

Weight & Balance and Load Planning – 5 Days

Introduction

Both Weight and Balance are essential to the well being for an aircraft to experience safe flight. The Root Cause of Multiple Aircraft Incidents can be attributed to overloaded aircraft or where they have been incorrectly balanced in their distribution of weight.

There are various factors involved in weight and balance accidents/incidents such as errors in the load sheet, shifting of cargo, incorrect loading. (The risk of having a weight and balance related accident with cargo flights is 8.5 times higher than with passenger flights.)

Weight & Balance should also consider the Loading & Burning of Fuel, Loading & Unloading of Baggage's and Boarding & Deboarding of all Passenger's in Commercial Planes as well as Loading & Unloading of External Stores in Military Planes at any time during the preparation, loading, operation, disembarkation and unloading of the aircraft.

This course is focused on the need to ensure, that at all times safe loading as well as weight & balance are ensured to maintain Safety of the Flight at all times and in particular during Take-off & Landing.

Who is the Course for?

It is for Regulatory Authorities and persons who are involved in the Technical Engineering Management , Design Engineering Team, Pilots, Marketing Team, Procurement Team, Manufacturing/Tooling Team, Technical Publications, Flight Operations, Customers.

What is the Benefit of this Training –What will I learn?

- a) Understand the basic Principles of Flight, related to Aircraft Weight and Balance
- b) Familiarize with all terms used in the Aircraft Weight & Balance Eng. Domain
- c) Consider the various weights used in the compilation of a load sheet and how to act on them
- d) Understand the use of Indexes and % Mean Aerodynamic Chord (MAC)

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What is the Benefit of this Training –What will I learn?

- e) Familiarize with the Design of Load and Trim charts
- f) Be Able to Ensure the correct Weight & Balance of an Aircraft prior to dispatch to Customers.

Why Should I Choose SAS for the training?

Sofema Aviation Services a Regulatory training and consulting company with 45 years of commercial aviation experience and 12 years of operational experience. Since we started we have provided certificates to approx 25,000 delegates we have grown for 2 primary reasons!

The first is that we are professional and we listen to our customers. Please visit our download area as an example of how we engage with our customer.

The second is not only the fact that our prices are far more cost-effective than our competitors it is that our discount program leaves all the others way behind – please do not take our word for it [check it out!](#)

What Makes SAS Weight & Balance and Load Planning – 5 Days Different?

Our instructors are competent and well versed in the need to build effective understanding into a range of opportunities which may be used to take the organization forward, by delivering outcomes, identifying roles and responsibilities and agreed timelines.

Our EASA Part 21 compliant regulatory training courses are overseen and usually delivered by an EASA Part 21 Subpart J Certification Verification Engineer

At Sofema Aviation Services our focus is on accepting that compliance with EASA Regulations is in fact minimum compliance. Interpreting the regulations in a way which enables the development and optimization of our business is where we should see opportunity to drive efficiency and cost saving.

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Detailed Content / Topics - The following Subjects will be addressed

Day 1:

Introduction:

– Aircraft Weight and Balance

Glossary

– Overview of Weight and Balance

Importance of Weight and Balance

Basic Definitions of Weight and Balance

Weight & C.G importance from the Conceptual Design Phase

Aircraft Stability

Centre of Gravity Impact on Aircraft Design

The Aircraft Coordinate System

Pictorial View of Weight and C.G Breakdown for an Aircraft

Examples of finding C.G of an Object

M.A.C

– Aircraft Weight Breakdown from Basic Empty Weight to Max Landing Weight

Basic Empty Weight (BEW)

Dry Operating Weight (DOW)

Operating Weight (OW)

Maximum Zero Fuel Weight (MZFW)

Maximum Taxi Weight (MTW)

Maximum Take-off Weight (MTOW)

Maximum Landing Weight (MLW)

Day 2:

Practical Session:

Study of any respective Internal Aircraft Company Eng. drawing an assembly along with Material Schedule and Find out the Weight and C.G of that assembly.

Compute the Weight and CG of that Assembly using CATIA-Enovia Data base using Material Schedule of that assembly and Create Weight and CG Table as per Material Schedule in Excel and transfer the computed result to that table to find Total Weight and C.G of that Assembly.

Day 3:

Aircraft Weighing

– Aircraft Weighing Procedure

Scale Preparation

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Detailed Content / Topics - The following Subjects will be addressed

Clean Aircraft Inside Hanger
Drain the Aircraft Fuel
Configuration of the Aircraft
Jacking the Aircraft
Levelling the Aircraft
Safety Considerations
Determining the CG from the Datum
– **Aircraft Load and Trim**
Definitions of Load and Trim
Load Control
Load and Trim Sheet
Loading Instruction Report
Cargo Compartments
Structural Loading Limitations
Dangerous Goods and Special Items
Baggage Handling System
Air Mail
Fuel Loading

Day 4:

Aircraft Loading

– **Load Graph and Weight and Balance Envelope**

Computation of A/c of Take-off Weight to Landing Weight.

Pilot & Front Passenger

Fuel

Rear Passenger

Baggage

– **Review of Incidents and Accidents based Weight and Balance**

Day 5:

Weight Reduction

– **Weight Reduction / Optimization and Control Techniques.**

Control of Supplier Equipment

Configuration Control

Design Control

Manufacturing Control

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– Study on

EO's,

NIEO's,

RFC's and

Modsum's and

those effect on Weight and C.G. of an Aircraft, available in the respective Aviation Industry.

– Questions & Debrief

Target groups

Regulatory Authority Members, Pilots Team, Technical Engineering Management, Design Engineering Team, Marketing Team, Procurement Team, Manufacturing/Tooling Team, Technical Publications, Flight Operations, Customers.

Pre-requisites

- Participants should know Mathematical Calculations and must be Familiar with SAWE Handbook.
- CATIA and Enovia Database access knowledge.
- Knowledge on Complete Aircraft Structures and Systems.

Learning Objectives

After Completion of this Training Course, Designers should be able to Perform all steps necessary to Perform Weight and Balance within the Flight Safety Limits and Capable to obtain Flight Clearance from Certifying Authority.

What do People Say about Sofema Aviation Services Training?

"The trainer provided very good examples of every aspect illustrated in the presentation"

"The course developed each of the trainee's skills"

"I really liked that the training was practice-oriented – it helped me to understand more than the theory"

"The instructor had a very positive attitude"

"The analysis and the practical part were very evenly distributed."

Duration

5 days – Start at 09.00 and finish at 17.00, with appropriate refreshment breaks.

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