



**SIMULATION PROJECT FOR  
WING COMPONENTS MANUFACTURING**



**INDUSTRY**

Aerospace

**APPLICATION AREA**

Manufacturing

**COUNTRY**

The Netherlands

**CHALLENGE**

Insight into the impact of different uncertainties in a production process during the design and start-up phase.

**RESULTS**

- Fokker was able to make founded decisions during the design phase regarding the production schedule, required capacity and production control.
- During the operational phase Fokker always achieves the required Key Performance Indicators, by correcting the production based on the results of the simulation analysis.

**Fokker always achieves the required Key Performance Indicators by using simulation software!**

**FOKKER AEROSTRUCTURES**

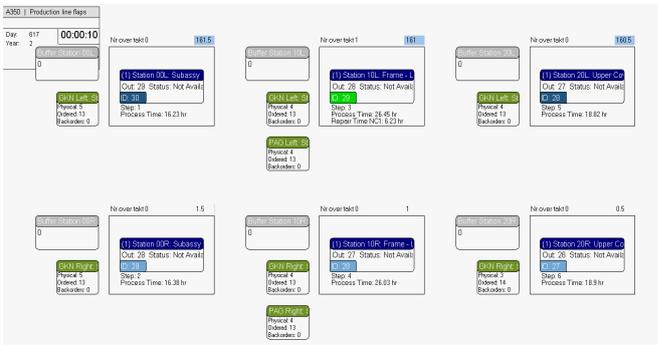
Fokker Aerostructures is working on the design and start-up of an assembly line for wing components of the Airbus A350. In the coming years, Fokker will supply these parts in large numbers. The quality requirements of the components are high and there are strict delivery conditions defined.

Within the production process Fokker has to deal with many different uncertainties. For example: processing times are variable, process times will change due to learning effects and at different points the process is dependent on material availability. To understand the impact of these aspects in relation to the intended production control system, Fokker has chosen to work with the simulation software Enterprise Dynamics.

**BENEFITS FOR FOKKER**

With Enterprise Dynamics a simulation model is developed of the entire production process including internal transport. With this simulation model, various scenarios were tested to get insight into the effects of the variations. In this manner, Fokker was able to make founded decisions during the design phase regarding the production schedule, the required capacity and production control.

Fokker is planning to use the simulation model regularly in the future for new analyzes, based on current data from the production process. Based on the results, the production can be corrected and therefore always achieve the required Key Performance Indicators.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1		Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
2		Week	1-48	1-48	1-48	1-48	1-48	1-48	1-48	1-48	1-48	1-48	
3		Day	-	-	-	-	-	-	-	-	-	-	
4	Station	KPI											
5	Station 00L: Subassy	Avg Process Time (hr)	29.42	16.34	15.74	14.78	15.56	15.28	15.46	15.2	15.21	15.37	
6	Station 00L: Subassy	# Processed	15	17	28	35	50	100	100	100	100	100	
7	Station 00L: Subassy	# Over Takt	2	0	0	0	0	0	0	0	0	0	
8	Station 00L: Subassy	Avg Takt Time (hr)	322.7	370	191.71	119.23	109.44	70.5	51.57	57.6	57.6	57.59	
9	Station 00L: Subassy	# Scrap	0	0	0	0	0	0	0	0	0	0	
10	Station 00L: Subassy	# NC1	0	1	0	0	4	2	1	4	1	1	
11	Station 00L: Subassy	# NC2	0	0	0	0	0	0	0	0	0	0	
12	Station 00R: Subassy	Avg Process Time (hr)	30.08	16.26	15.36	15.05	15.17	15.17	15.27	15.08	15.33	15.62	
13	Station 00R: Subassy	# Processed	15	16	29	35	50	100	100	100	100	100	
14	Station 00R: Subassy	# Over Takt	3	0	0	0	3	1	0	2	0	0	
15	Station 00R: Subassy	Avg Takt Time (hr)	304.67	391.28	193.81	118.03	109.08	73.28	48.66	57.6	57.6	57.59	
16	Station 00R: Subassy	# Scrap	0	0	0	0	0	0	0	0	0	0	
17	Station 00R: Subassy	# NC1	2	0	2	0	0	4	3	3	3	7	
18	Station 00R: Subassy	# NC2	0	0	0	0	0	0	0	0	0	0	
19	Station 10L: Frame - Lower Cover	Avg Process Time (hr)	47.94	26.57	25.99	25.31	25.74	19.09	19.03	19.14	19.22	18.95	
20	Station 10L: Frame - Lower Cover	# Processed	15	16	29	36	50	100	100	100	100	100	
21	Station 10L: Frame - Lower Cover	# Over Takt	1	1	0	2	0	0	0	0	0	1	
22	Station 10L: Frame - Lower Cover	Avg Takt Time (hr)	328.46	376.88	191.71	118.76	108.71	70.3	60.28	48.83	57.6	62.78	
23	Station 10L: Frame - Lower Cover	# Scrap	0	0	0	0	0	0	0	0	0	0	
24	Station 10L: Frame - Lower Cover	# NC1	1	1	2	0	3	5	4	5	7	3	
25	Station 10L: Frame - Lower Cover	# NC2	1	1	0	0	1	3	1	2	2	1	
26	Station 10R: Frame - Lower Cover	Avg Process Time (hr)	48.88	27.27	26.1	25.7	25.17	18.89	18.95	18.98	19	18.69	
27	Station 10R: Frame - Lower Cover	# Processed	15	15	29	36	50	99	101	100	99	101	
28	Station 10R: Frame - Lower Cover	# Over Takt	2	0	0	1	0	2	0	1	0	2	
29	Station 10R: Frame - Lower Cover	Avg Takt Time (hr)	310.11	400.03	193.81	117.38	108.36	70.96	50.92	60.27	55.09	67.1	