Presented by

Manfred Porath Airbus Vice President A320 Family Final Assembly Line and Integration

Building a Final Assembly Line in China

From an idea to reality

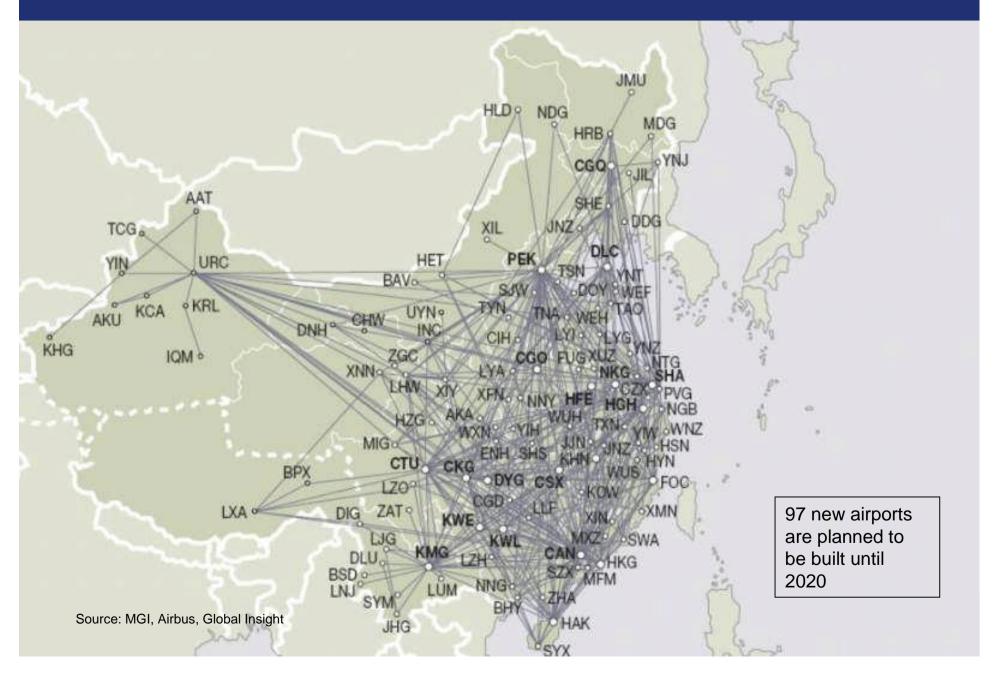




Air Traffic in Intra-China (1985)



Air Traffic in Intra-China (2006)



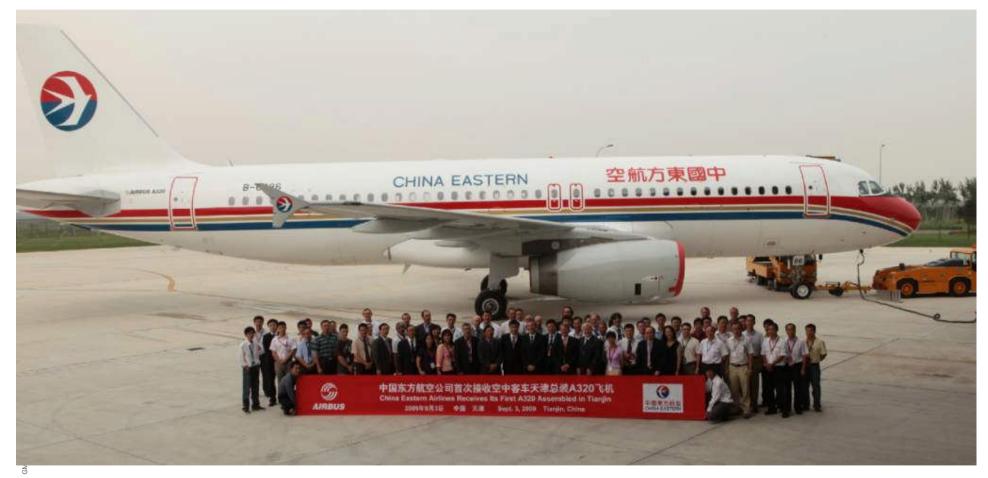
Which of this aircraft was assembled in China? in Hamburg?







1st delivery of China Eastern from Tianjin





Same quality in China and Europe



FAL Tianjin



FAL Hamburg

The Final Assembly Line (FAL) in Tianjin is building aircraft with the same quality as FAL Hamburg and FAL Toulouse

Building a Final Assembly Line in China

JV

set-up Phase MOU between Project Site JV
Airbus and Chinese Organisation established selection contracts signed

04.12.05

Feb. 06

May 06 28.06.07

Implementation Phase

Construction FAL-Hangar Training of All buildings J&T Start of Chinese Facade and installation completed Launch around completed Roof sealed Prep. 15.05.07 Sep.06 23.12.07 10.03.08 **Aug. 08** Sept. 09

Operational Phase

FAL **EIS** EIS **EIS** EIS **EIS** 1st 1st **EIS** 1st MCA 1st MCA opening St.41-43 St.40 St.35 Dock **Paint** Final Flight Delivery Shipping road Ceremony **Phase** transport 18.08.08 11.11.08 19.12.08 26.02.09 16.03.09 25.07.08 28.09.08 08.10.08



JV Setup Phase MOU between Airbus and Chinese Central Government

04 December 2005

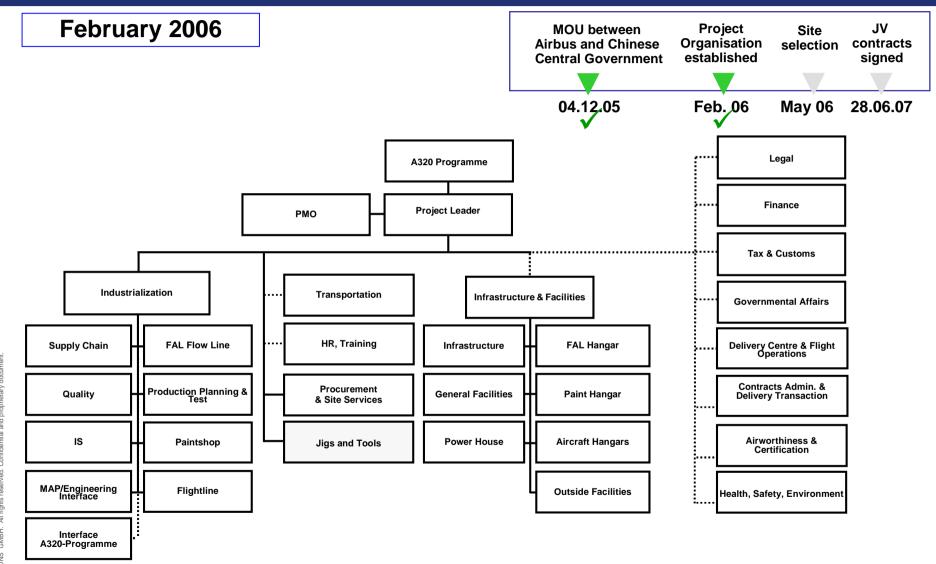






The FAL China project was launched in December 2005 by a MoU between Airbus CEO and the Chinese Central Government (NDRC). Its aim was to establish a Final Assembly Line for A319 and A320 a/c in China as a Joint Venture between Airbus and a Chinese Consortium, composed of Tianjin Municipal Government and AVIC.

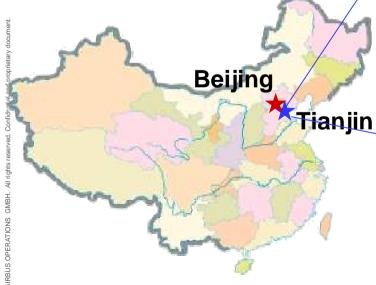
JV Setup Phase Project Organisation established



JV Setup Phase Site selection

May 2006





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Airbus FAL-China Site

- Located at Tianjin Binhai International Airport
- •35 km to Tianjin Seaport
- •130 km to Beijing by Expressway

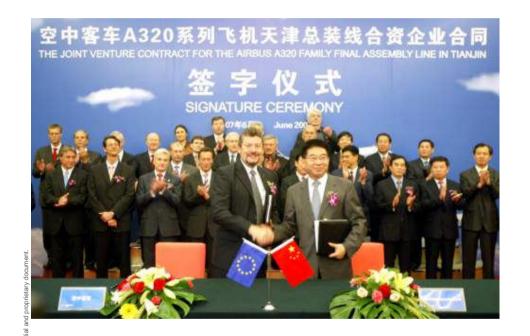
June 2010

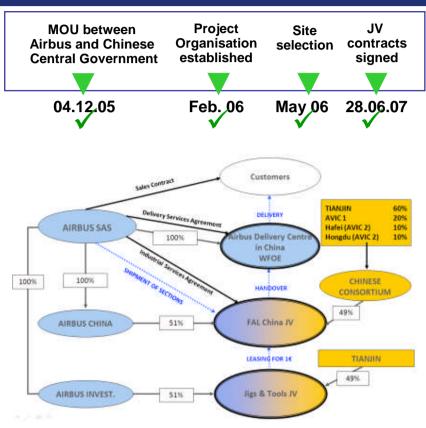
Page 10



JV Setup Phase JV contracts Signature

28 June 2007



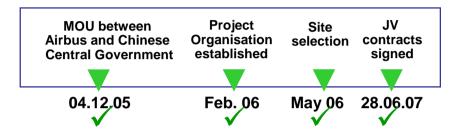


Airbus is owner of the FAL China and Jigs and Tools JV at 51% Airbus is fully responsible of the sales and delivery centre

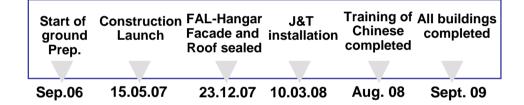


Building a Final Assembly Line in China

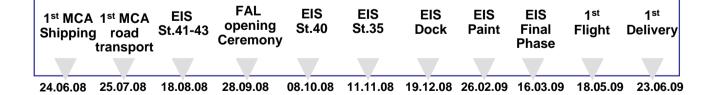




Implementation Phase



Operational Phase





Implementation Phase Start of Ground Preparation

Sept 2006

Training of All buildings Construction FAL-Hangar J&T Start of Chinese Facade and installation completed Launch ground completed Roof sealed Prep. 15.05.07 **Sep.06** 23.12.07 10.03.08 Aug. 08 Sept. 09







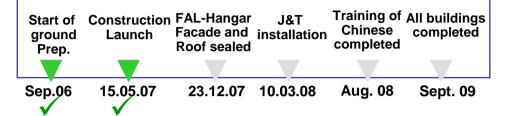
Implementation Phase Construction Launch

15.05.2007





Building a Final Assembly Line in China - Manfred Porath







Implementation Phase FAL-Hangar Facade and Roof sealed

23.12.2007

Training of All buildings Construction FAL-Hangar J&T Start of Chinese Facade and installation completed Launch ground completed Roof sealed Prep. Sep.06 15.05.07 23.12.07 10.03.08 **Aug. 08** Sept. 09



Implementation Phase Jigs and Tools installation

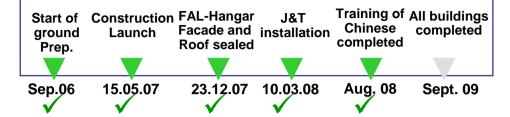
10.03.2008

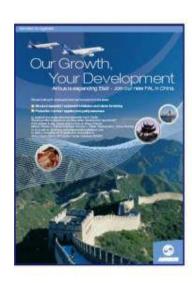
Training of All buildings Construction FAL-Hangar J&T Start of Chinese Facade and installation completed Launch ground completed Roof sealed Prep. **Sep.06** 15.05.07 23.12.07 10.03.08 Aug. 08 Sept. 09

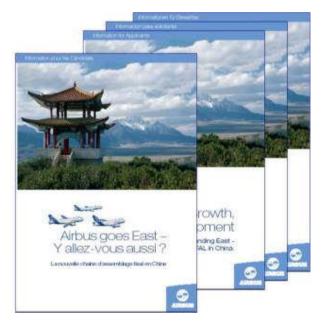


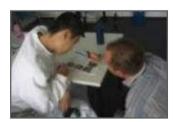
Implementation Phase Training of Chinese employees

Aug. 2009











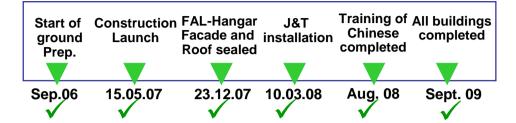
250 Chinese have been trained in the European FALs





Implementation Phase All building completed

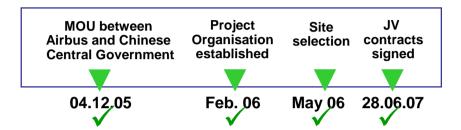
Sept. 2009



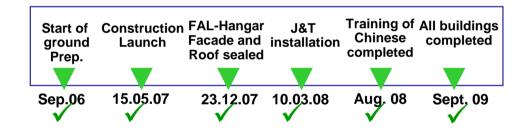


Building a Final Assembly Line in China

JV set-up Phase



Implementation Phase

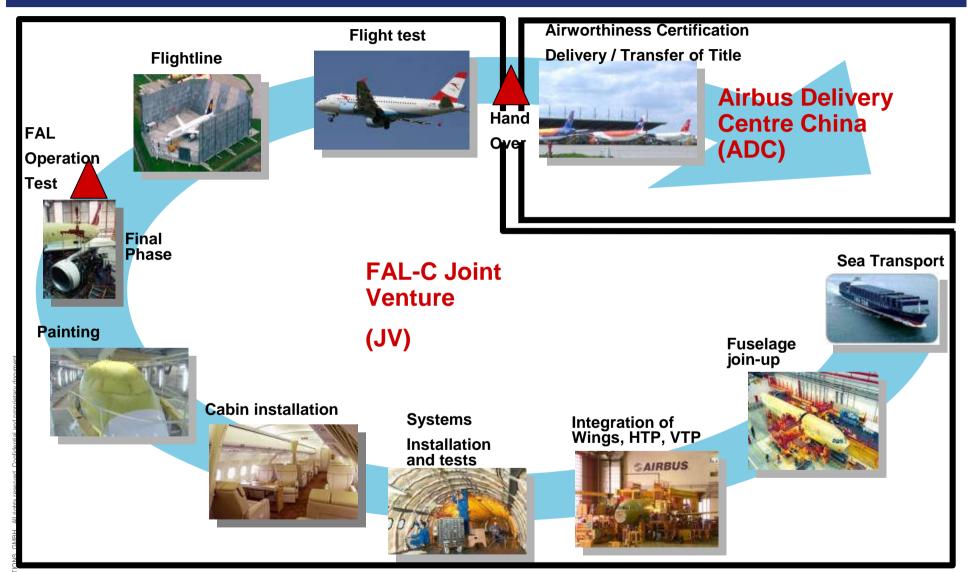


Operational Phase

FAL **EIS** EIS **EIS EIS EIS** 1st 1st **EIS** 1st MCA 1st MCA opening St.41-43 St.40 St.35 Dock **Paint** Final Flight Delivery Shipping road Ceremony **Phase** transport 11.11.08 19.12.08 26.02.09 16.03.09 25.07.08 18.08.08 28.09.08 08.10.08

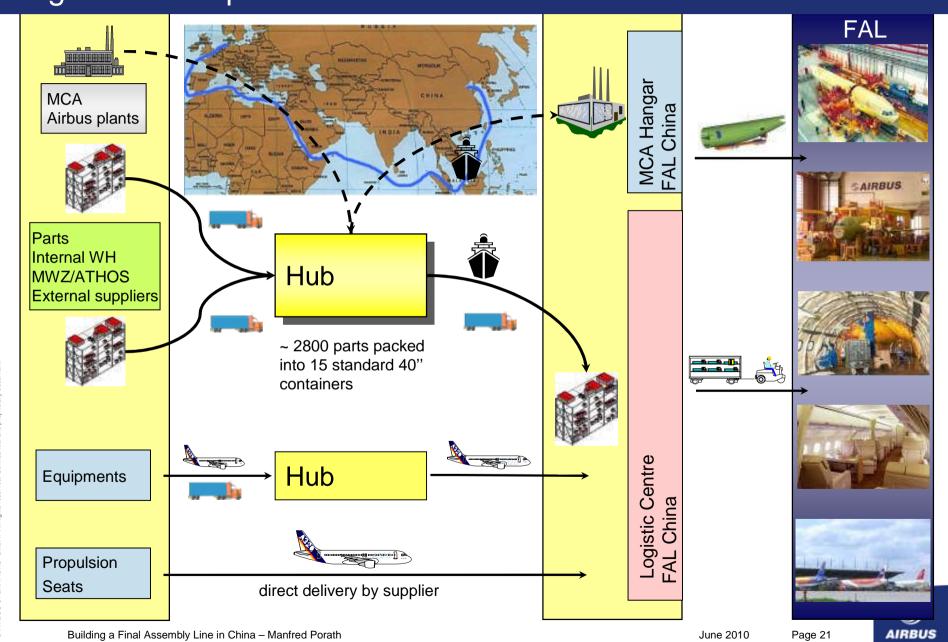


Operational Phase Aircraft assembly process





Operational Phase Logistics Principles

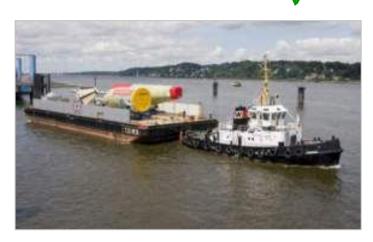


Operational Phase 1st Major Constituant Assembly Shipping

24 June 2008

FAL **EIS** EIS EIS **EIS** EIS 1st MCA 1st MCA EIS opening St.40 St.35 Final Dock **Paint** Flight St.41-43 Delivery Shipping road Ceremony **Phase** transport

4.06,08 25.07.08 18.08.08 28.09.08 08.10.08 11.11.08 19.12.08 26.02.09 16.03.09 18.05.09 23.06.09







The aircraft section are shipped by boat (6 weeks travel time)



Operational Phase 1st MCA Road Transport

25 July 2008

FAL EIS EIS EIS **EIS EIS** EIS 1st MCA 1st MCA opening St.40 St.35 Final **Flight Delivery** St.41-43 **Dock Paint** Shipping road Ceremony **Phase** transport 18.08.08 28.09.08 08.10.08 11.11.08 19.12.08 26.02.09 16.03.09 18.05.09







35 km road transportation from Tianjin Seaport to Tianjin Final Assembly Line



Operational Phase Entry-Into-Service of Station 41-43

18 August 2008

FAL EIS EIS EIS **EIS** EIS EIS 1st MCA 1st MCA opening St.40 St.35 Dock **Paint** Final Flight St.41-43 Delivery Shipping road Ceremony **Phase** transport 18.08.08 28.09.08 08.10.08 11.11.08 19.12.08 26.02.09 16.03.09 18.05.09 23.06.09







Operational Phase FAL Opening Ceremony

28 September 2008

FAL EIS EIS **EIS EIS** EIS EIS 1st MCA 1st MCA opening St.40 St.35 Final Dock **Paint** Flight Delivery St.41-43 Shipping road Ceremony **Phase** transport 18.08.08 28.09.08 08.10.08 11.11.08 19.12.08 26.02.09 16.03.09 18.05.09











Operational Phase EIS Station 40

8 October 2008

FAL EIS EIS EIS EIS EIS EIS 1st MCA 1st MCA opening St.40 St.35 Final Dock **Paint** Flight St.41-43 Delivery Shipping road Ceremony Phase transport 08.10.08 11.11.08 19.12.08 26.02.09 16.03.09 18.05.09 25.07.08 18.08,08 28.09,08 23.06.09





Operational Phase EIS Station 35

11 November 2008

FAL EIS EIS EIS EIS EIS EIS 1st MCA 1st MCA opening St.40 St.35 Final Dock **Paint** Flight St.41-43 Delivery Shipping road Ceremony Phase transport 08.10.08 11.11.08 19.12.08 26.02.09 16.03.09 18.05.09 24.06.08 25.07.08 18.08,08 28.09.08 23.06.09



Operational Phase EIS Dock Station

19 December 2008















AIRBUS

Operational Phase EIS Paint

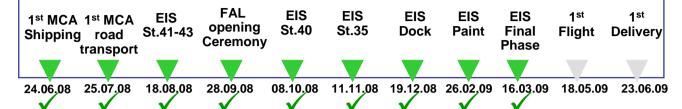
26 February 2009

FAL EIS EIS EIS EIS EIS EIS 1st MCA 1st MCA opening St.40 St.35 Final Dock **Paint** Flight St.41-43 Delivery Shipping road Ceremony Phase transport 24.06,08 25.07,08 18.08,08 08.10.08 11.11.08 19.12.08 26.02,09 16.03.09 18.05.09 23.06.09 28.09,08



Operational Phase EIS Final Phase

16 March 2009





Operational Phase 1st Flight

18 May 2009

FAL EIS EIS EIS **EIS** EIS EIS 1st MCA 1st MCA opening St.40 St.35 Final Dock **Paint** Flight St.41-43 Delivery Shipping road Ceremony **Phase** transport 08.10.08 11.11.08 19.12.08 26.02,09 16.03.09 18.08.08 28.09.08 18.05.09 23.06.09

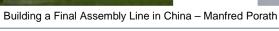














Operational Phase 1st Delivery

23 June 2009











And one Year later...







Already 22 deliveries from FAL Tianjin to Chinese customers

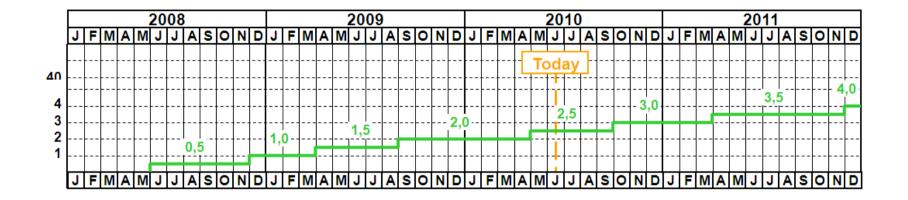








Ramp-up



- The A320 program will increase rate to 36 in December 2010
- •Rate 4 in FAL Tianjin will be achieved end of 2011

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FAL China: Conclusion

⇒ The success story:

- All major milestones met
- Excellent product quality
- Level of expenditures are fully inside the business case

⇒ Most important success factors:

- Excellent team spirit, experienced people on board, very high level of motivation, tasks and responsibilities well structured, good internal communication
- Support from Chinese government

⇒ Major challenges:

- Short Lead Time / keep all clusters synchronized
- Chinese Culture / JV Partner
- New ground: recruitment in China, training, supply chain, transportation, sourcing in China, Chinese administration

⇒ Lessons learnt:

- Don't underestimate the importance of HR tasks (recruitment, training, expats...)
- Make use of local experience to avoid surprises







Examples of Airbus parts and sub-assemblies manufactured in China

SA E-Bay Door





SA Nose Landing Gear Bay



LR Frame 1





A319 Wing Box (2007)





SA Rear Pax Doors

