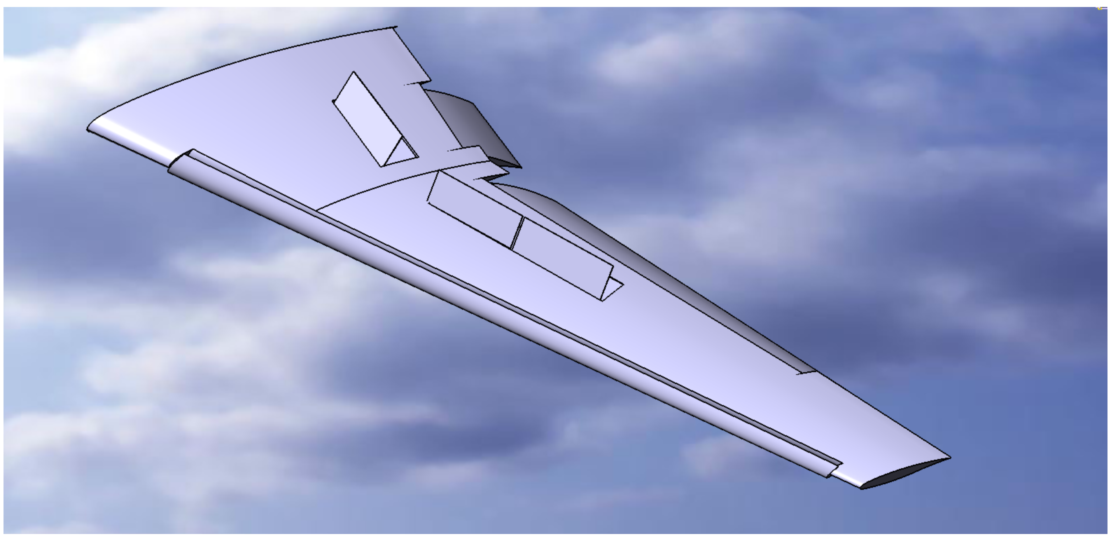
Delft University of Technology

AE2100 Design and Construction

Wing Plan Form Design

Workpackage 2



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Preface

Summary

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List of Symbols

Symbol	Description	Dimension
a	Speed of sound	m/s
b	Wing span	m
c	Chord length	m
c_{l_α}	Slope linear part of the lift versus angle of attack curve	$1/^\circ$
c_l	lift coefficient (airfoil)	$-$
c_d	Drag coefficient (airfoil)	$-$
c_j	Specific fuel coefficient	$Kg/N/s$
g	Standard gravity	m/s^2
t	Wing thickness	m/s
A	Aspect ratio	$-$
C_{L_α}	Slope linear part of the lift versus angle of attack curve	$1/^\circ$
C_L	lift coefficient (wing)	$-$
C_D	Drag coefficient (wing)	$-$
D	Drag force	N
L	Lift force	N
M	Mach number	$-$
R	Aircraft range	m
Re	Reynolds number	m
S	Wing surface area	m^2
T	Temperature	K
T	Thrust	N
V_∞	Free stream airspeed	m/s
V_s	Aircraft stall speed	m/s
W_F	Fuel weight	N
α	Angle of attack	$^\circ$
β	Prandtl-Glauert correction factor	$-$
γ	Adiabatic index of air	$-$
γ	Climb gradient	$^\circ$
λ	Taper ratio	$-$
ρ	Air density	kg/m^3

1 Introduction

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2 Fuel system

Introductie

2.1 Components

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2.2 Required fuel tank volume

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2.3 Available fuel tank volume

test

2.4 Fuel system conclusion

Conclusie

3 Landing gear

Introductie

3.1 Landing gear functions

test

3.2 Landing gear sizing

test

3.3 Gear retraction mechanism

test

3.4 Landing gear conclusion

Conclusie

4 Control surfaces

Introductie

4.1 Methods of roll control

test

4.2 Roll manoeuvre simulation

test

4.3 Control surfaces conclusion

5 Conclusion

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