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Airbus Group & Airbus

An aeronautic view

World Materials Forum

Roundtable : KPI's for Material efficiency

Content

Materials in Airbus Business

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Material use optimization

- 15 min

Wrap-up

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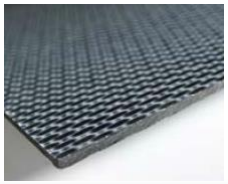
Materials in Airbus Business : Key facts & figures

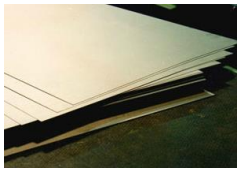
Composites, Paint, Coatings & Sealants



Every working day, Airbus uses:
- **4 tons** of composite material
- **>1500 gallons** of paint
- **300 pounds** of sealant

A350 XWB is mostly Composites (> 50%)

Aluminium

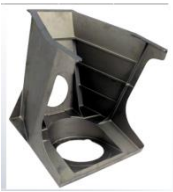


Every working day, Airbus product manufacturing requires **615 tons** of aluminium

Titanium

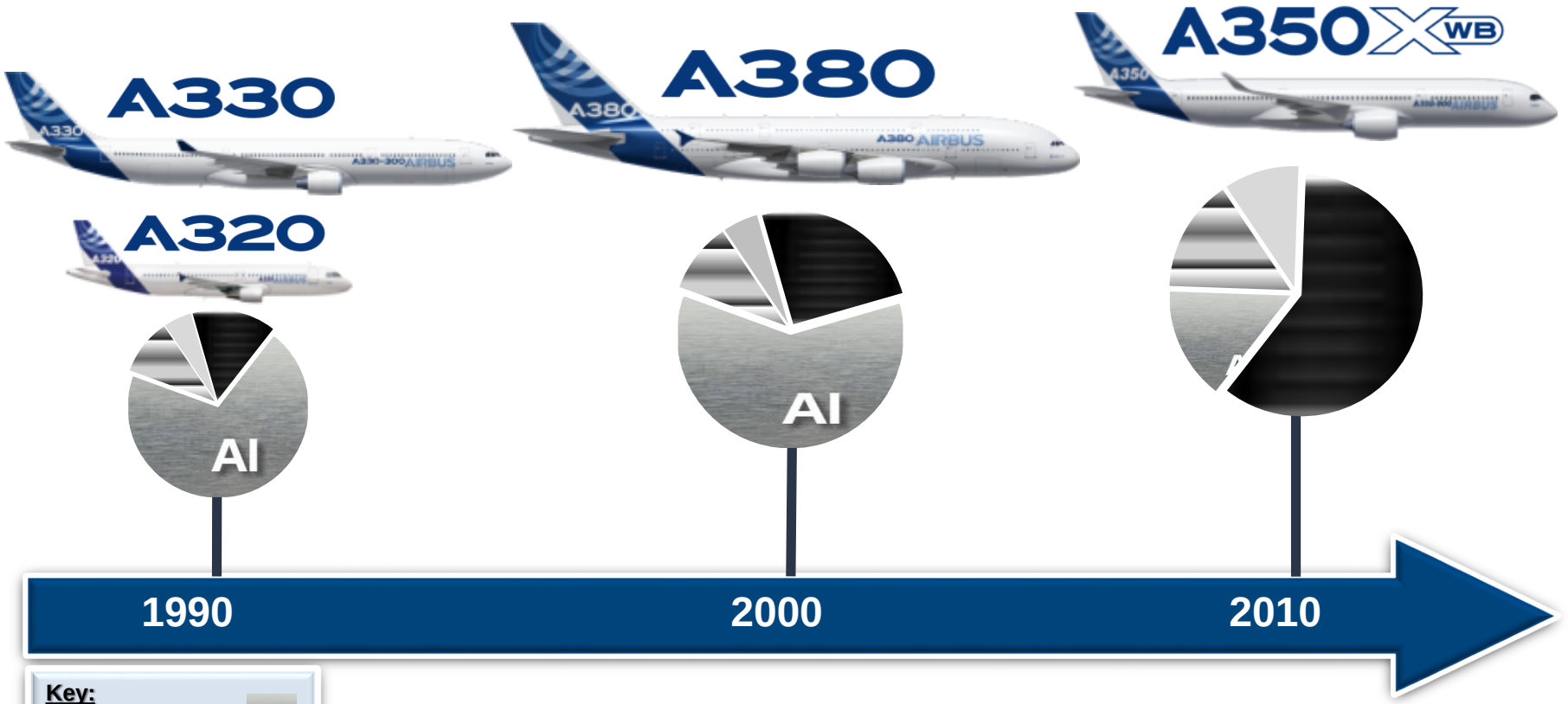
Every working day, Airbus products manufacturing requires **38 tons** of Titanium (2015 consumption)

Forgings & Casting



A Single Aisle aircraft flies **more than 600 casting** and **200 forged parts**

Evolution of Material breakdown / programme



The use of Titanium & Composite has increased with each aircraft generation.

→ Increase of material technicity

Aerospace materials specifics

Weight and **Safety** are **critical elements** in Aerospace industry

→ Specific mechanical properties requires narrow chemical composition

→ Need to be 100% proof (health checks, special testing frequency, frozen manufacturing route,..)

→ Damage tolerance sizing, impacts needs to be controlled and mastered (special testing)

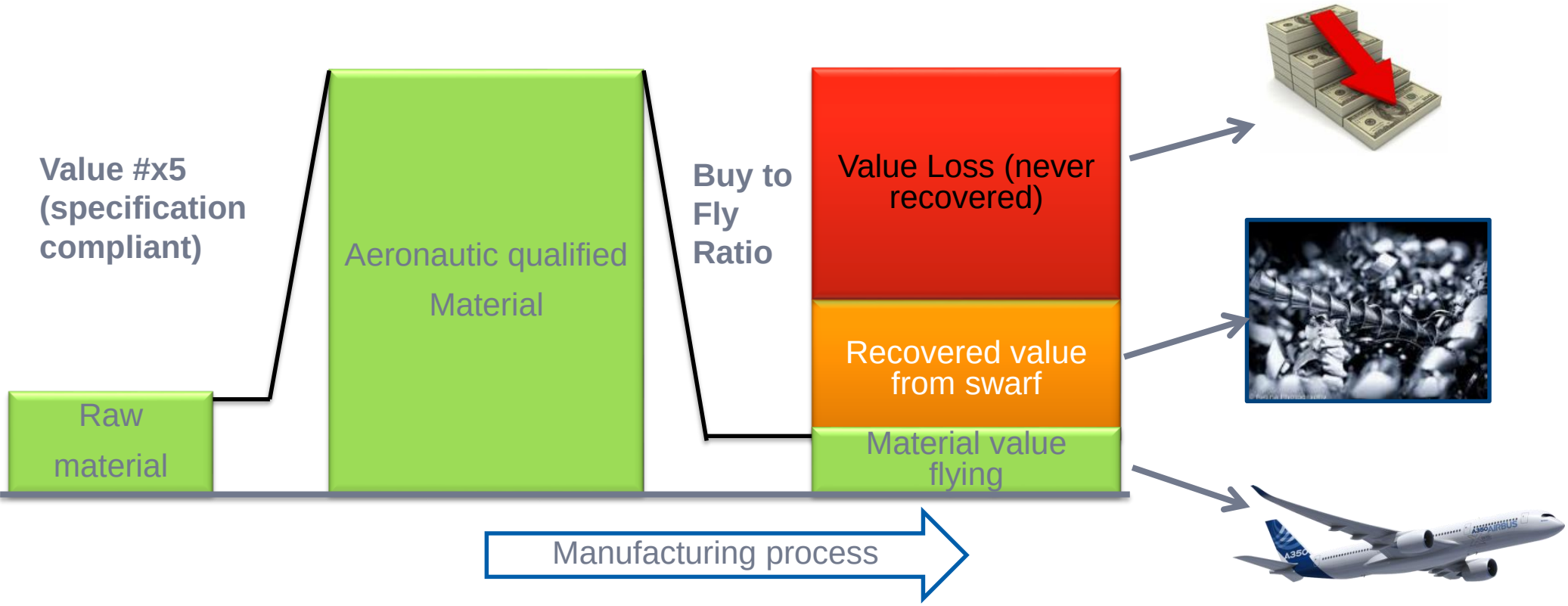
→ Maintenance intervals need to be mastered

→ Dimensional constraints (flatness, waviness, internal stresses,…)

All these requirements are integrated within materials specification

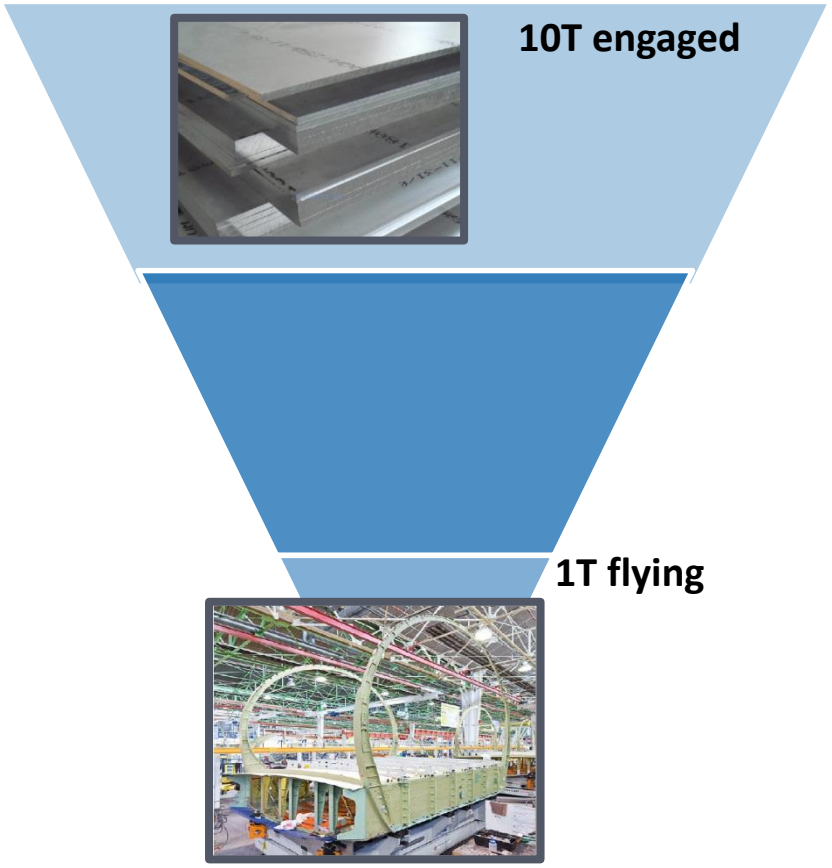
→ **Qualified aerospace grade materials are much more expensive than raw material**

AS IS - Material value stream

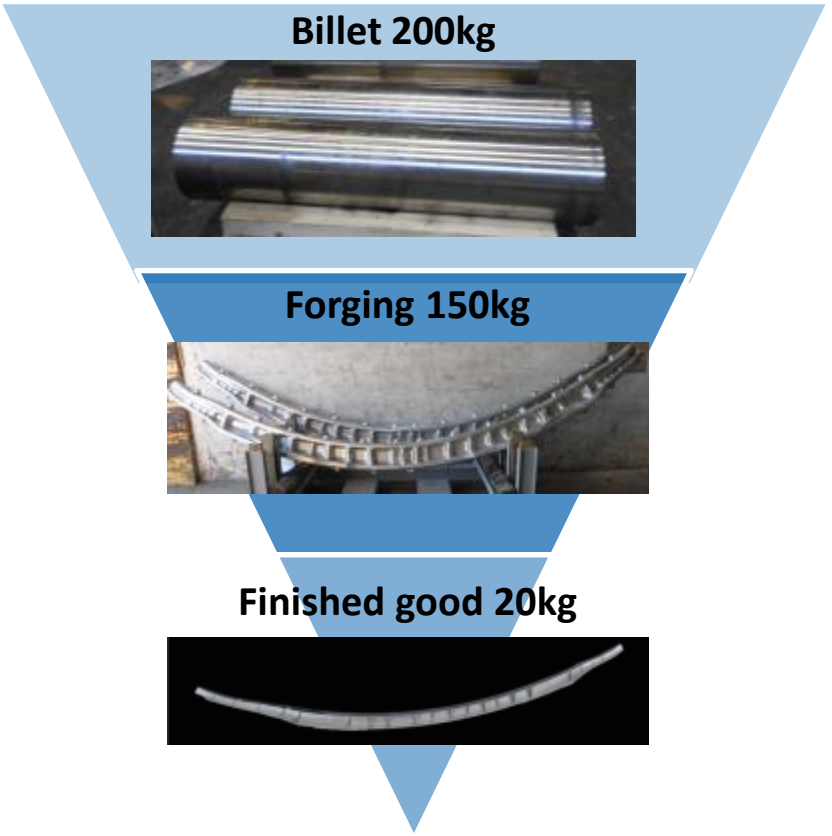


Average buy to Fly ratio is around 1/10

AS IS – A couple of examples



Center Wing Box



Doors Frame A350XWB

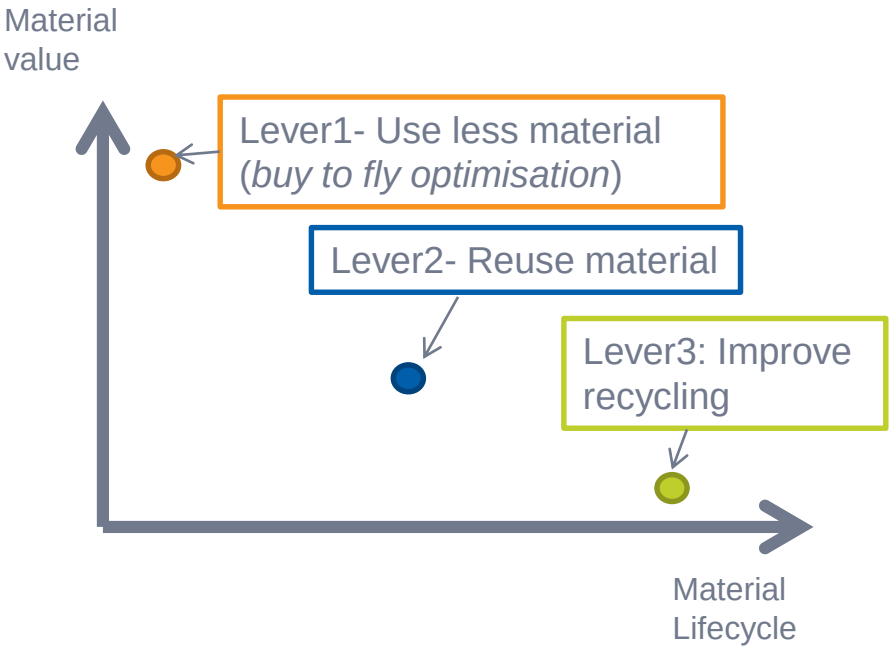
Input = 10

"Buy to Fly ratio"

Output = 1

TO BE - Material value stream (*in value*)

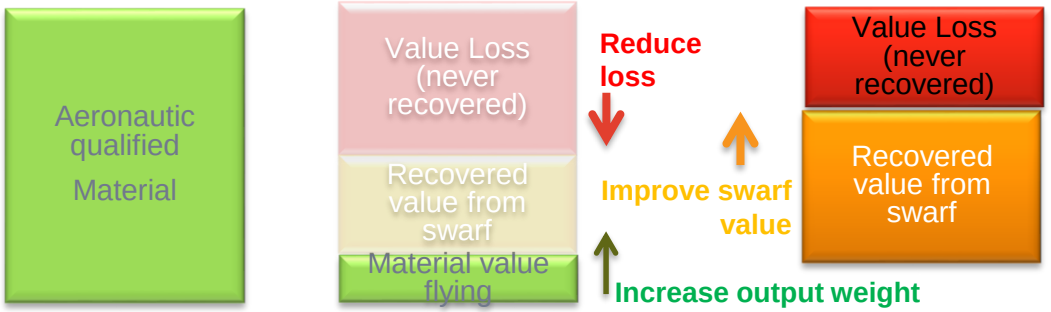
Potential levers to improve value



Expected impacts

Lever1- Use less material (*buy to fly optimisation*)

Lever2- Re-use material & Lever3-Improve recycling

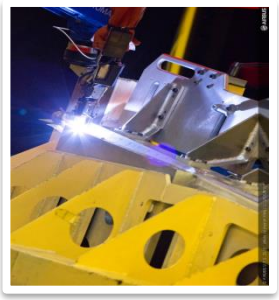


We need to engineer material consumption out of the supply chain

1- Use Less : Buy to fly evolution

High impact on value

Lever1- Use less material



Step 3

ALM

Step 2

Smart Welding

Step 1

Forming

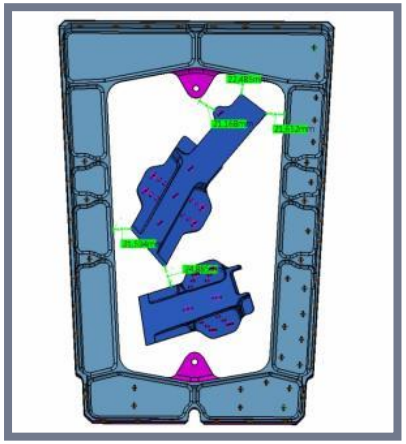
Extrusions

Nesting

Impact on Buy to Fly reduction

Maturity

Innovative 3D-printing technology will shape the future of aircraft component manufacturing.



2 - Use Less : Reuse
Medium/Low impact on value

Lever2- Re-use material

CFRP Value Recovery- Reuse Other Reuse activities

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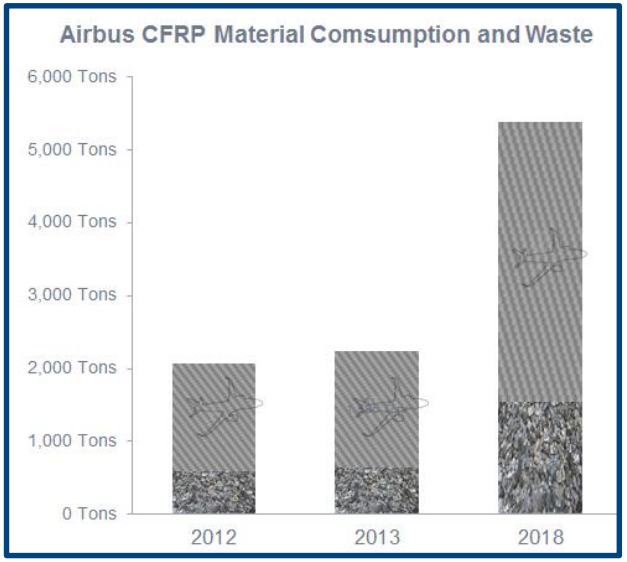

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3 - Use Less : Recycle

Low impact on value

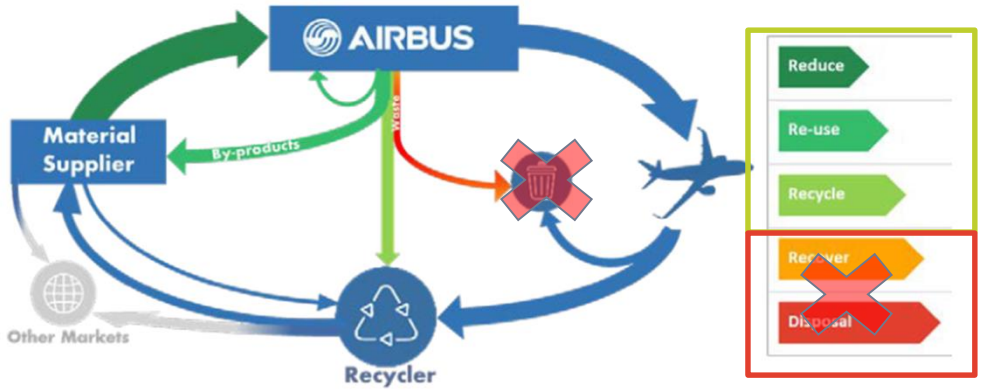
WORLD MATERIALS FORUM

Lever3-Improve recycling

- **Increase** the **amount** of scrap collected in the Airbus Group Supply Chain
- **Increase** the **value** of scrap within the Airbus Group Supply Chain
  - Commercial: volume effect as a leverage to increase scrap value
  - Plants processes: streamline processes to be more efficient on scrap management
- **Develop** a **circular economy model** to reuse scrap in the production process

Concept applied to Metallic products

Concept applied to Composite – *"zero waste target"*



REDUCE, REUSE & RECYCLING

AIRBUS

Wrap up

- Optimized material management along the products lifecycle still offers significant opportunities for the aerospace industry:
  - Material availability
  - Costs savings
  - Environmental sustainability

- Progress requires a multi-disciplinary approach with and within the supply chain