CASE STUDY FOR DESIGN AND CERTIFICATION PERSPECTIVES

How to get your design cleared for flight with the minimum of pain

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The regulator

- Is usually an enthusiast himself/herself
- Has committed to a career in aviation
- Is keen to see your aircraft fly

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But

- Has he got the evidence in front of him that your design is sufficiently safe ?
- Can he be confident that if an accident takes place, the records will show that he made a reasonable decision in clearing the aircraft for flight ?

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Why worry ?

- Responsibility for safety of aircraft, its occupants and the public
- Litigation
- Responsibility to the regulating body

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The bottom line is

- If an accident occurs, will the regulator be confident that he can defend his actions
- Will the designer be able to defend his position ?

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Building the relationship

- Have a plan
- Meet face to face
- Establish competence
- Build trust

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Competency

- Design features of the aircraft
- Content of written submission
- In discussion
- Knowledge of the literature
- Knowledge of what’s been done before
- Education and training

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Trust /Integrity

- Audits and spot checks
- Truthfulness
- Consistency
- Track record

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Understanding the role (1)

- Applicant designs (and checks)
- Regulator checks and approves (or not)

The regulator cannot redesign your aircraft for you

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Understanding the role (2)

- The applicant must be prepared to listen to advice from the regulator but must know his own mind and be prepared to defend his decisions
- If the applicant is over-reliant on the regulator and offers to make whatever changes to the aircraft the regulator asks for, the proper relationship breaks down, as no proper oversight of the changes would take place

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Make a plan

- Agree approval basis with regulator
- Agree means of showing compliance
- Test, calculation, or both
- Equivalent to existing approved design
- Start a compliance checklist
- Consider making a proof-of-concept

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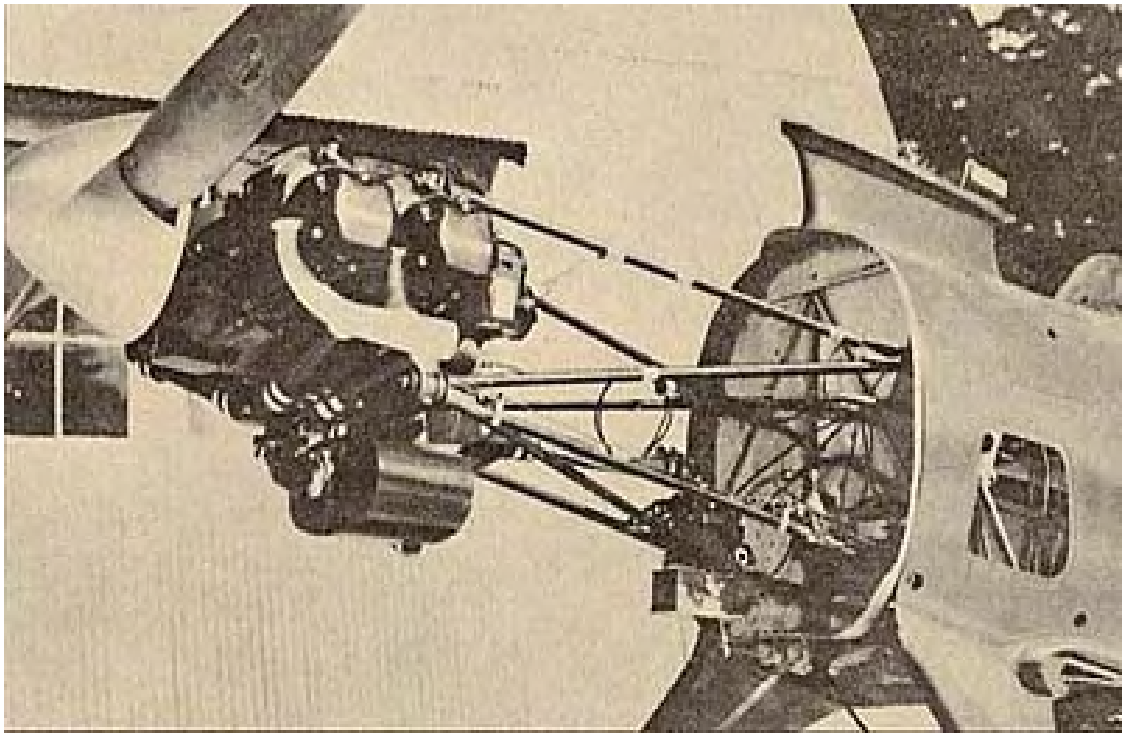
Sanity check your solution



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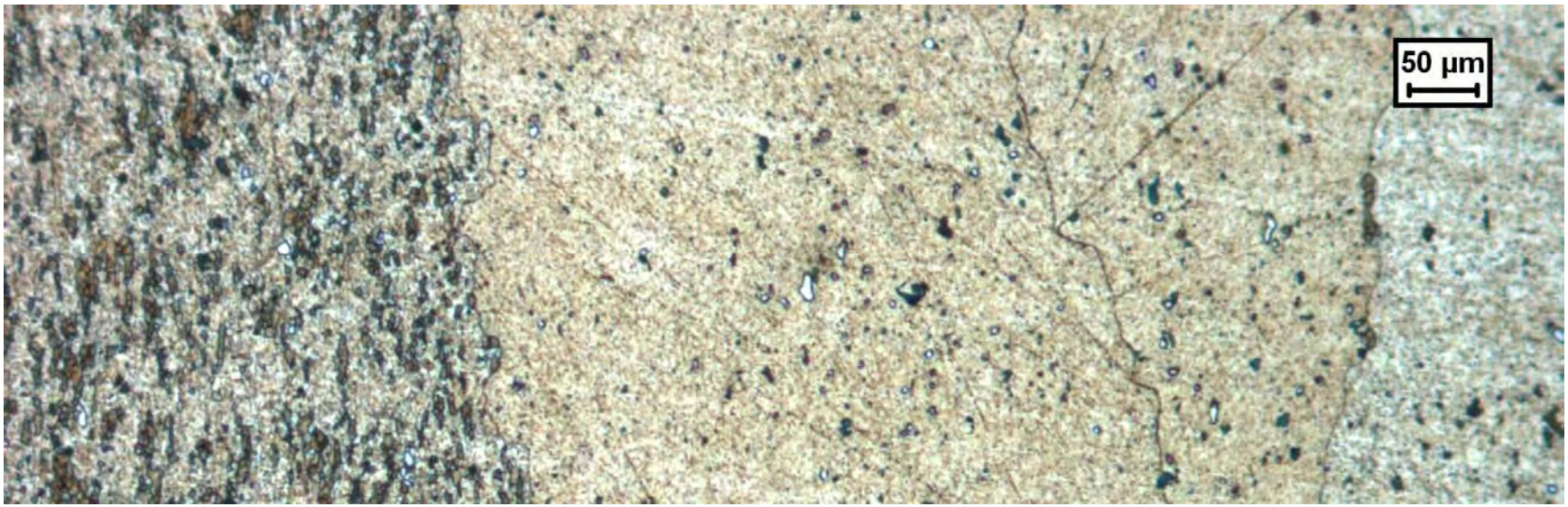
Choose reliable materials



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If only I had…..

- Used simplified load analysis methods
- Used conservative design allowables
- Stuck to established materials and technology
- Built in extra margins on critical parts
- Avoided ill-defined load paths

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Design Submission

- Clear
- Concise
- Detail
- Accuracy
- Avoid padding
- Don’t make statements you can’t substantiate

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But remember..

- Complying with a design code doesn’t necessarily ensure that you have a good, or even a safe aircraft
- Think about long term continued airworthiness
- Design for ease of maintenance

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And finally

- Don’t expect the aircraft to be right first time
- Many aircraft are spoilt for lack of development before putting on the market.

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