

ZODIAC AEROSPACE



An OEM Perspective...

ULDUG
September 12, 2012
Shanghai, China

Driessen Air Cargo Equipment

AGENDA

1. Short history of Lightweight, where are we coming from?

history

2. Consequences of ULD becoming lighter

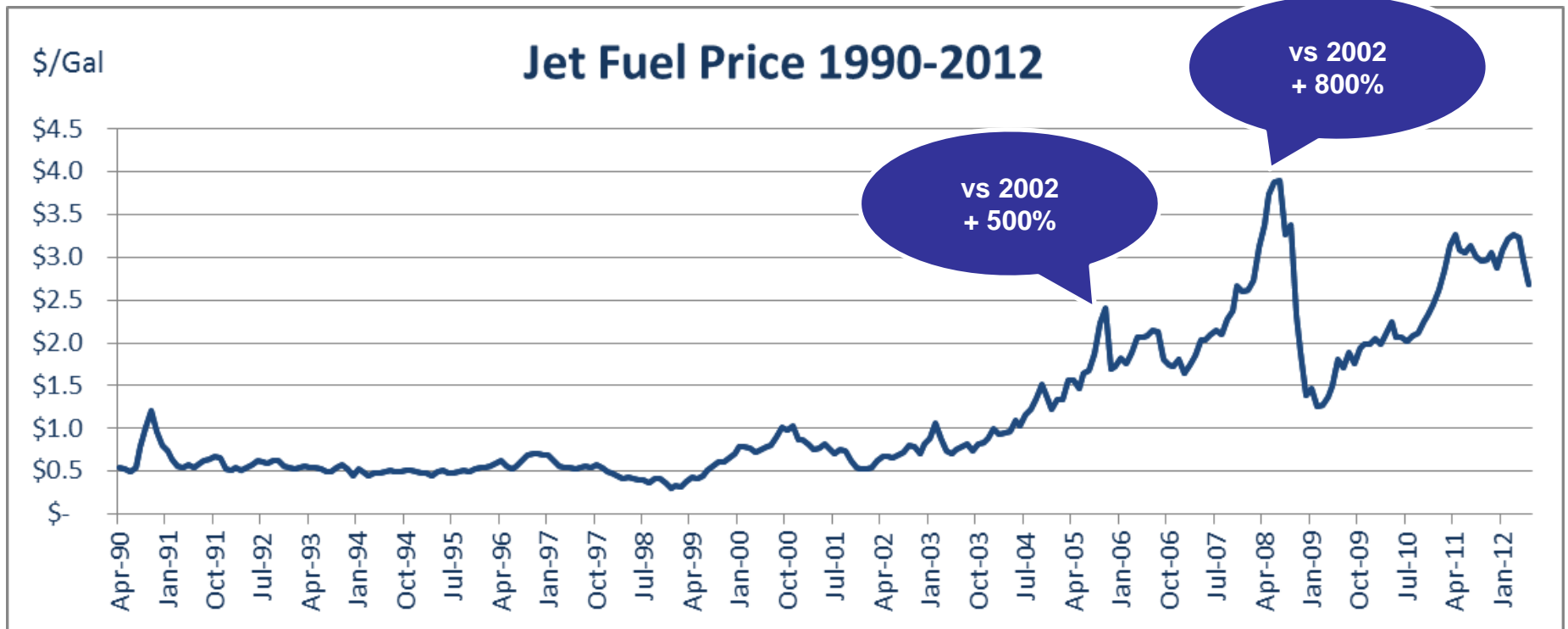
present

3. Outlook into the future

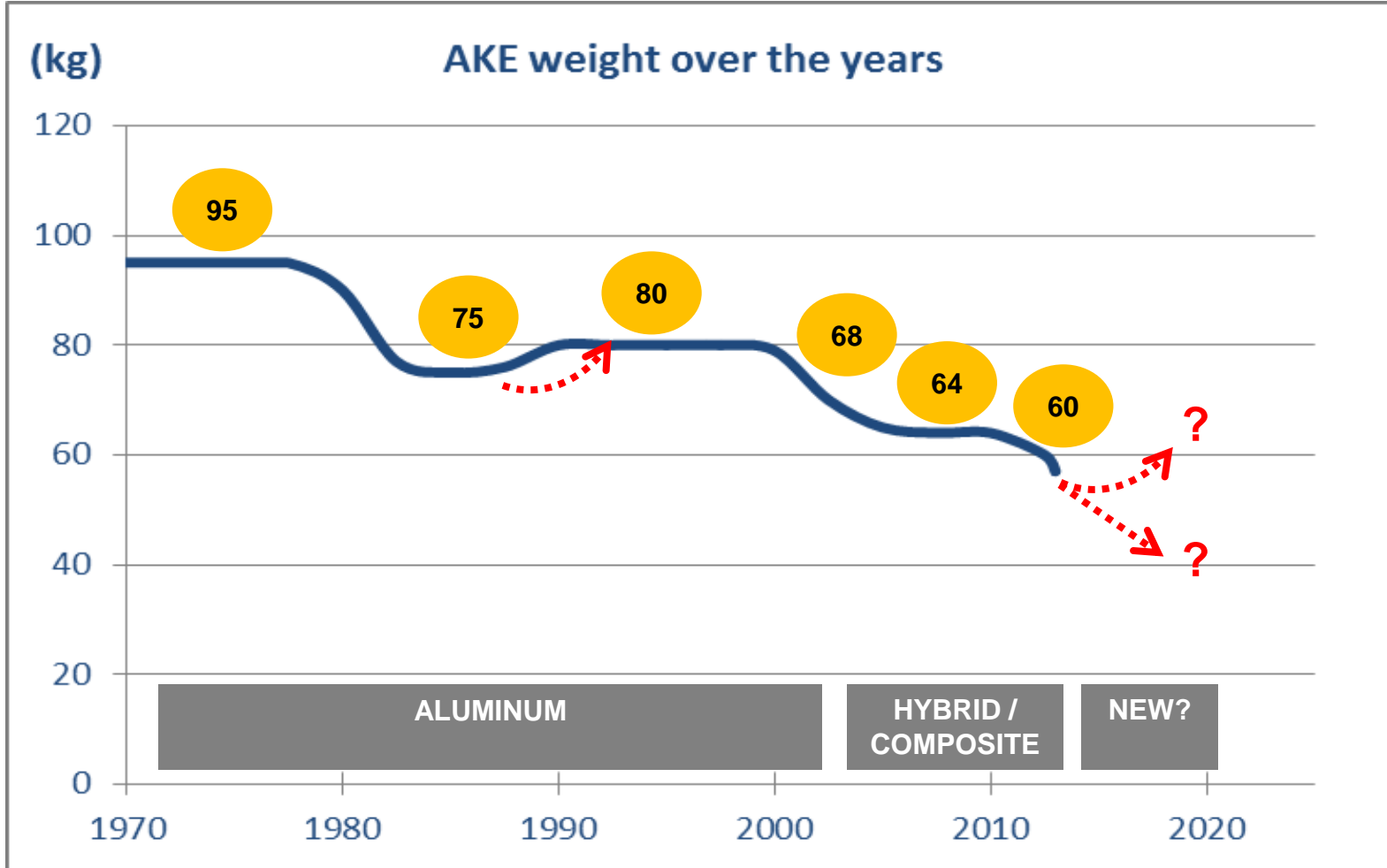
future

A short reminder, why did we need lightweight again...?

Until 2002: \$0.50 per Gallon



Will it keep going down?



OEM's response: Composite panels & Aluminum reduction

(1) Significant weight reduction by introduction of composite panels → 8-12KG



(2) further weight reduction by selective removal aluminum

“Sheet thickness”

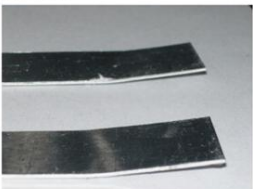
3.5mm



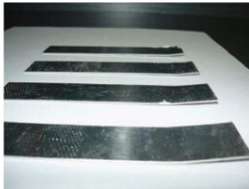
3.0mm



2.7mm



2.5mm



“Extrusion changes”



“Gusset changes”



But going lighter has its consequences...

If ULD's strength is reduced structurally, there are risks:

Maintenance costs might rise → More repairs

Asset costs might rise → More ULD needed to compensate damages / out-of-service

ULD life time might decrease → Earlier replacement



Going lighter therefore leads to many questions for ULD Managers...

Life-time?

Maintenance?

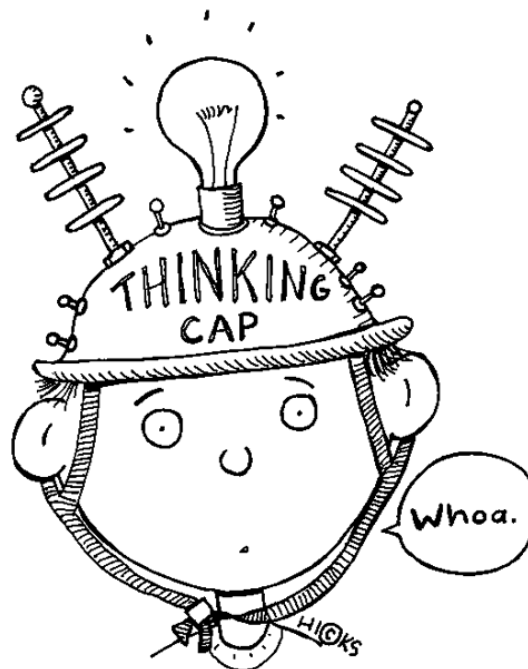
Inspection cycles?

Safety?

Purchase price?

Reliability?

Total Cost of Ownership?



“typical”
ULD-MANAGER

Depreciation?

Lightweight & Durability: a match?

TREND 1: Go for lowest weight possible → accept a shorter lifetime



Request airlines to OEM →

Innovate to reduce weight as much as possible, as long as the airworthiness is not endangered

Lightweight & Durability: a match?

TREND 2: Match durability with weight reduction



New or less materials



New designs



Request airlines to OEM →

Implement new materials or design structures to reduce weight & maintain durability

But it's not only the OEM's...

With all this weight reductions...airlines, MRO and airports should change too!

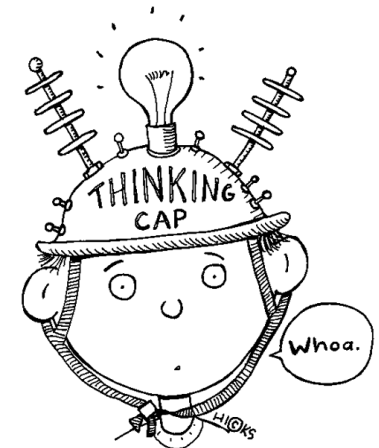
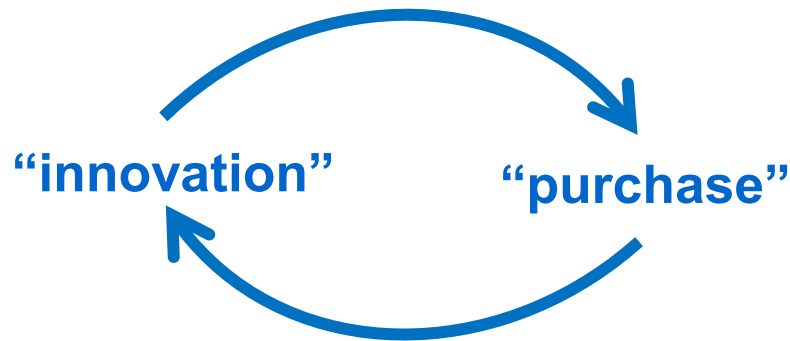
- Proper storage area
- Proper equipment used by Ground Handlers
- Continuous education of external parties (on and off-airport)
- Tightened and improved ULD inspection procedures
- Automatic baggage loading & off-loading systems



Lightweight & Durability: a match!!!

Conclusions:

- Requests airlines to OEM's known: lightweight & durability at acceptable price
- Materials and designs are available: but too expensive



**“typical”
OEM**

To answer to the requests of airlines, OEM's have to be innovative!

Lightweight & Durability: a match!!!

Conclusions:

We do expect a new wave of products combining weight and durability

But price-sensitivity require intense creativity of OEM's....
because we're looking for the durable lightweight combination...

