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Presented by:

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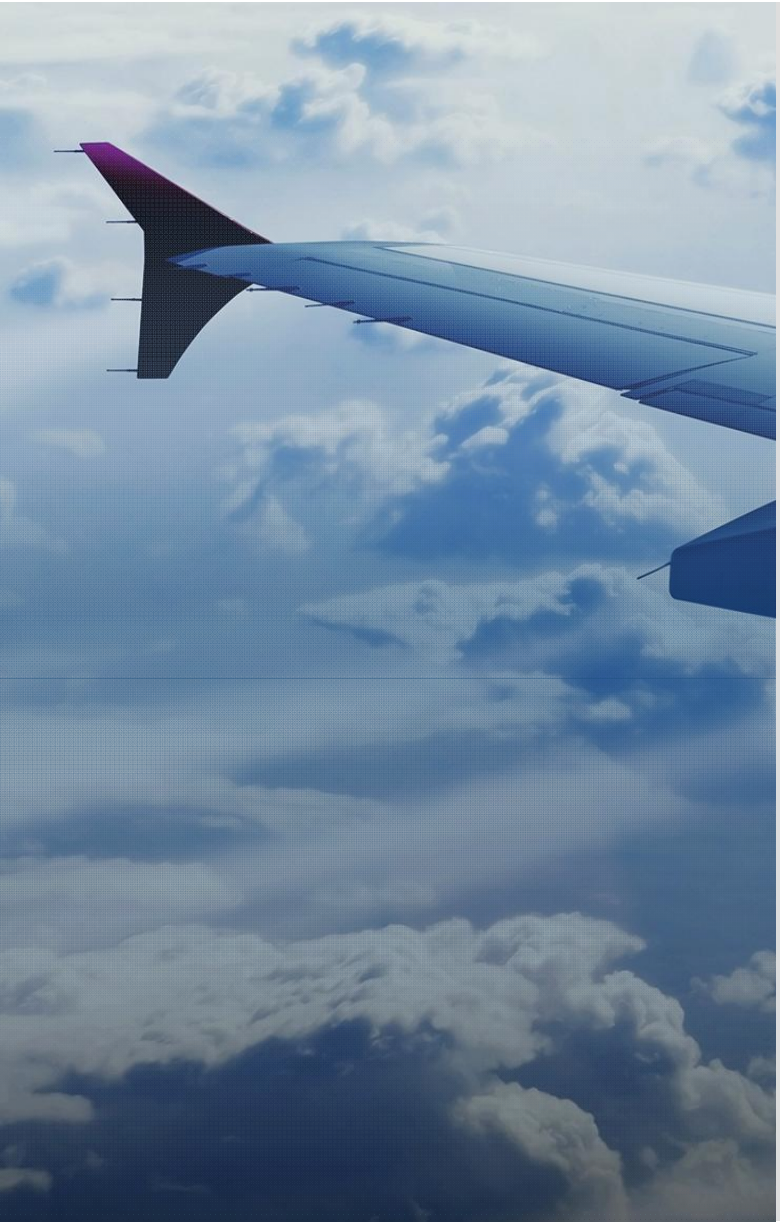
PMA Forecast and Market Trends



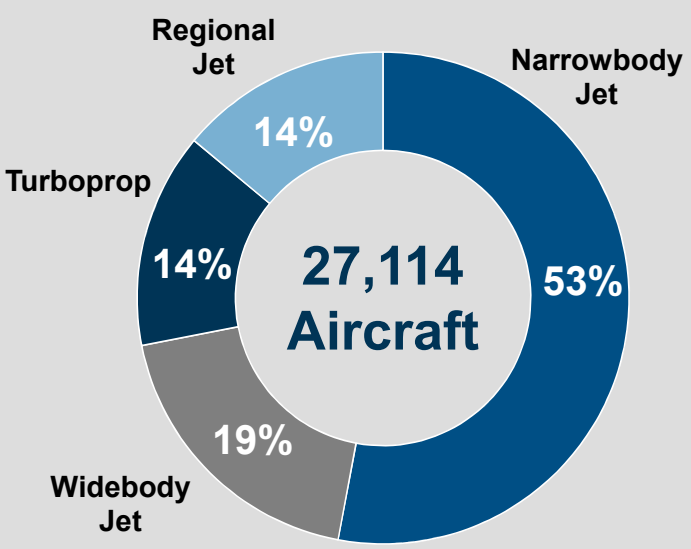
Today's Agenda

- MRO Forecast
- Meet the Frackers!
- The PMA Market…

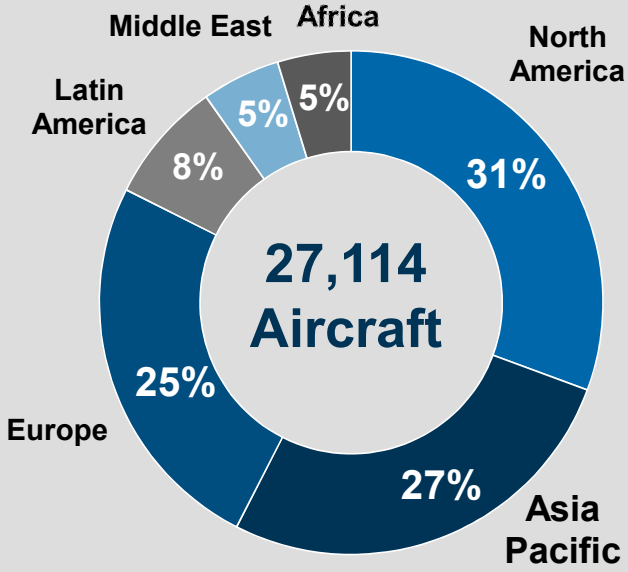
MRO Forecast

The current commercial air transport fleet consists of over 27K aircraft

2015 Global Commercial Air Transport Fleet



By Aircraft Type



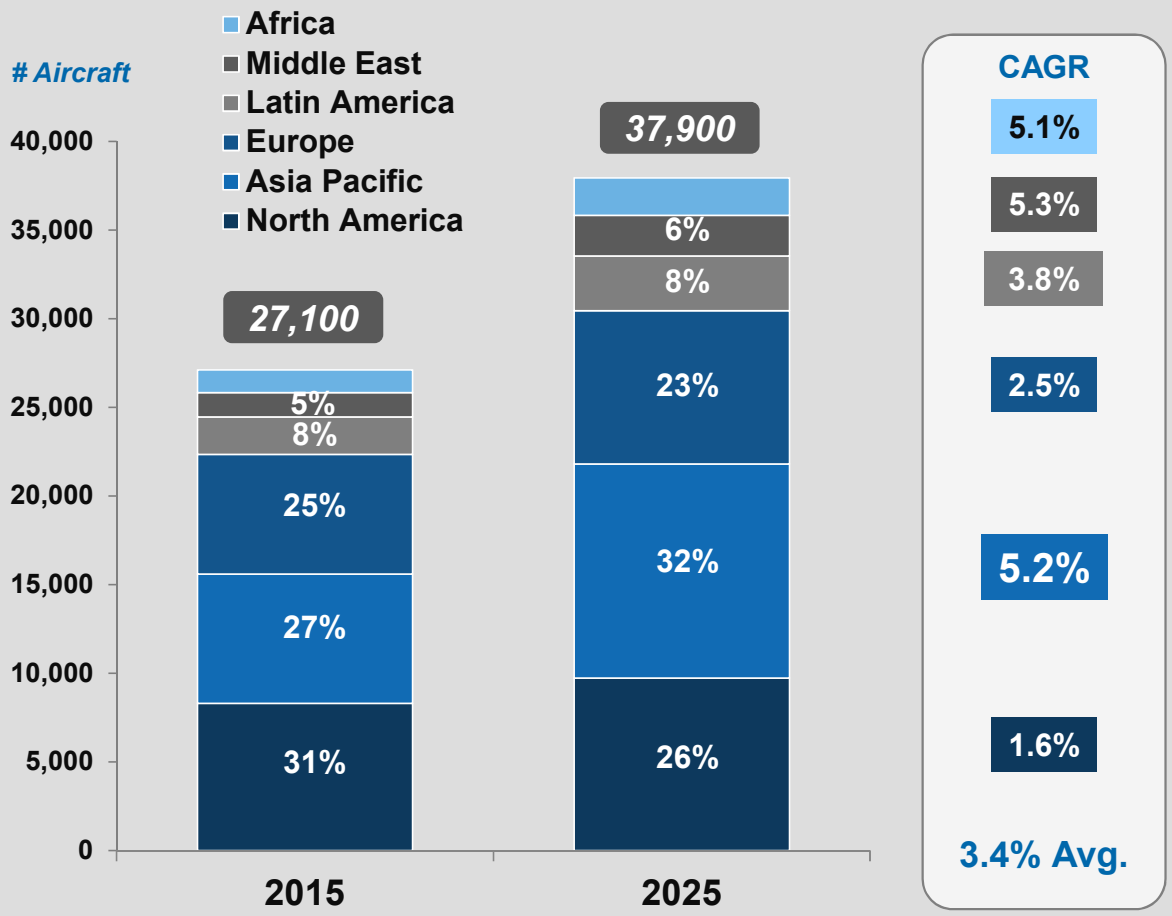
By Global Region

Source: CAPA 2015

The combination of strong air travel demand and the need to replace ageing aircraft will drive fleet growth at 3.4% annually

- Air traffic growth of ~4.1%
- Fuel costs in $55/bbl range
- ~19,600 aircraft deliveries
- ~8,800 aircraft retirements

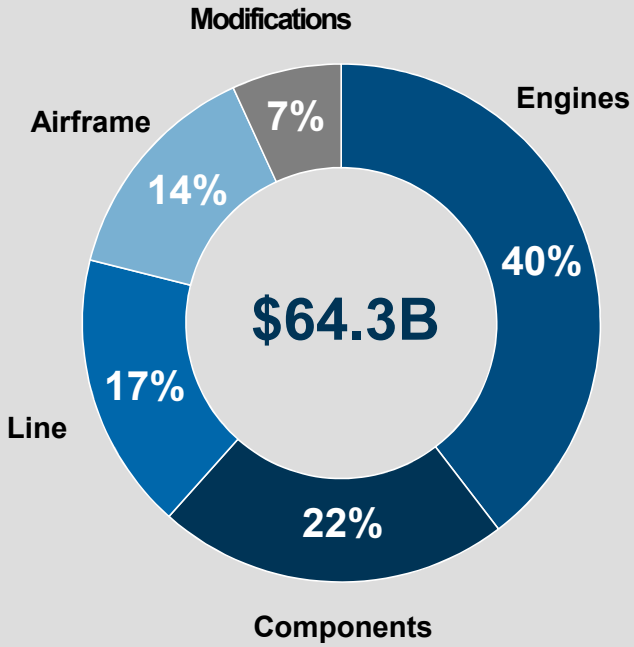
10 Year Global Air Transport Fleet Growth



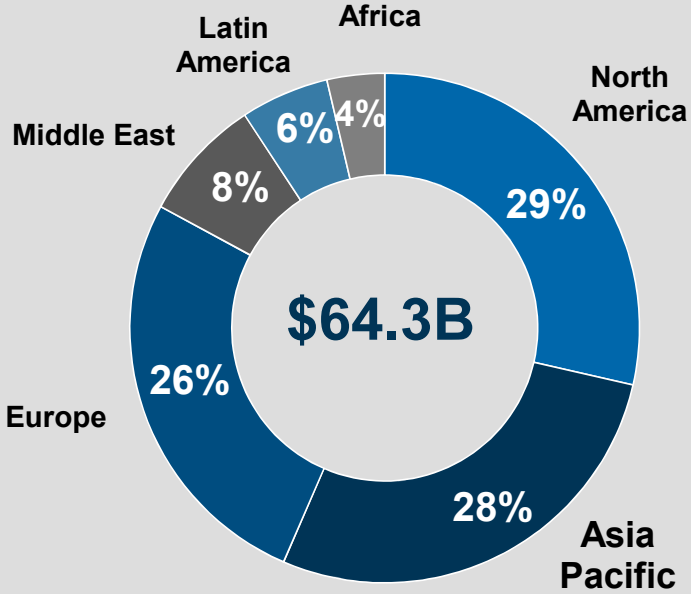
Source: ICF International, CAPA 2015

Current air transport MRO demand is $64.3B; Asia Pacific is now equivalent to North America and Europe

2015 Global MRO Demand



By MRO Segment

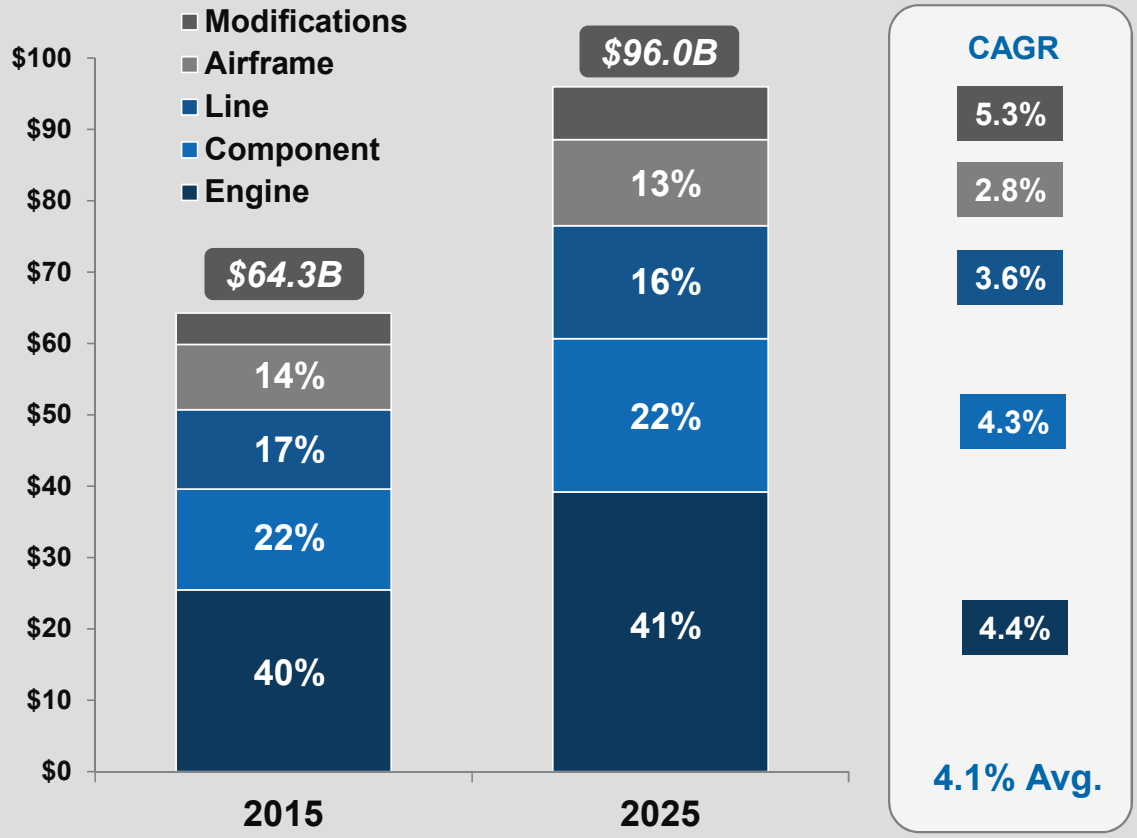


By Global Region

Source: ICF International

The global MRO market is expected to grow by 4.1% per annum to $96B by 2025

10 Year Global MRO Demand Growth

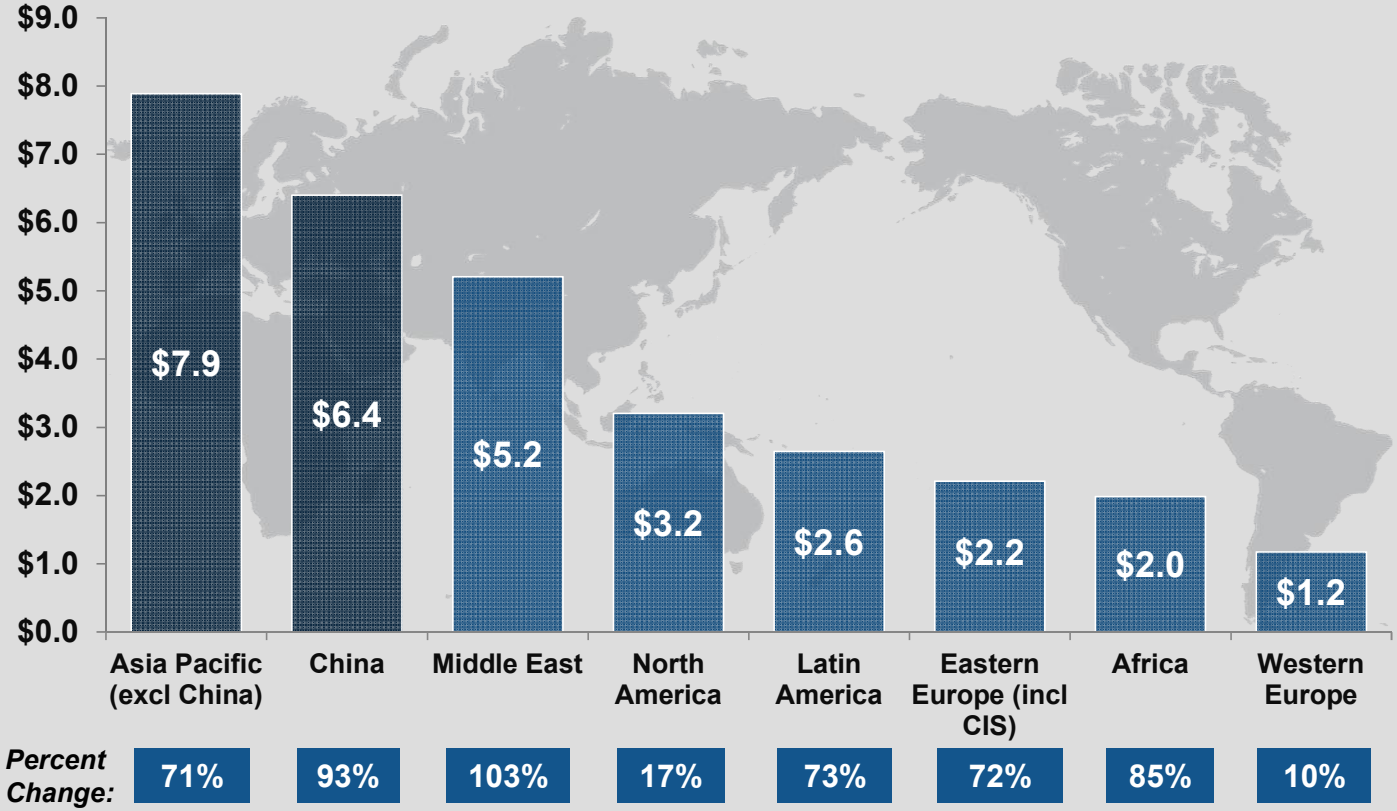


Source: ICF International; Forecast in 2015 $USD, exclusive of inflation

Over the next decade, China and Asia Pacific region will drive absolute MRO spend growth

Difference in MRO Spend, 2025 vs. 2015 – By Global Region

$ USD Billions

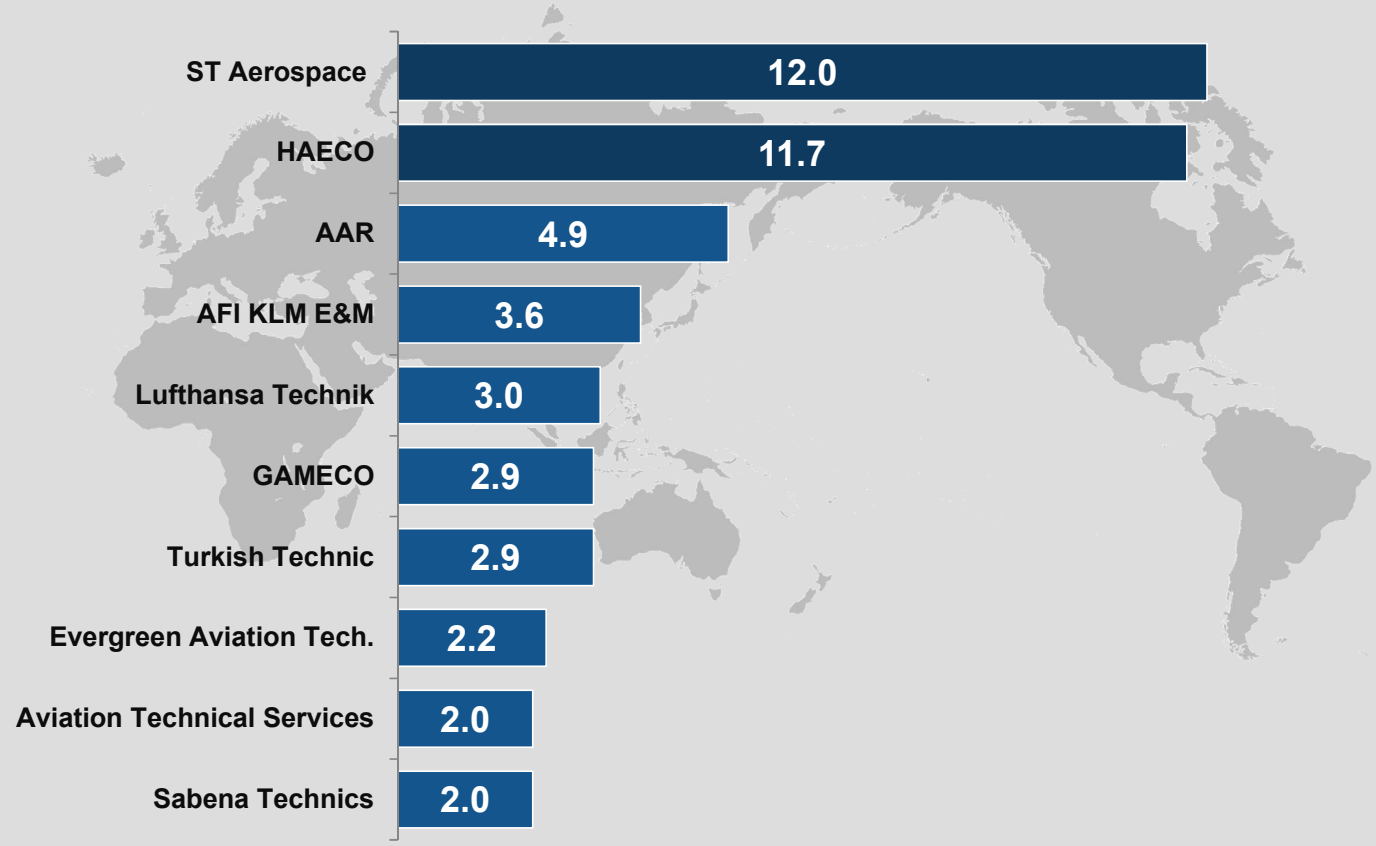


Source: ICF International; Forecast in 2015 $USD, exclusive of inflation

Among the top ten airframe MRO providers, ST Aerospace and HAECO account for 50% of man-hours performed in 2014

2014 Top 10 Airframe MROs by Man-Hours Performed

In Millions



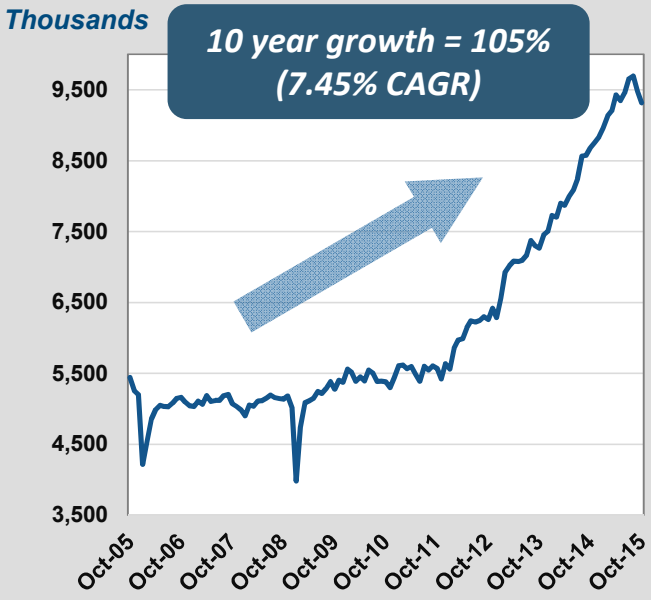
Source: Aviation Week

Meet the Frackers!

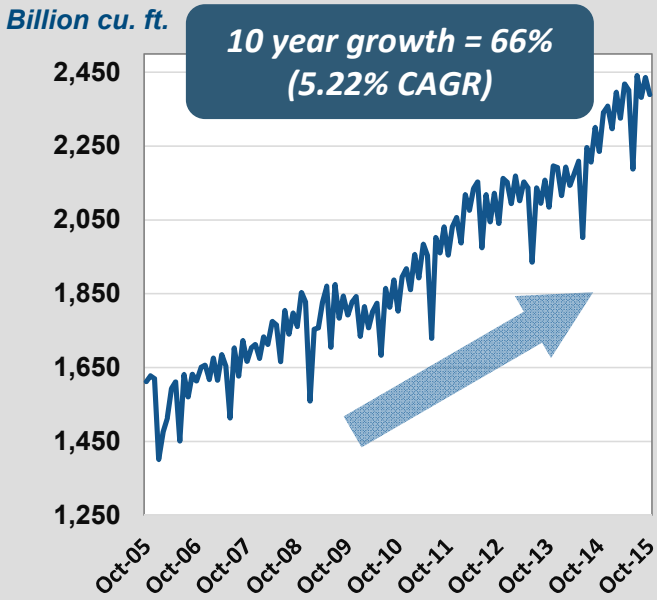
Breakthrough technologies in horizontal drilling and hydraulic fracturing (aka fracking) resulted in a US-led energy revolution

North American crude oil and natural gas production have soared in recent years…

U.S. Crude Oil Production
(Barrels / day)



U.S. Natural Gas Production
(Monthly marketed production)



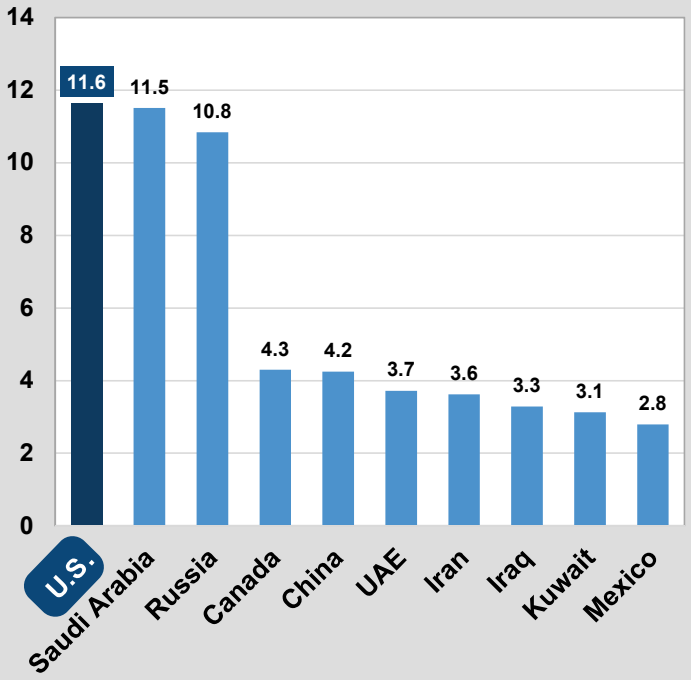
Source: BP Statistical Review of World Energy June 2015, ICF International Analysis

The US energy revolution has completely disrupted the global economic and geopolitical balance of power

…making the U.S. a global powerhouse in energy production

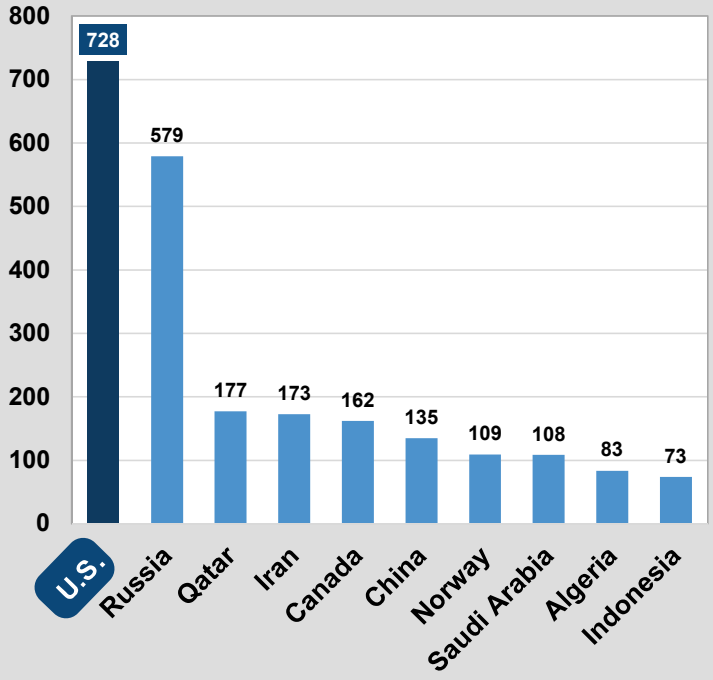
Global Oil Production

(Million barrels / day as of June 2015)



Global Natural Gas Production

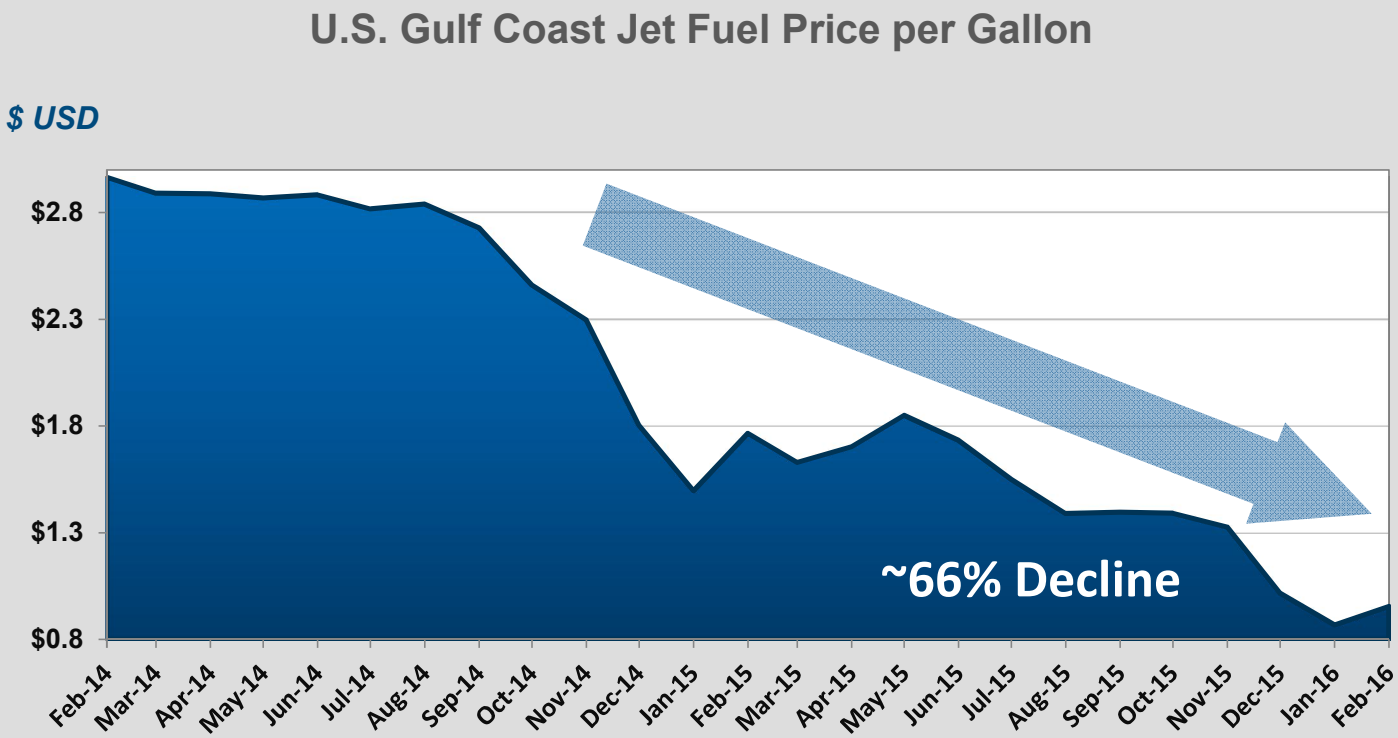
(Billions of cubic meters as of June 2015)



Source: BP Statistical Review of World Energy June 2015, ICF International Analysis

Continued low fuel costs will have significant repercussions throughout the aviation & MRO supply chain

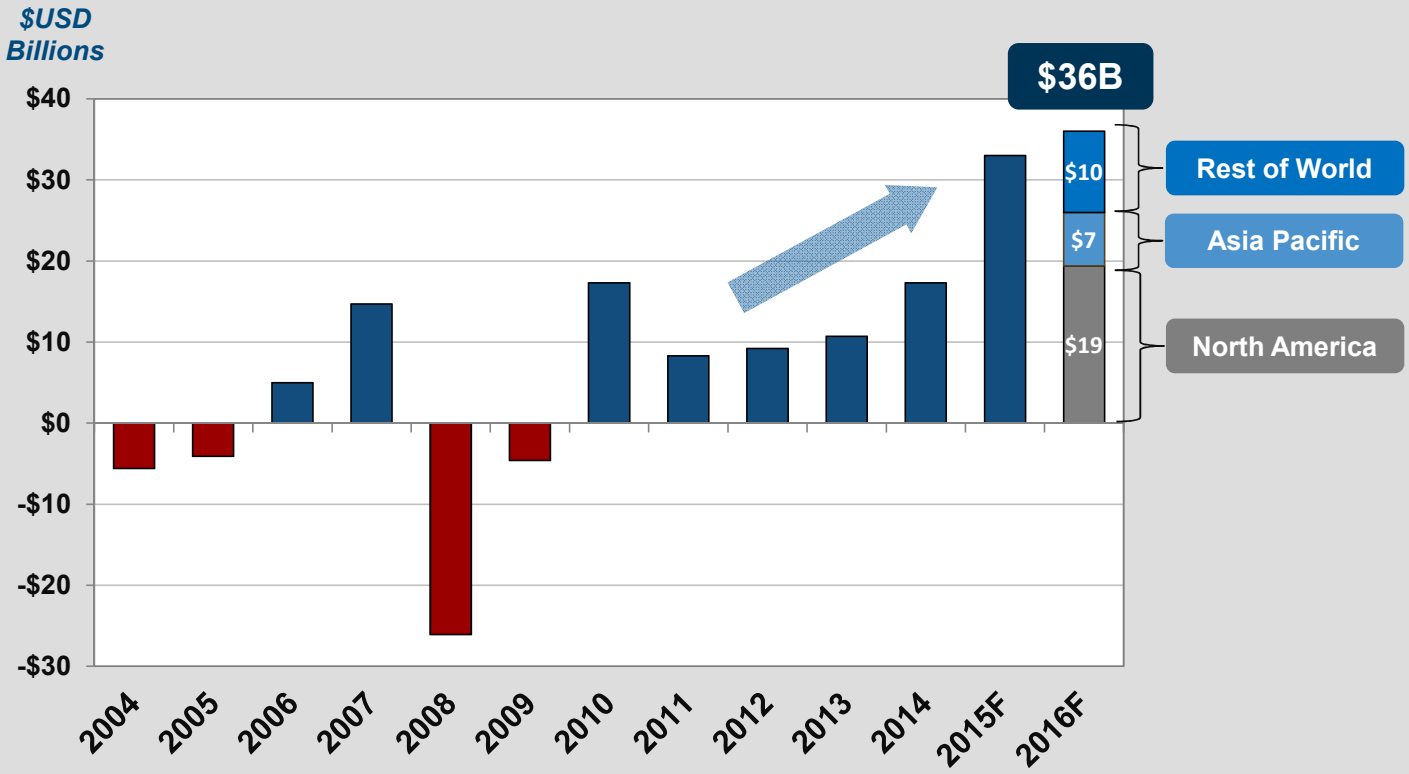
Aviation fuel costs have dropped by approx. 66% during the past 24 months…



Source: EIA; ICF International analysis

While Asia Pacific & North American airlines have enjoyed record profitability, other regions continue to struggle

Global Airline Profitability, 2004-2016



Source: IATA

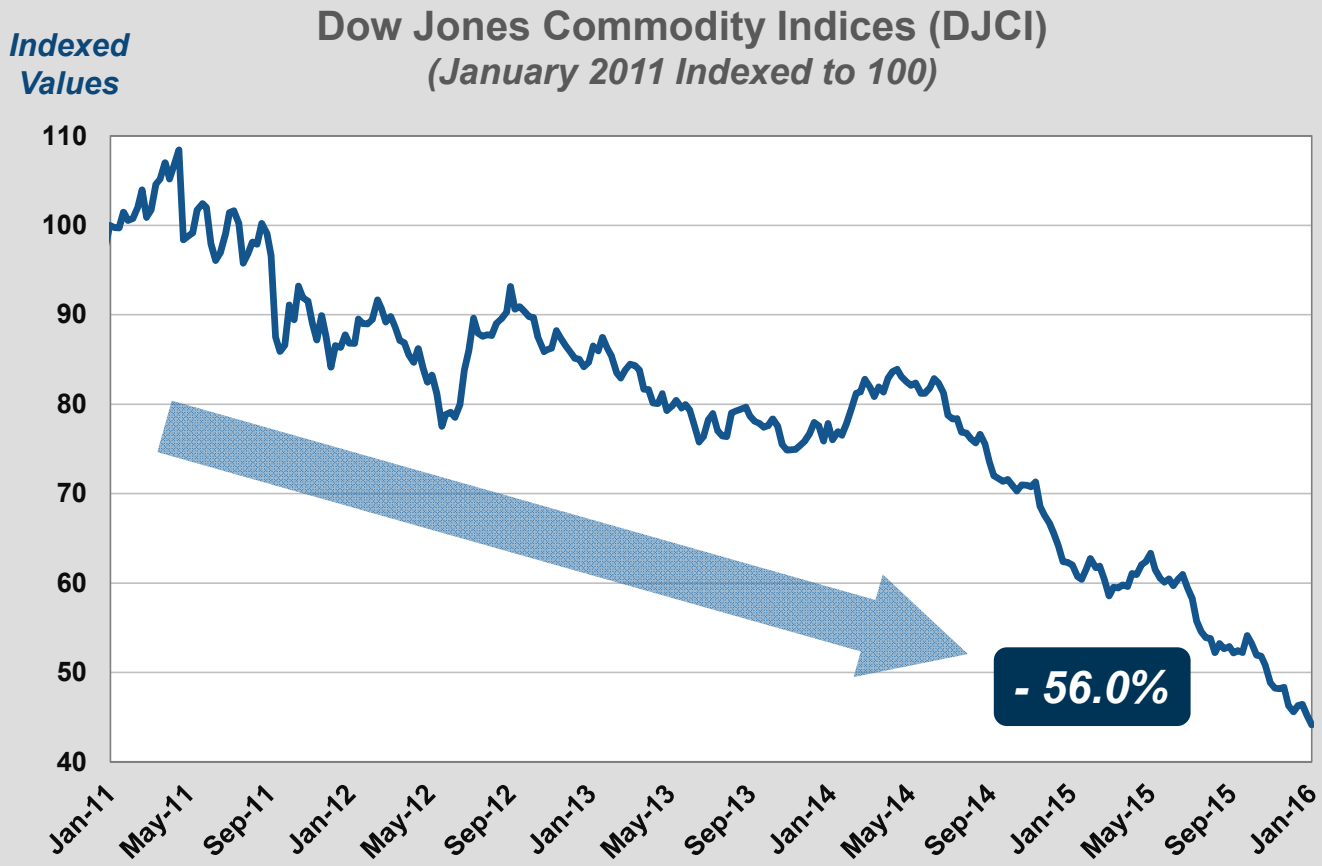
China's seemingly insatiable demand for global commodities was a key driver of global economic growth

After years of remarkable GDP growth, China's economy has been steadily slowing

Source: IMF, World Economic Outlook Database October 2015, ICF International Analysis

The fall in commodity prices have had a dramatic impact of economies dependent on commodity exports

Over the past 5 years, commodity prices have plummeted more than 55%



Source: Dow Jones Commodity Index

The dramatic increase in oil & gas market supply and reduced demand for commodities has led to a stronger US Dollar

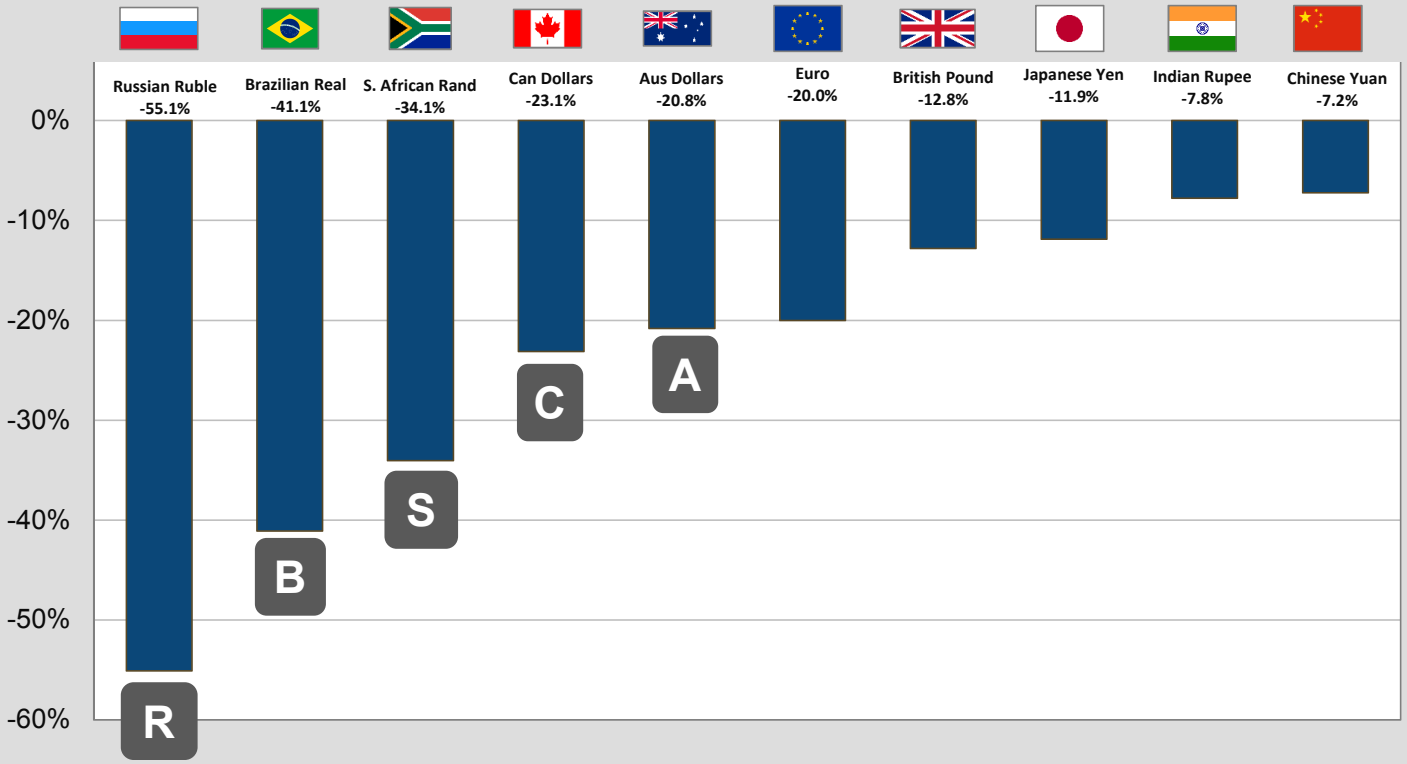
FOREX Impact

- Partially offsets the positive impact of low fuel costs for operators
- Increases the cost of dollar based flight hour agreements (and parts/material in general)
- Cost of labor for in-country MROs is cheaper driving up margins for US dollar based contracts
- Buying/leasing aircraft becomes more expensive

The "CRABS": Countries with economies that are heavily dependent on commodity exports

Global Currency Exchange Rates vs USD

% Value Change, Jan. 2014 – Jan. 2016

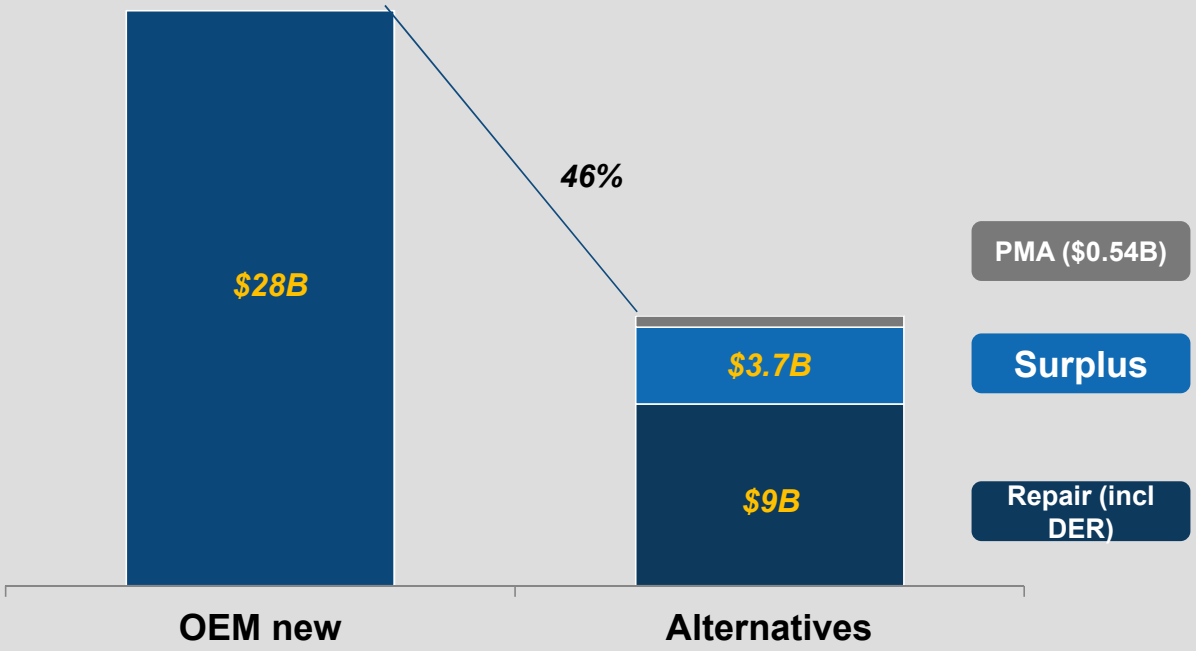


Source: Oanda historical exchange rates, ICF International Analysis

The PMA Market…

Last year, operators spent over $28B on OEM new parts and an additional $13B on alternatives such as PMA, surplus, and parts repairs

2015 Parts Alternatives Compared To OEM New Parts



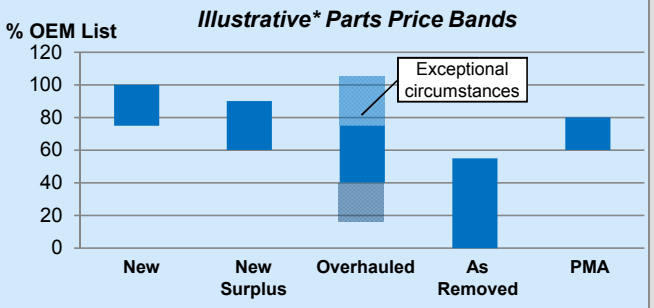
Source: ICF International

Parts pricing and availability continue to drive demand for PMA parts

Price and availability are the main reasons for PMA usage

Part Price

- PMA parts are typically 20 to 40% off OEM list price
- Many OEMs may protect their aftermarket revenue streams by campaigning against PMA and by insisting that licensed MROs discard PMA parts found during overhaul



Part Availability

- In an AOG situation, any permitted serviceable part will be used irrespective of price, including PMA
- Use of PMA is usually driven by long lead time for OEM parts

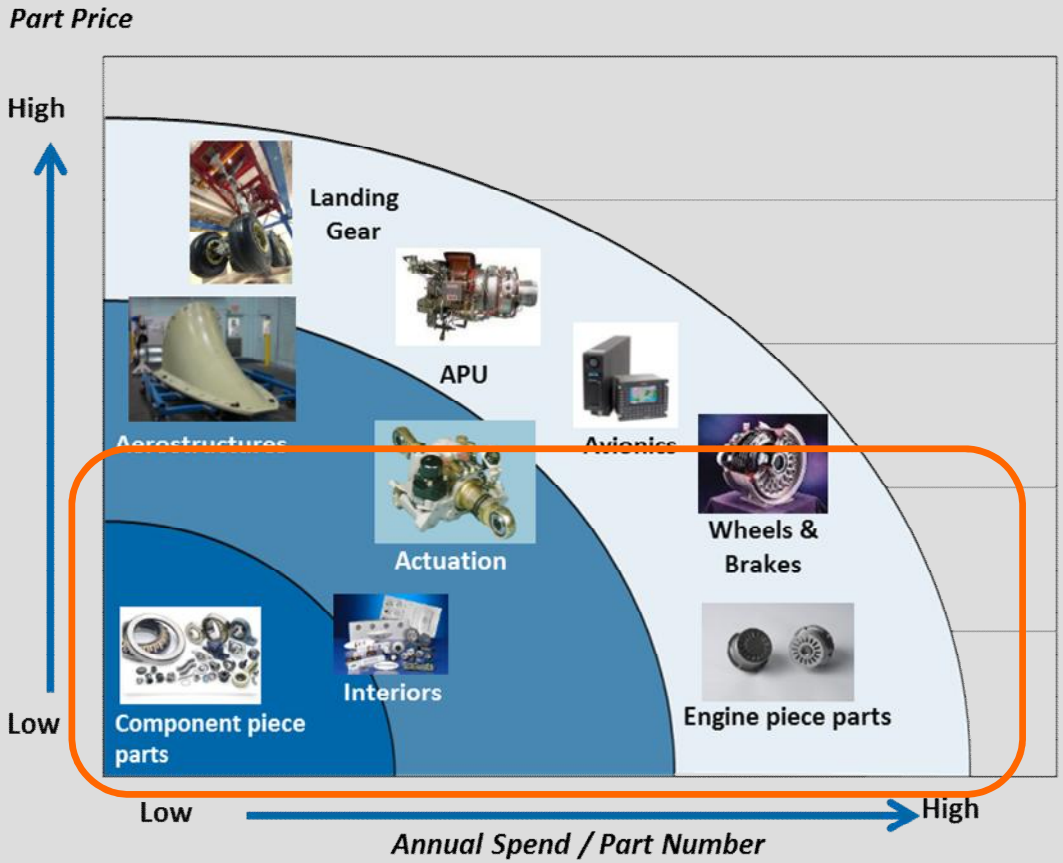
"TAT on repair order and warranty management are most important for my component repair business. Parts availability might drive the use of alternative parts in the future. "

- Major Chinese Airline

Source: ICF International

PMA parts tend to be best suited for low price, high velocity parts

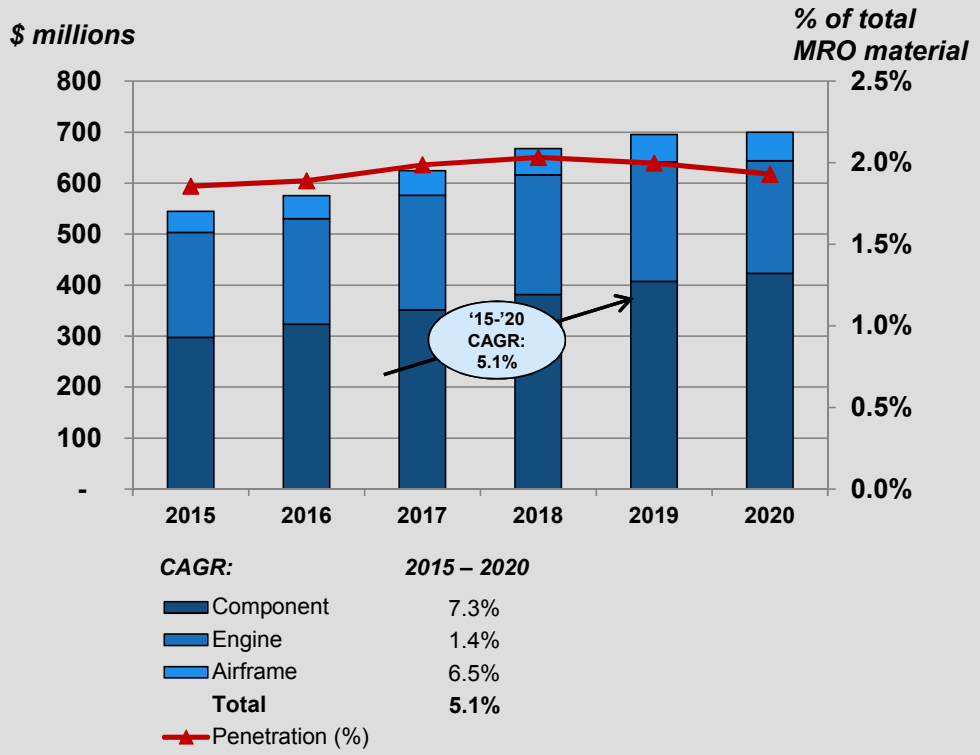
Alternative Parts Exposure vs. Part Type



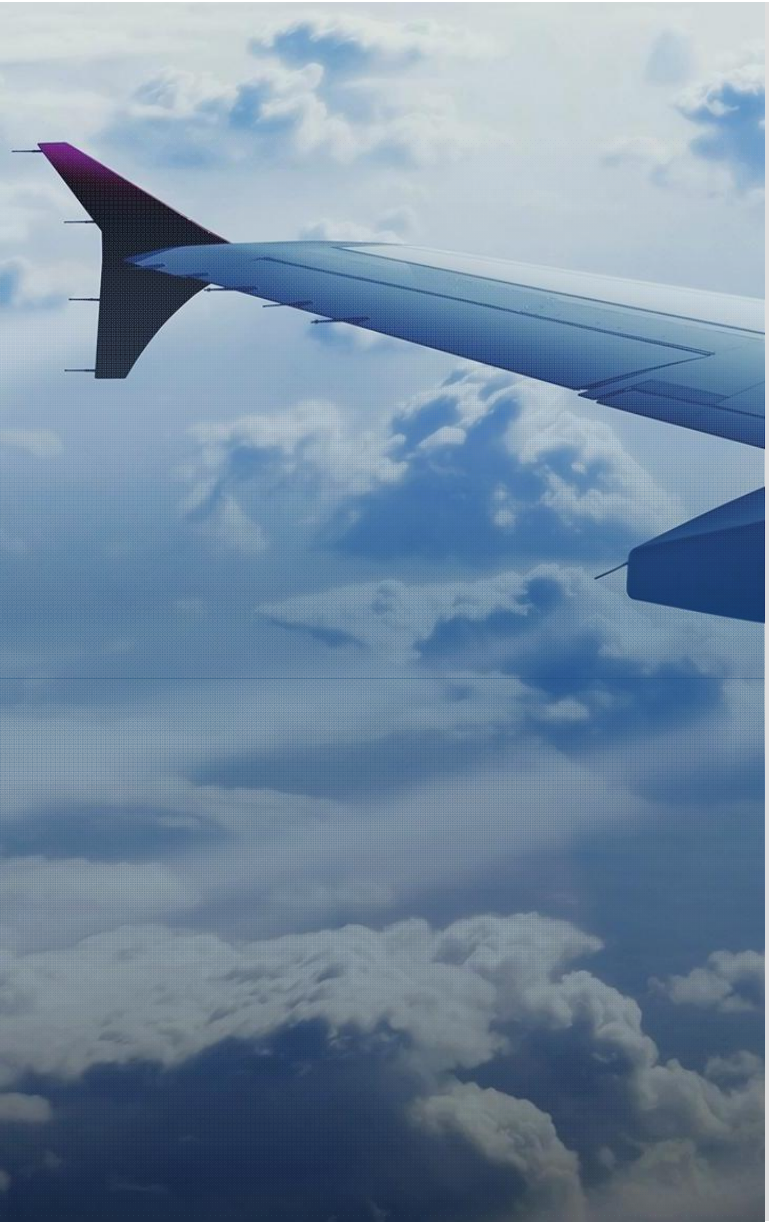
Source: ICF International

PMA growth is expected to be slower due to the retirement of mature aircraft, but still healthy at 5.1%

Air Transport PMA Market Forecast In $ Millions (2015-2020)



Source: ICF International
Forecast in 2015 USD, exclusive of inflation



In Summary…

- The air transport MRO market is expected to grow 4.1% per annum through 2025 driven by the Asia Pacific region
- The two largest global airframe MRO suppliers are headquartered in the Asia Pacific region
- The US energy revolution combined with the economic slowdown in China are having a significant impact commodity export dependent CRABS
- The PMA market is expected to grow 5.1% per annum to $700M USD by 2020

THANK YOU!

For questions regarding this presentation, please contact:

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