**DGAC Conference**

*16th Dec 2015*

# Introduction to Airbus Data-Package

Presented by Nathalie Freysz

*Flight Dynamics Simulation & Qualification Support*

AIRBUS

# Content

1 Data Provider

2 Data Package content

3 Example 1: Malfunctions process

4 Example 2: Stall buffet model

5 Synthesis



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# Who is delivering the Airbus data?

## Airbus GO5

is the Airbus focal point for **training operators** and **simulators manufacturers**

## Missions:

- Allow development and qualification of Flight Simulation Training Devices (FSTD)
- **No "Negative Training"**: **Ensure training of quality**
- Propose innovations to address training needs



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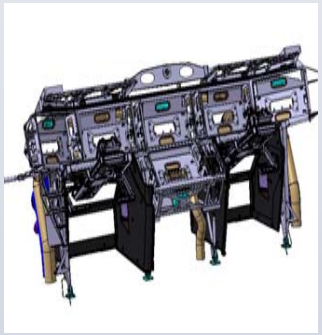
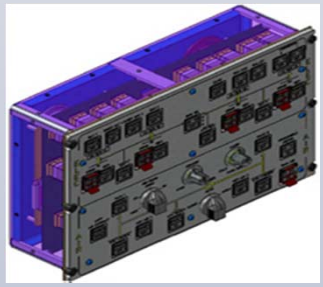
# Airbus Data Package content

## GO5 deliverables

### Cockpit material



Cockpit Parts



Vendors' Equipment

### Engineering data

Data Package

Simulation Software Package



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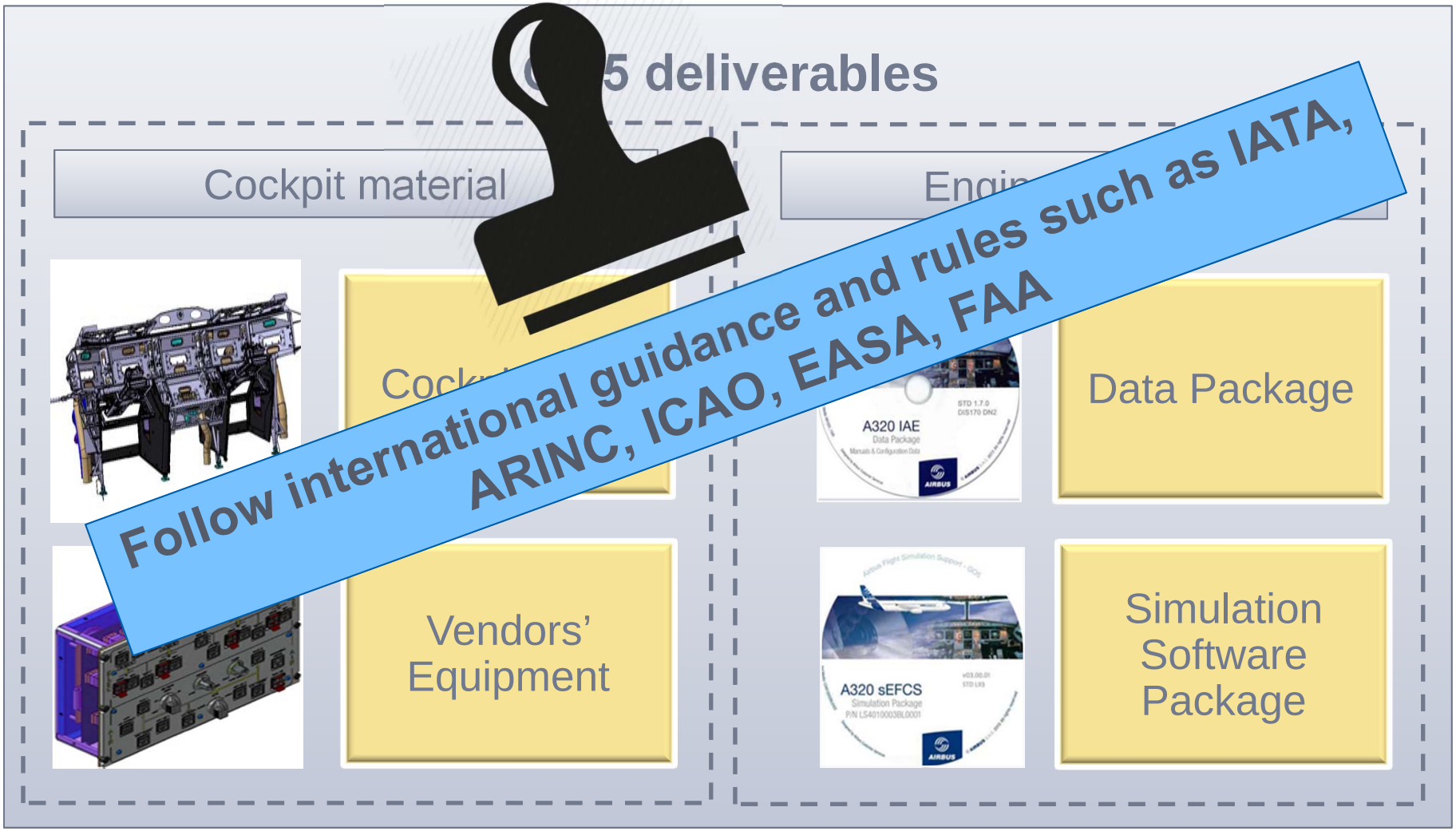
# Airbus Data Package content



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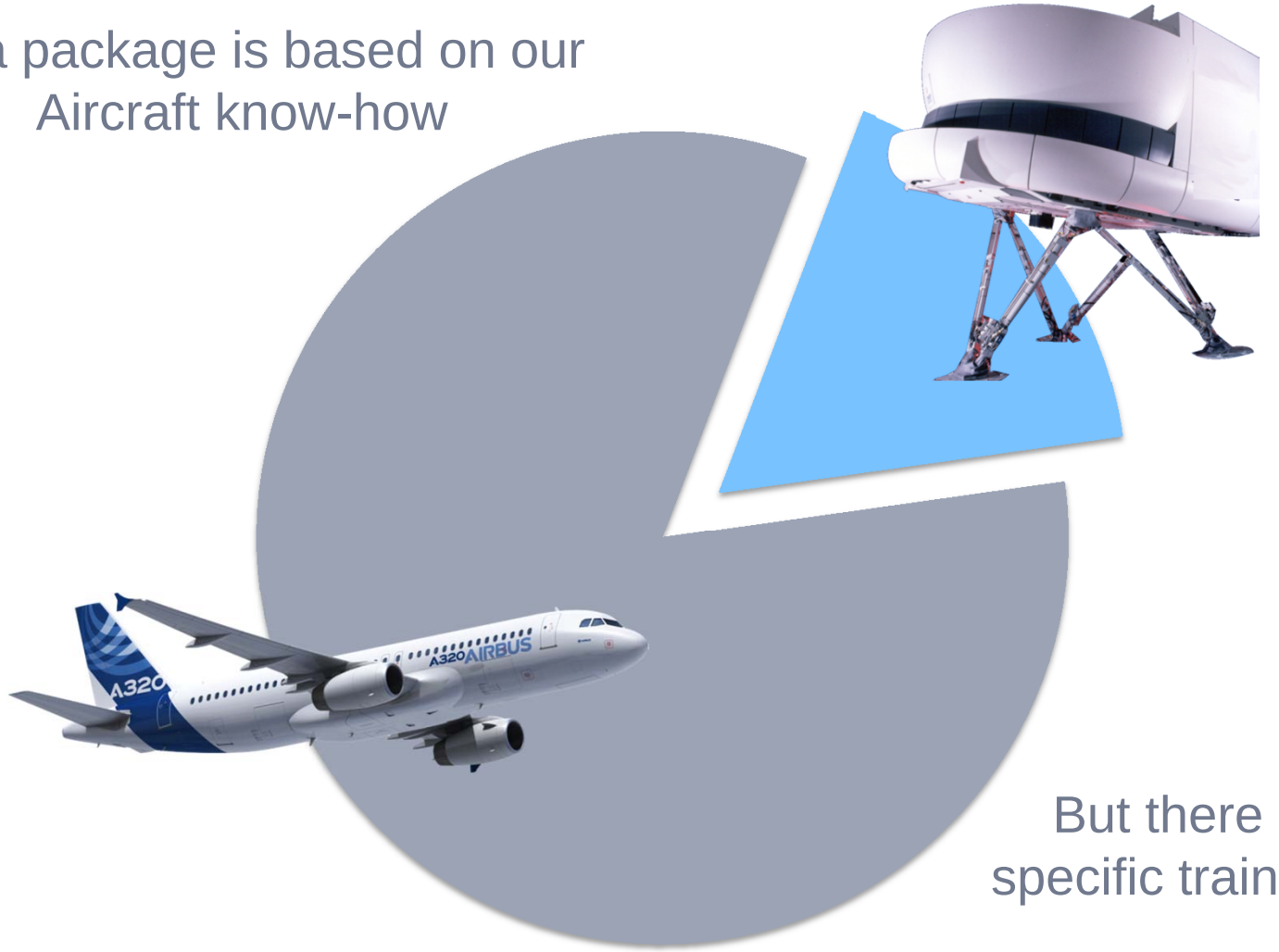
# GO5 deliveries: Aircraft or training specifics?

Data package is based on our Aircraft know-how




But there are some specific training needs…



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# Malfunctions



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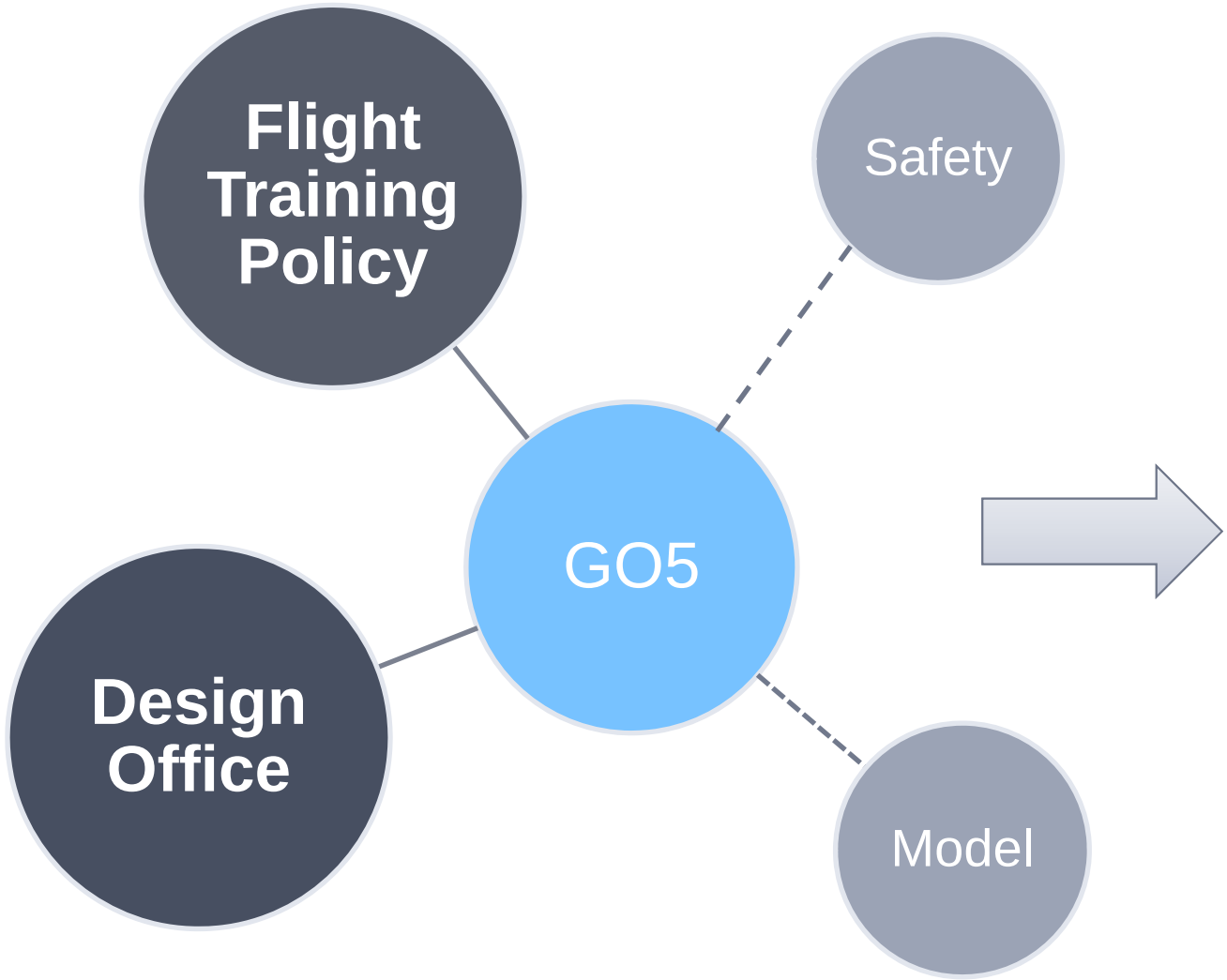
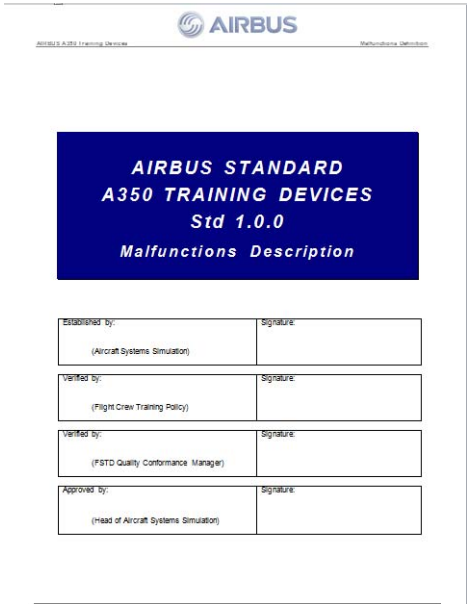
# Malfunctions definition process

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AIRBUS STANDARD
A350 TRAINING DEVICES
Std 1.0.0
Malfunctions Description

| | |
|---|---|
| Established by: (Aircraft Systems Simulation) | Signature: |
| Verified by: (Flight Crew Training Policy) | Signature: |
| Verified by: (FSTD Quality Conformance Manager) | Signature: |
| Approved by: (Head of Aircraft Systems Simulation) | Signature: |



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# Feedbacks from customers

➢Some proposals are added:

**ATA 70 – ENGINE**

**MALFUNCTION : BIRD INGESTION** **ENG 1 (2)**

**AIRCRAFT** : A350

**CAUSE** : Bird ingestion

**CONSEQUENCES:**

During take-off all engine parameters move erratically lower and upper than in normal operation.

- EGT fluctuates without exceeding over limit,
- N1 vibration level reaches advisory,
- Motion effects take place (FFS Only),
- Sound effects take place (FFS Only),
- Single Chime sounds,
- MASTER CAUT lights illuminate,
- WD displays message: **ENG 1(2) STALL**
  **ENG 1(2) N1 HIGH VIBRATIONS**
- Dispatch page display messages
  ENG 1(2) STALL
  > ENG 1(2) STALL
  ENG 1(2) N1 HIGH VIBRATIONS
  > ENG 1(2) N1 HIGH VIBRATIONS

Then after 30 seconds:

- Stall effects disappear,
- N1 vibrations and EGT return to nominal operation.

Cancelling the malfunction restores normal engine performance.

➢And some are not :

**No training added value** (e.g. gear collapse) up to risks of **negative training**



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# Stall Buffet Model



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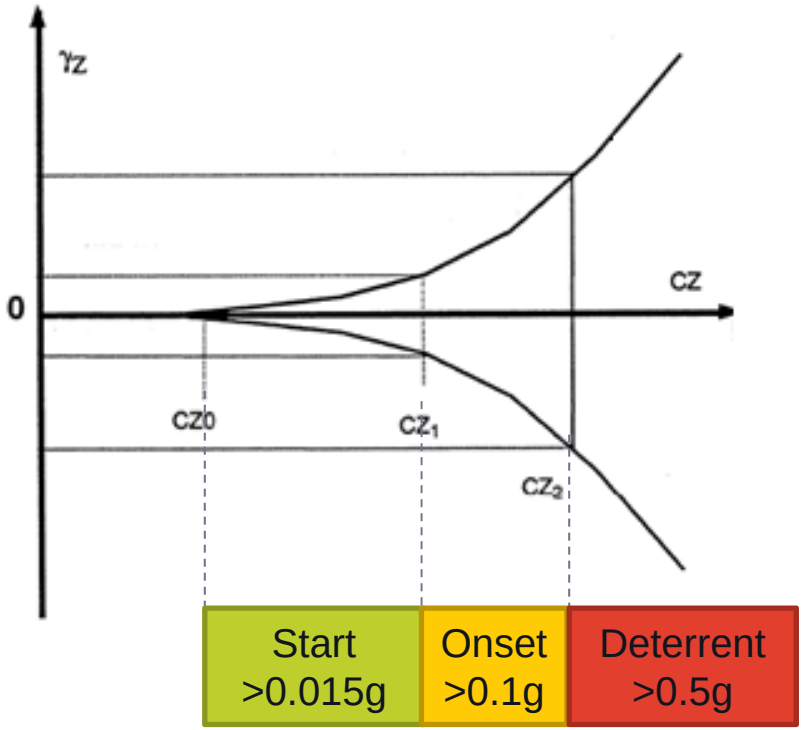
# Stall buffet model description – A320, A330, A380

- "Technical Note **Buffeting Model** for Flight Training Simulator" document




- Tables and equations of CZ0, CZ1, CZ2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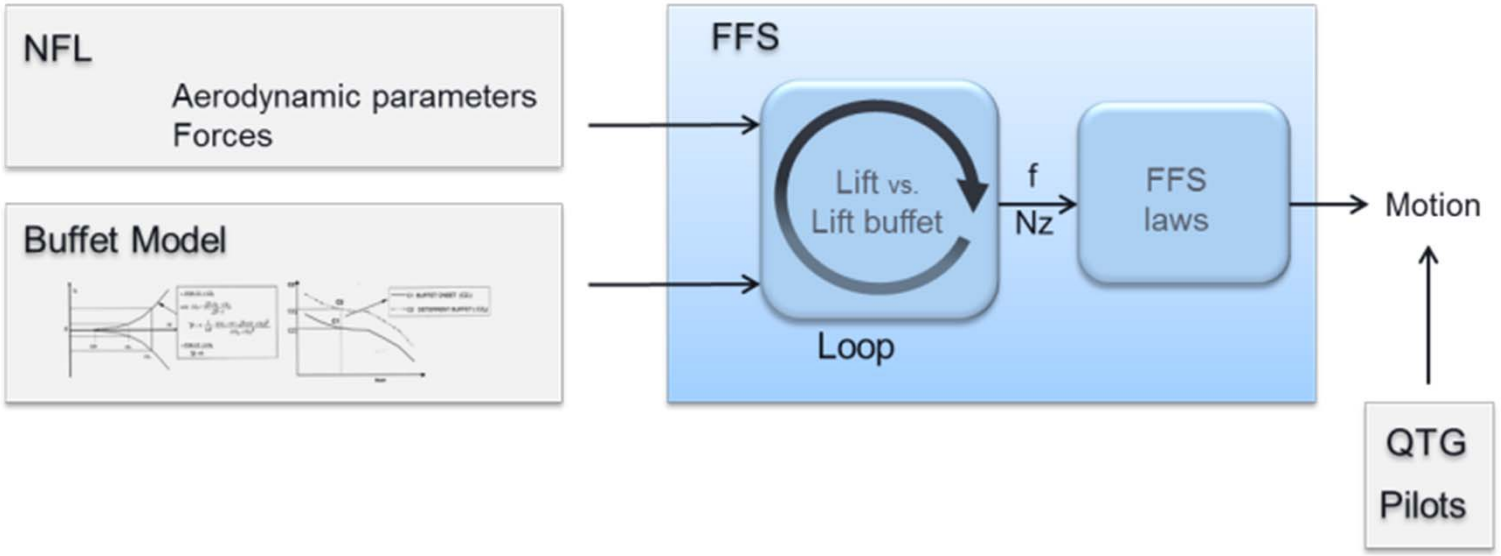
# Stall buffet model integration – A320, A330, A380




But…

- Up to the stall
- Difficult to release updates
- Difficult to support **subjective pilot assessment**



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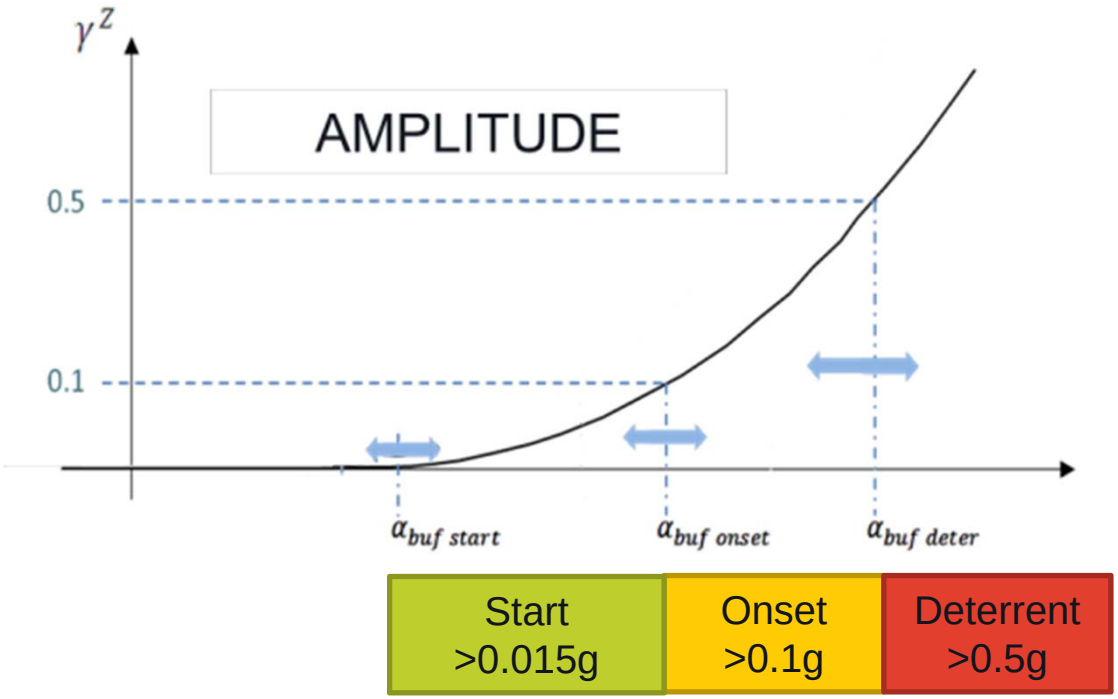
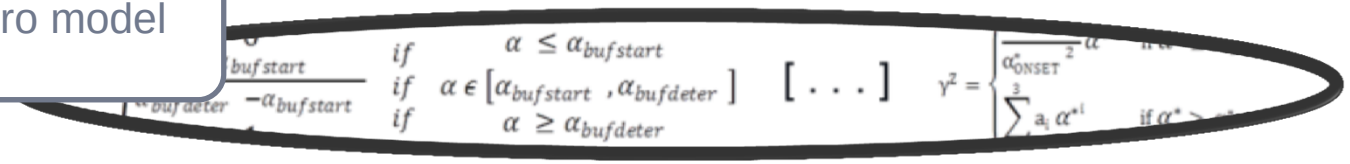
# Stall buffet model description – A350

## ➢ Model embedded within Simulation Software Package (SSP)




Inside aero model



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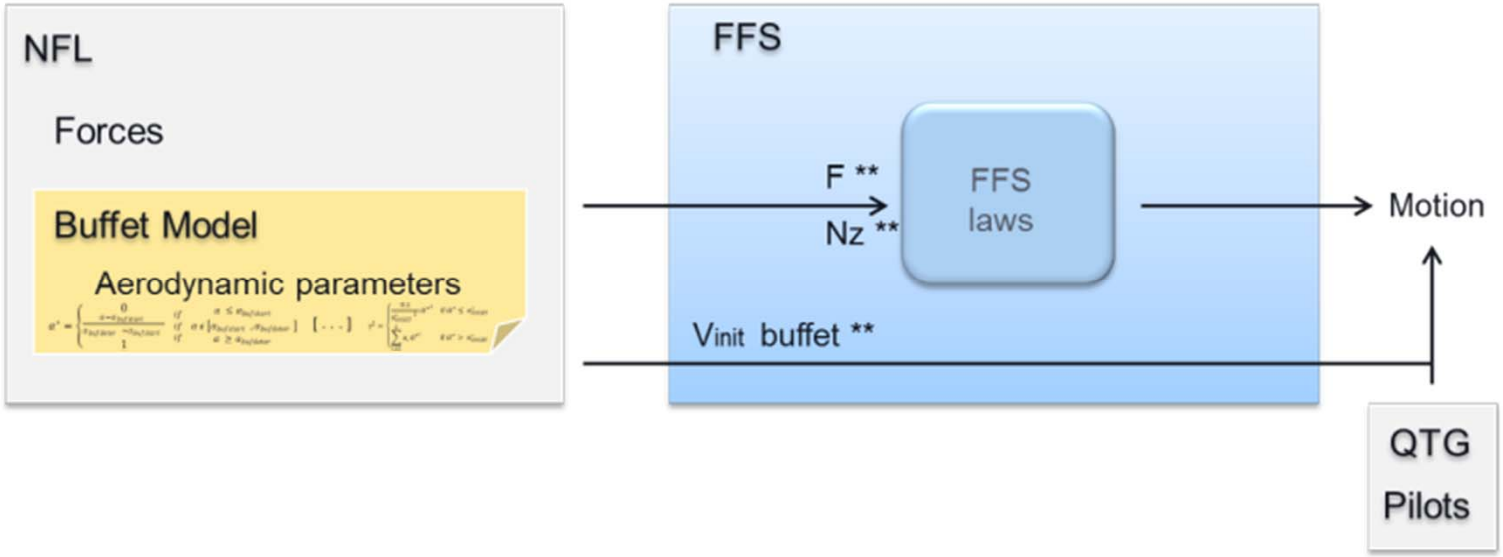
# Stall buffet model integration – A350




- Alpha envelope limited
- Updated with feedbacks from flight test pilots
- Proof of match:
  - ✓Internally validated vs F/T. Check out tests.
  - ✓2c8=3g5 → Objective point of view for FFS tuning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# Synthesis

**The Data Package provides maximum aircraft know-how as possible**

**For specific training needs, GO5 could bring you additional information**

**Data keeps evolving: Be part of it!**



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