

WHITE PAPER - Gaining EASA Part 21 Design (DOA) and Production (POA) Organisation Approval: Strategic & Financial Reality

Presented by Sofema Aviation Services

Executive Summary

For established Maintenance, Repair, and Overhaul (MRO) organizations, vertical integration into Design (Part 21J) and Production (Part 21G) represents a logical, albeit complex, evolution. The ability to design repairs, modify cabin interiors, and manufacture parts offers significant independence from OEMs and new commercial revenue streams.

However, the transition from Part 145 (Maintenance) to Part 21 (Design & Production) requires a fundamental cultural shift and a substantial capital commitment. It is not merely an administrative exercise; it demands the construction of a robust airworthiness system based on demonstrated competence.

Crucially, this white paper places a specific focus on the "Total Cost of Acquisition." While regulatory fees are often estimated between €120,000 and €160,000, the true investment required for a non-EU organization to reach a revenue-generating state is likely to exceed €1.1 million. This document outlines both the regulatory roadmap and the financial stamina required to succeed.

Strategic Business Objectives: Defining the "Why"

Before engaging with the regulator, the applicant must define the commercial imperative. EASA approval is a high-maintenance privilege; it requires a clear return on investment (ROI) to justify the significant upfront "cash burn."

- **Internal vs. External Strategy:** Is the primary goal to support the internal fleet (reducing costs on cabin reconfigurations and minor repairs), or is the strategy to sell parts and STCs to the global market?
- **Fleet Applicability:** The scope of approval must align with the target registry. While EASA approval is globally recognized, its primary legal applicability is for EU-registered aircraft. For non-EU fleets, the acceptance of EASA data by the local National Aviation Authority (NAA) is a prerequisite.
- **Market Demand:** A clear understanding of the specific product categories (e.g., Cabin Interiors, Avionics, Structural Repairs) is essential to size the organization correctly. Over-scoping the initial application is a common failure point.

Strategic Insight: A "Minor Change" DOA scope is often the most prudent entry point, allowing the organization to build competence before attempting "Major Changes" (STC) which attract significantly higher regulatory scrutiny and cost.

The Financial Reality of Acquisition (The "Missing" Chapter)

Most applicants severely underestimate the cost of approval by focusing only on the direct fees payable to EASA. For a non-EU applicant, the "Total Cost of Acquisition" includes regulatory fees, travel reimbursements, and arguably the largest cost center: the "burn rate" of highly skilled staff during the non-revenue investigation period.

1. The Regulator Costs (Fees + Travel) EASA charges an hourly investigation fee (indexed annually, approximately €250–€300 per hour). For non-EU applicants, these fees are compounded by travel costs.

- **Direct Fees:** A complex initial investigation often exceeds 500+ man-hours, totaling €150,000+.
- **Travel & Per Diems:** Non-EU applicants are required to reimburse EASA experts for Business Class travel, hotels, and daily allowances. Over a typical 24-month investigation involving multiple on-site audits, travel costs alone can add €50,000 to €80,000.
- **The "Findings" Multiplier:** Inexperienced organizations often generate more findings (non-compliances). Every finding requires EASA to review the corrective action, adding billable hours to the project.

2. The Human Capital "Burn" You cannot apply for Part 21J without a competent team already in place.

- **Pre-Revenue Salaries:** You must hire a Head of Design (HDO) and Compliance Verification Engineers (CVEs) before submitting the application.
- **The Gap:** These high-salary experts (often costing €100k+ annually per head) will likely be on the payroll for 18 to 24 months before the organization can sell a single design.
- **Liability:** The estimated sunk cost for a 3-person core team over 2 years is roughly €600,000.

3. The "Shadow Project" Costs EASA requires a "Shadow Project" A real design and manufacturing exercise performed under full scrutiny to prove competence.

- **Tangible Costs:** This involves engineering hours, raw materials, flammability testing, and destructive testing of a part that is often scrapped or never sold.
- **Budget:** Organizations should allocate €30,000 to €50,000 for this exercise alone.

Summary of Financial Liability: When combining EASA fees (~€250k with travel), Staffing (~€600k+), Software/Tech setup (~€50k), and Consultancy (~€50k), the realistic barrier to entry is **over €1 million**.

The Regulatory Environment & Bilateral Relations

For an organization located outside the European Union, EASA does not act in isolation. The relationship involves a triad: The Applicant, EASA, and the local National Aviation Authority (NAA).

- **Authority Engagement:** The local NAA must be willing and able to support the investigation. EASA frequently relies on the local authority to perform surveillance tasks.

- **Bilateral Agreements:** The existence of a Working Arrangement (WA) or Technical Implementation Procedures (TIP) greatly facilitates the process. Without these, the path to approval is steeper, requiring EASA to perform all oversight directly, increasing costs and logistical complexity.

Part 21J: The Design Assurance System

The core of Part 21J is Competence. Unlike Part 145, where compliance is often procedural, Part 21J requires engineering judgment.

The Competence Bottleneck: CVEs The most common cause for application delays is the lack of independent Compliance Verification Engineers (CVEs).

- **Role:** CVEs check and verify the design data created by the design engineers.
- **Independence:** A critical EASA requirement is that the CVE must not be the same individual who drafted the drawing. Small organizations often struggle to find enough qualified staff to maintain this separation of duties.
- **Experience:** CVEs must demonstrate a track record of liaison with authorities and deep technical knowledge of Certification Specifications (e.g., CS-25).

Organizational Structure

- **Head of Design Organisation (HDO):** This is a Form 4 nominated person carrying personal liability. They must have roughly 10 years of aeronautical design experience.
- **System Monitoring:** An Independent System Monitoring (ISM) function is required to audit the design process. This function must be independent of the design team.

Part 21G: The Production Management System

Manufacturing parts requires a different mindset than maintaining them.

- **Production vs. Maintenance:** Staff must understand the legal difference between an EASA Form 1 issued for Maintenance (restoring a used part) and a Form 1 issued for Production (certifying a new part conforms to approved design data).
- **Design Data Source:** A POA cannot exist in a vacuum; it needs a source of approved data. This is typically the organization's own DOA, or an arrangement with a Third-Party DOA or TC Holder.
- **Special Processes:** If the scope includes welding, surface treatment, or NDT, these processes must be qualified to international standards, adding a layer of complexity to the supply chain management.

Quality System & Safety Management (SMS)

Recent amendments to Part 21 have introduced the requirement for a Safety Management System (SMS) in Design and Production, aligning it with Part 145.

- **Unified vs. Split Systems:** Organizations must decide whether to integrate the Part 21 SMS into their existing Part 145 SMS or run parallel systems. Integration is efficient but requires careful mapping of interfaces.
- **Supplier Control:** The Quality Assurance Manager (Production) bears heavy responsibility for the supply chain. EASA requires physical audits of raw material suppliers, which requires a budget for travel and auditing manpower.

Resource Planning & Technical Tools

Gaining EASA Part 21 approval is a capital-intensive project. Organizations must budget for the "hidden" workload and tools.

- **Software:** Budget must be allocated for licensed CAD software (e.g., CATIA, SolidWorks) and, critically, Finite Element Analysis (FEA) tools for structural substantiation.
- **Testing:** Access to flammability test rigs (CS 25.853) and pull-test equipment is mandatory for cabin interiors.
- **Product Liability Insurance:** As a manufacturer, the organization takes legal responsibility for the airworthiness of the part. Premiums for international manufacturing liability are distinct from standard MRO premises insurance.

The Timeline for Approval

For a non-EU applicant, the timeline is typically 18 to 24 months.

- **Phase 1: Preparation (Months 1-9):** Recruitment of Form 4 holders, training (Part 21, CS-25, SMS), and writing the Design/Production Organisation Expositions (DOE/POE). This phase incurs high salary costs with no interaction with EASA.
- **Phase 2: Investigation (Months 10-24):** Formal application, EASA on-site audits, and the execution of the Shadow Project. This is the period of highest cash outflow (Fees + Travel + Salaries).

Critical Constraint: Submission of immature documents or lack of trained staff during the investigation phase will lead to EASA rejecting the application, forfeiting paid fees, and potentially requiring a restart of the entire process.

Conclusion

Achieving EASA Part 21J and 21G status places an organization in an elite tier of aviation providers. It signifies a transition from "service provider" to "architect and manufacturer."

However, success depends on robust preparation and honest financial forecasting. The challenges of acquiring independent CVEs, funding the regulatory investigation, and sustaining the "burn rate" of a high-competence team for two years require a strategic commitment from the Accountable Manager.

Final Takeaway – To Avoid the Valley of Corporate Death!

The Board must be prepared for an investment exceeding €1 million. If the organization attempts this transition undercapitalized, expecting to pay only the €160,000 in regulatory fees, the project will likely stall in the "Valley of Death"—fully staffed, partially audited, but unable to cross the finish line to revenue.

Next Steps

Please see www.sassofia.com and www.sofemaonline.com related to the availability of classroom, webinar and online training compliant with EASA and FAA Initial Airworthiness Regulations. For additional comments or questions please email team@sassofia.com