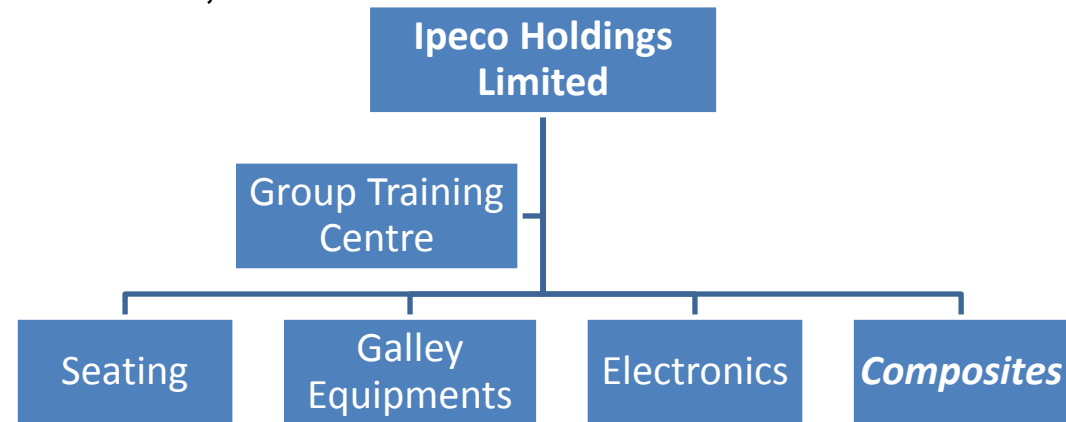




Use of Dynamic Analysis for CBA

August 2012

- Seating
 - Crew seats (pilot & co-pilot);
 - Flight deck (Obs.) and attendant seats;
 - Executive passenger seats;
- Galley Equipment
 - Galley inserts;
 - Beverage maker;
 - Oven, Fridge/Cooler.
- Electronics
 - Power supply modules;
 - Power systems/Battery chargers.
- Composites
 - Aircraft seating & interiors;
 - Aerospace primary & secondary structures;
 - Rail & Space.



Use of Analysis

- Ipeco has with increasing success used dynamic analysis since 2001 to guide design and improve confidence in the outcome of physical testing.
- The number of certification and occupant injury tests is minimal per program when compared against a typical cabin seating program.
 - Therefore not the same incentive to take a certification by analysis approach.
- The variety and complexity of the moving parts and mechanisms do not easily lend themselves to certification by analysis.
- Actively involved in SAE Seating Committee (Andrew Cullen).

- Dynamic properties of foams with an understanding of the effects of the containment leather/cover (e.g. friction).
- Approximations are made by modelling bolts as rigid bodies. More and faster computer resource will be required to produce detailed models.
- Other modelling approximations for locking, height, rotation, recline and pan tilt mechanisms. These will have to be replaced by substantiated detailed models.
- Substantiation of analysis models for a widely differing range of products will be time consuming. Commonality will not be an option.
- Development of methods of quality assurance for Modelling & Simulation for CBA. Validation Analysis Report alone is insufficient – more rigorous checking on every stages of M&S.

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