ **08 Keep support architecture open until the machine question is tested.**
Avoid turning a provisional bearing geometry into a hidden requirement.
- ☐ **09 List what is measured, specified, assumed or unknown.**
The provenance of inputs must survive into the engineering decision.

D. ROTOR / SUPPORT CONSEQUENCE

- ☐ **10 Connect support state to the shaft-line decision.**
Bearing stiffness, capacity and clearance are not isolated from span, drive, tool and rotor response.
- ☐ **11 Screen operating-state dependence.**
Identify which changes in load, clearance, supply or adjustment can move the governing rotor state.
- ☐ **12 Reject weak states before expensive CAE.**
Do not spend high-fidelity solver time on candidates already outside the machine decision boundary.

E. EVIDENCE PATH

- ☐ **13 Define exactly what detailed CFD / FE must prove.**
High-fidelity analysis should answer a named discrepancy or decision-changing question.
- ☐ **14 Name the evidence owner and handoff.**
Internal engineering, supplier, CAE partner, test lab or acceptance owner.
- ☐ **15 Define the freeze / release condition.**
State what evidence is still missing before architecture freeze, prototype commitment or release.

What the pre-RFQ brief should contain.

A good RFQ does not hide architecture uncertainty inside supplier assumptions. It makes the machine decision, controlled state and unanswered proof questions visible.

01 Decision statement

One sentence: what must this supplier / CAE task help the OEM decide?

02 Operating envelope

Speed, duty, loads, gas state, accuracy / process constraints and packaging limits.

03 Controlled architecture basis

Support type, shaft-line context and which geometry/state variables are still open.

04 Input provenance

Measured / specified / assumed / unknown - with units and source.

05 Decision-changing questions

What discrepancy, margin or uncertainty must detailed work resolve?

06 Acceptance / evidence boundary

What evidence is required before freeze, prototype commitment or release?

Do not freeze the brief while these remain hidden.

- A finished CAD model exists, but the governing machine decision is still undefined.
- A supplier quote is being requested before the OEM has a vendor-neutral architecture basis.
- One stiffness value or one critical speed is treated as the complete rotor-system answer.
- CFD / FEA is planned without naming the operating state, discrepancy or decision it must resolve.
- Acceptance evidence is discussed only after prototype hardware is already committed.

WHEN AN ARCHITECTURE SCREEN IS APPROPRIATE

The project is live, but the architecture or proof path is still uncertain.

Start with non-confidential machine facts. The first Fit Check contains no numerical design work and determines whether a bounded paid Architecture Screen is justified.

AURA project channel

aura@breshevenengineering.com

breshevenengineering.com/services/feasibility-screen/