

Frigate Ecojet

Windtunnel Testing Stage 2

Test under cryogenic conditions



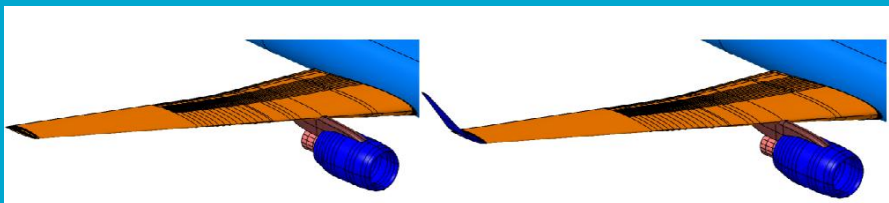
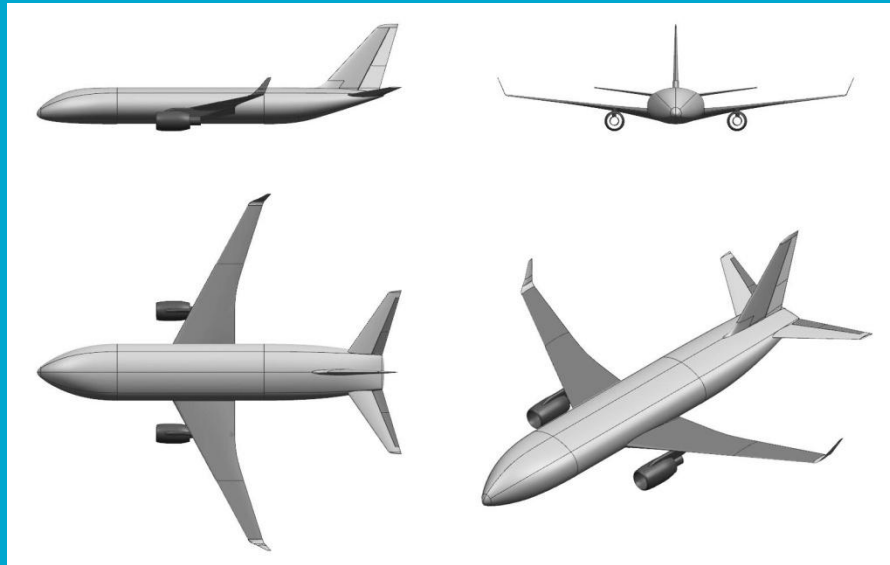
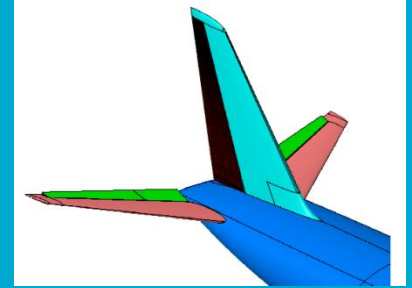
Purpose

- Examination of the flight conditions lift-to-drag ratio and other aerodynamic qualities of the Frigate Ecojet to be a matter of the “clean configuration-model”



Manufacturing of Aircraft Model

Deharde
MASCHINENBAU



Windtunnel Testing of Aircraft Model



Test program

| ETW Configuration Number | TKSY Test Points | Model Build | Transition | Delta_Elev1 (Degrees) | Delta_Elev2 (Degrees) | Delta_Rudd (Degrees) | Ttot (K) | Reynolds Number (million) | Ptot at M=0.78 (kPa) | Q/E at M=0.78 (J) | Alpha | Beta | | | | | | | | | | | | | Comments | | | | | | | | | | |
|--|------------------|-------------------|------------|-----------------------|-----------------------|----------------------|----------|---------------------------|----------------------|-------------------|--------|------|------|------|------|------|------|------|------|------|------|------|------|-------|--------------------------------|--|--|--|---|-------------------------------------|--------|----------------|---------------------------|----------------|------------------------------------|
| | | | | | | | | | | | | | 0.40 | 0.60 | 0.70 | 0.75 | 0.78 | 0.79 | 0.80 | 0.81 | 0.82 | 0.84 | 0.86 | 0.80R | | | | | | | | | | | |
| 466101 | 1-7 | B+W+VTP+WT+HTP+NP | Free | 0 | 0 | 0 | 300 | 3.34 | 137 | 0.2226 | A1 | 0 | | | | | | | | | | | | | Determine Alpha Cruise, Re atm | | | | | | | | | | |
| | 8-10 | | | | | | | 3.34 | 137 | 0.2226 | Cruise | B1 | | | | | | | | | | | | | | | | | | Lateral Stability, Re atm | | | | | |
| | 22 | | | | | | | 3.34 | 251 | 0.3953 | A1 | 0 | | | | | | | | | | | | | | | | | | | Re atm | | | | |
| | 23 | | | | | | | 6.04 | 248 | 0.4028 | A1 | 0 | | | | | | | | | | | | | | | | | | | | 20% Re Natural | | | |
| | 24- | | | | | | | 7.56 | 311 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | | | 30% Re Natural | | | |
| | 32 | | | | | | | 15.11 | 319 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | 50% Re Natural Q/E Varies | | |
| | 24+ | | | | | | | 10.25 | 110 | 0.1713 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | 30% Re Natural | | |
| | 25 | | | | | | | 12.08 | 130 | 0.2018 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | 40% Re Natural | |
| | 26 | | | | | | | 15.11 | 162 | 0.2523 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | 50% Re Natural | |
| | 27 | | | | | | | 18.13 | 194 | 0.3027 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | 60% Re Natural |
| | 28 | | | | | | | 21.15 | 227 | 0.3531 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | 70% Re Natural |
| | 29 | | | | | | | 24.17 | 259 | 0.4035 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | 80% Re Natural |
| | 30 | | | | | | | 27.19 | 291 | 0.4538 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | 90% Re Natural |
| | 31 | | | | | | | 30.21 | 324 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | Re Natural |
| | 11-21 | | | | | | | 30.21 | 324 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | Longitudinal Stability, Re Natural |
| 466102 | 33 | B+W+VTP+WT+HTP+NP | Free | 0 | 0 | 0 | 115 | 30.21 | 324 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| 466103 | 34 | B+W+VTP+WT+HTP | Free | 0 | 0 | 0 | 115 | 30.21 | 324 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| 466104 | 35 | B+W+VTP+WT | Free | OFF | OFF | OFF | 115 | 30.21 | 324 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| 466105 | 36 | B+W+VTP | Free | OFF | OFF | OFF | 115 | 30.21 | 324 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| 466106 | 37 | B+W | Free | OFF | OFF | OFF | 115 | 30.21 | 324 | 0.5041 | Cruise | B1 | | | | | | | | | | | | | | | | | Influence of Aircraft Parts on the Longitudinal Stability | | | | | | |
| 466107 | 38 | B | Free | OFF | OFF | OFF | 115 | 30.21 | 324 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| Change to Twin Sting Supports to Obtain Sting Interference Corrections. Prepare model and Test Section for PIV Measurements. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 466201 | - | B+W+VTP+WT+HTP+NP | Free | OPT | 0 | 0 | 115 | 30.21 | 324 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | TSR Tests, Dummy Sting ON | | | | | | |
| 466202 | - | B+W+VTP+WT+HTP+NP | Free | OPT | 0 | 0 | 115 | 30.21 | 324 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | TSR Tests, Dummy Sting OFF | | | | | |
| | 39-41 | B+W+VTP+WT+HTP+NP | Free | 0 | 0 | 0 | 115 | 30.21 | 324 | 0.5041 | A1 | 0 | | | | | | | | | | | | | | | | | | PIV Measurements, 6 Planes, Area #1 | | | | | |

