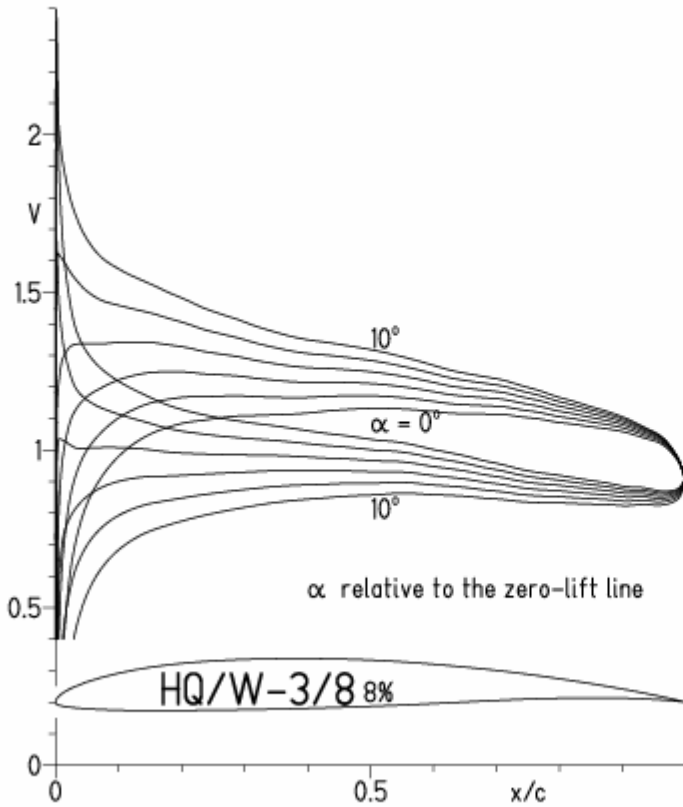


HQ/W-3/8, N=11, Re-Zahlen für leichtere Thermikmodelle

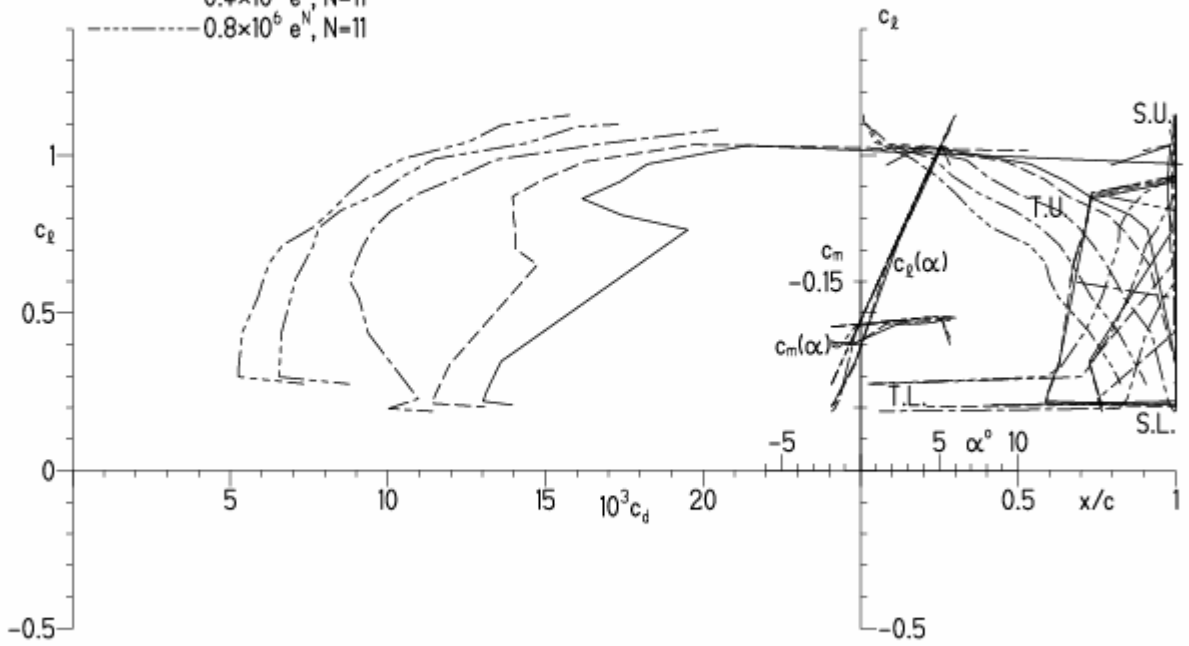
EPPLER 2005 V. 8.5.07 RUN 23.12.10 19:00



EPPLER 2005 V. 8.5.

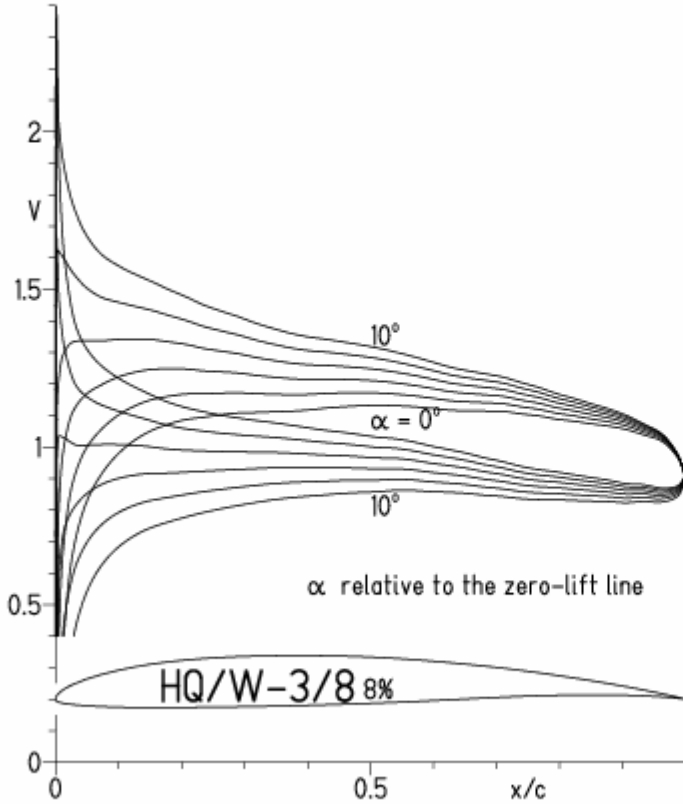
HQ/W-3/8 8%

- $Re = 75\,000 e^N, N=11$
- - -  $0.1 \times 10^6 e^N, N=11$
- · -  $0.2 \times 10^6 e^N, N=11$
- · -  $0.4 \times 10^6 e^N, N=11$
- · -  $0.8 \times 10^6 e^N, N=11$



HQ/W-3/8, N=9, Re-Zahlen für leichtere Thermikmodelle

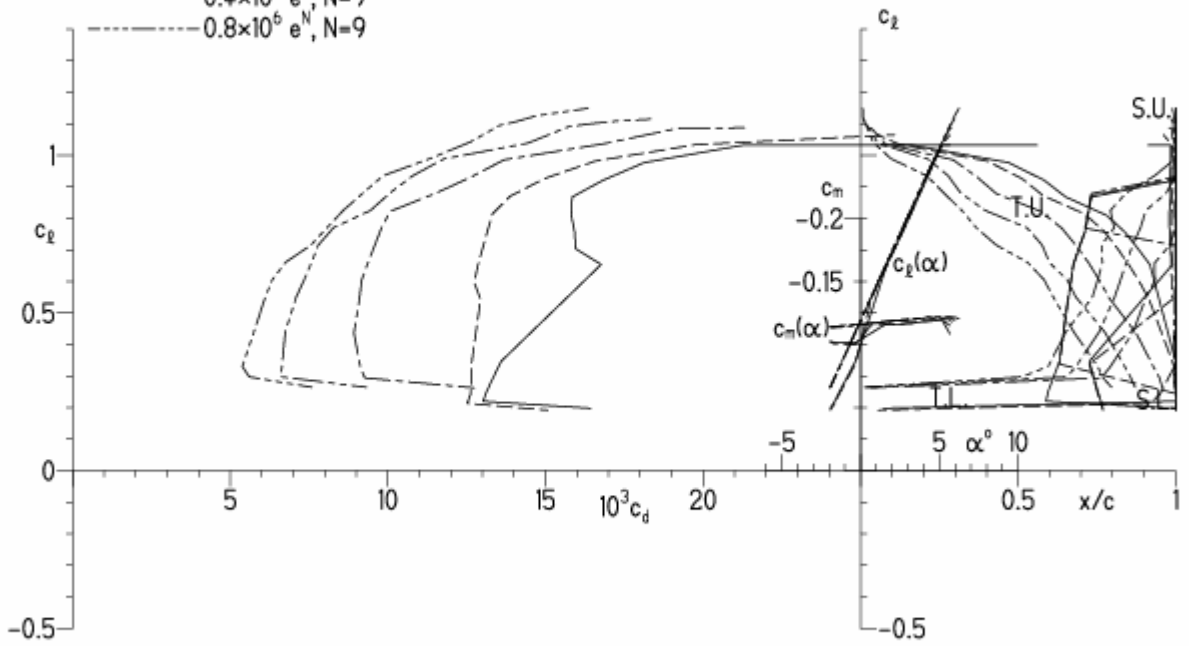
EPPLER 2005 V. 8.5.07 RUN 30.12.10 16:49



EPPLER 2005 V. 8.5.07 RUN 30.12.10 16:49

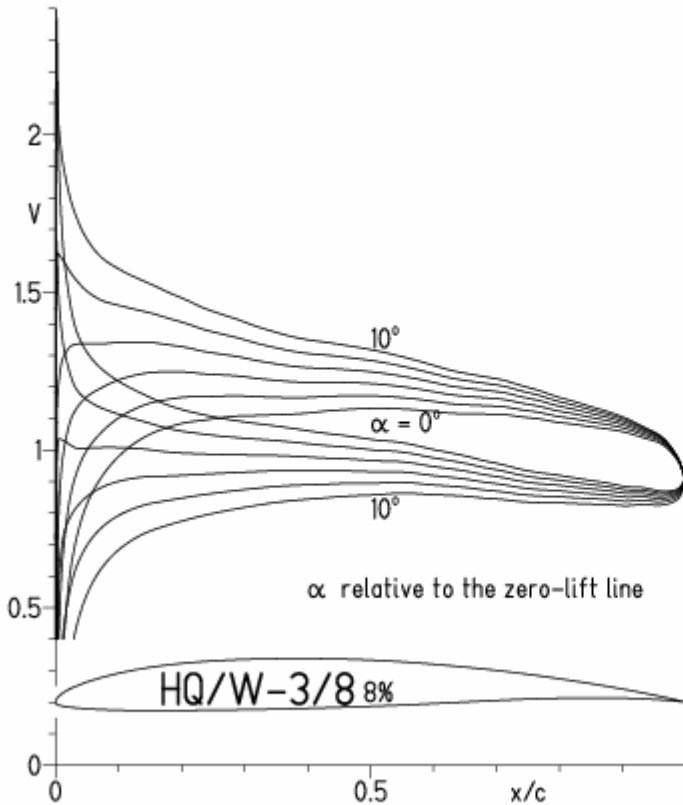
HQ/W-3/8 8%

- $Re = 75\,000 e^N, N=9$
- - -  $0.1 \times 10^6 e^N, N=9$
- · -  $0.2 \times 10^6 e^N, N=9$
- · - ·  $0.4 \times 10^6 e^N, N=9$
- · - · -  $0.8 \times 10^6 e^N, N=9$



HQ/W-3/8, N=9, Turbulatoreffekt bei Re-Zahlen für leichtere Thermikmodelle

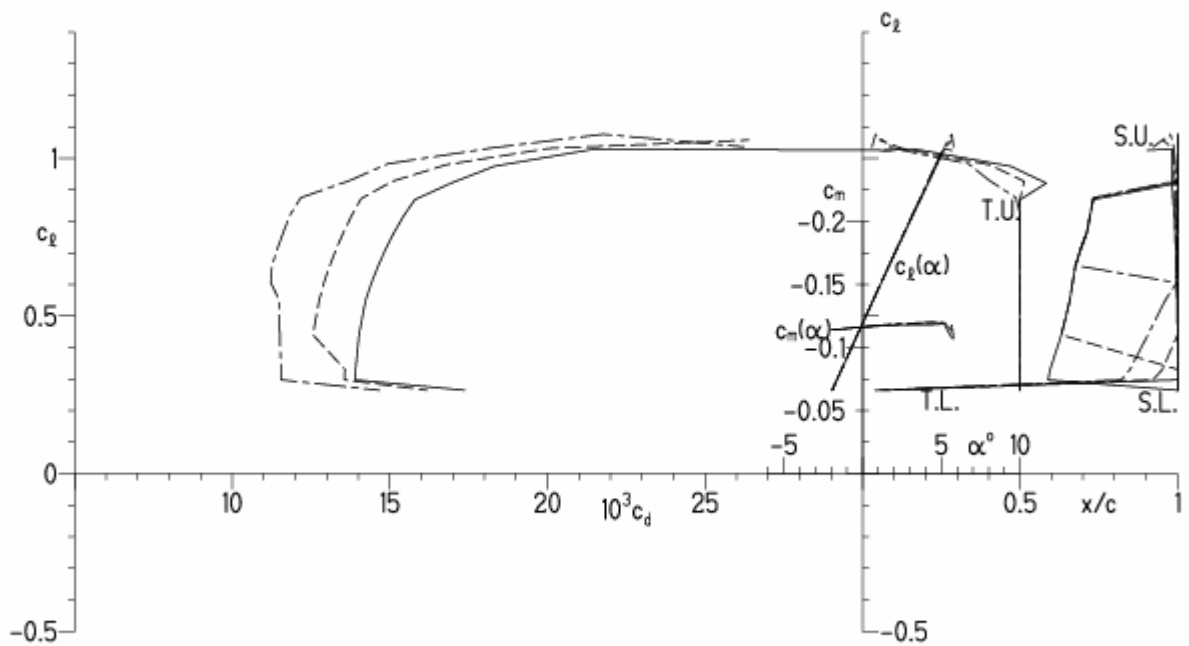
EPPLER 2005 V. 8.5.07 RUN 30.12.10 16:57



EPPLER 2005 V. 8.5.07 RUN 30.12.10 16-

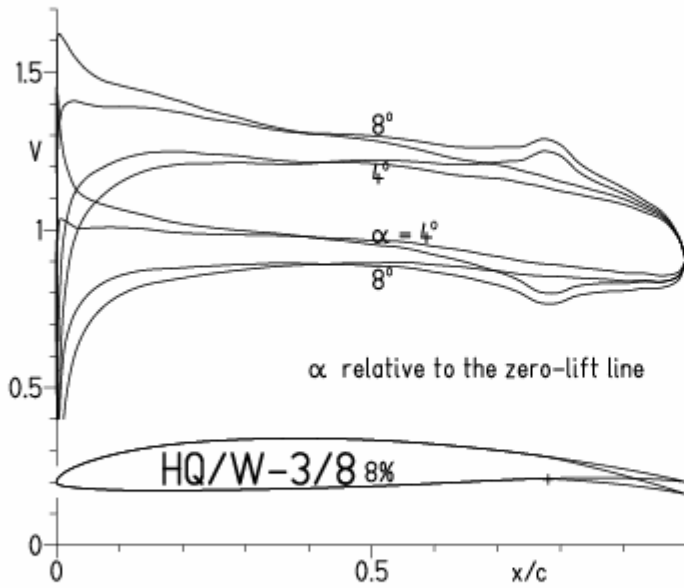
HQ/W-3/8 8%

- Re = 75 000, Turb. upper 50%  $e^N$ , N=9
- - -  $0.1 \times 10^6$ , Turb. upper 50%  $e^N$ , N=9
- · -  $0.15 \times 10^6$ , Turb. upper 50%  $e^N$ , N=9



HQ/W-3/8, N=9, mit 5° Wölbklappenausschlag bei Re-Zahlen für leichtere Thermikmodelle

EPPLER 2005 V. 8.5.07 RUN 30.12.10 17:30

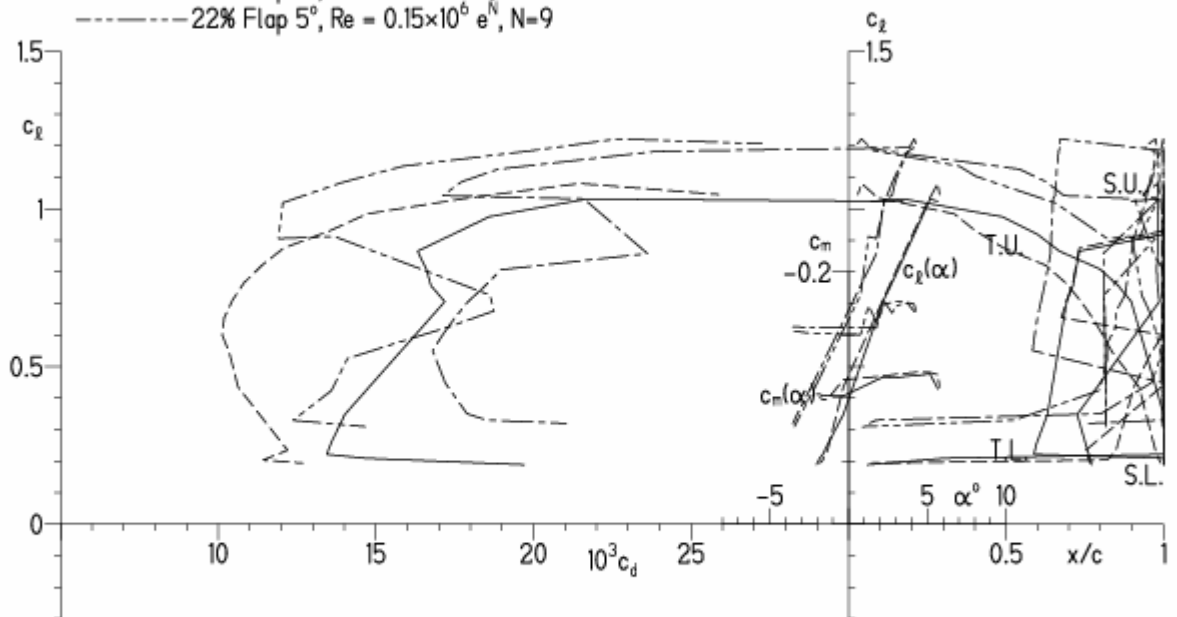


EPPLER 2005 V. 8.5.07 RUN 30.12.10 17:30

**HQ/W-3/8 8%**

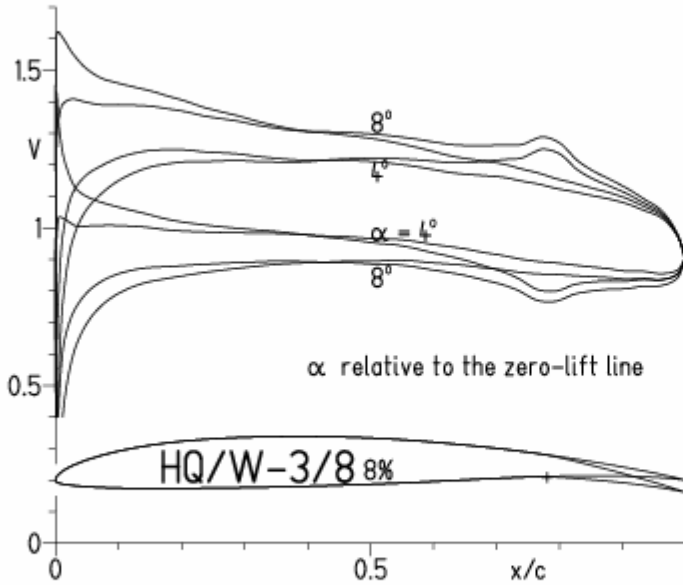
- Re = 70 000 e<sup>N</sup>, N=9
- - - 0.15x10<sup>6</sup> e<sup>N</sup>, N=9
- · - 22% Flap 5°, Re = 70 000 e<sup>N</sup>, N=9
- · - 22% Flap 5°, Re = 0.15x10<sup>6</sup> e<sup>N</sup>, N=9

- T. boundary layer transition
- S. boundary layer separation
- U. upper surface
- L. lower surface



**HQ/W-3/8, N=9, mit 5° Wölbklappenausschlag, Turbulatoreffekt bei Re-Zahlen für leichtere Thermikmodelle (optimale Turbulatorposition bei 50% - 60% der Profiltiefe)**

EPPLER 2005 V. 8.5.07 RUN 30.12.10 17:39

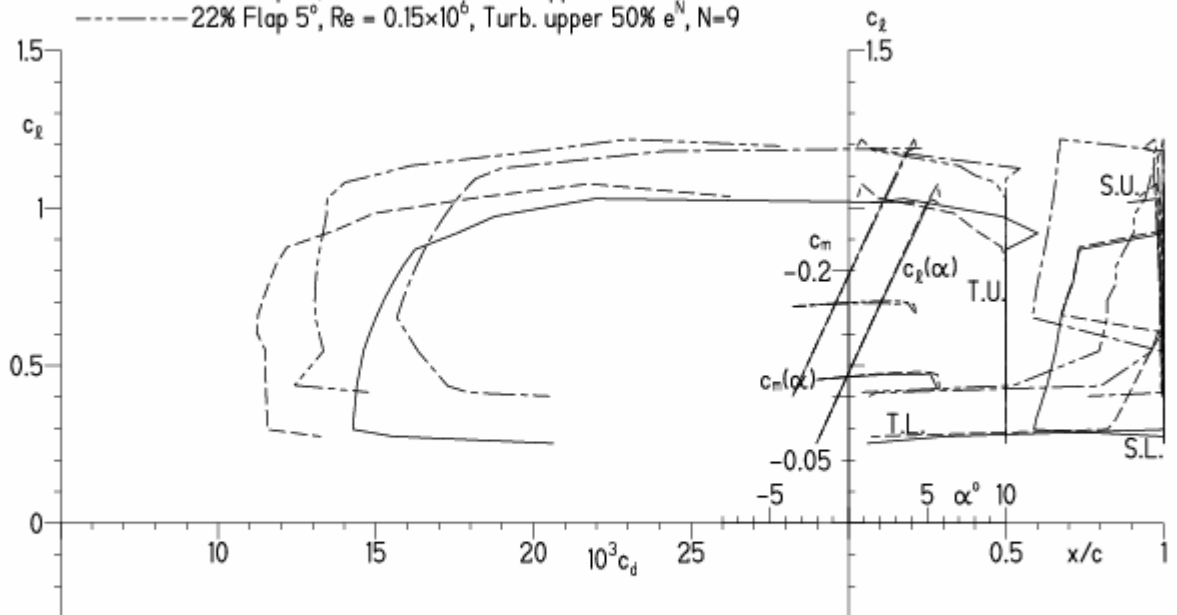


EPPLER 2005 V. 8.5.07 RUN 30.12.10 17:39

**HQ/W-3/8 8%**

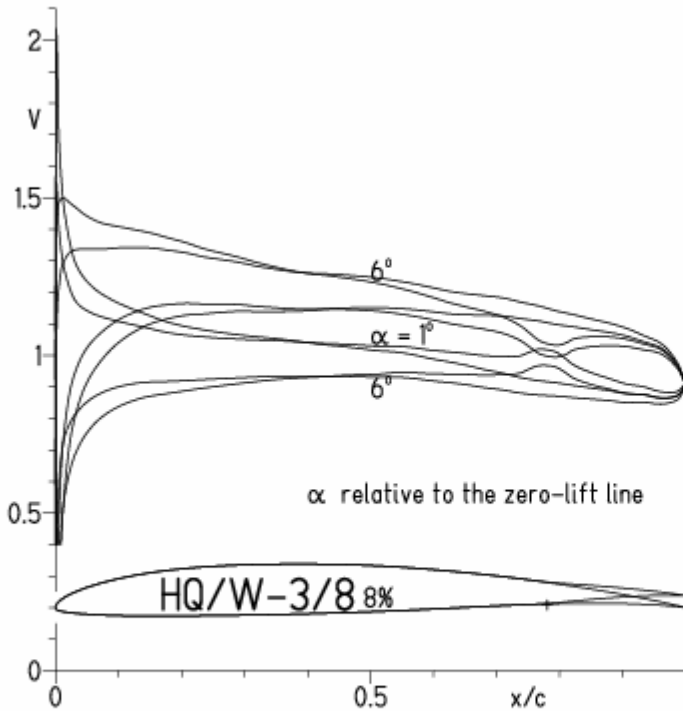
- Re = 70 000, Turb. upper 50% e<sup>N</sup>, N=9
- - - 0.15x10<sup>6</sup>, Turb. upper 50% e<sup>N</sup>, N=9
- · - 22% Flap 5°, Re = 70 000, Turb. upper 50% e<sup>N</sup>, N=9
- · - 22% Flap 5°, Re = 0.15x10<sup>6</sup>, Turb. upper 50% e<sup>N</sup>, N=9

- T. boundary layer transition
- S. boundary layer separation
- U. upper surface
- L. lower surface



HQ/W-3/9, N=11, mit -5° Wölbklappenausschlag (Schnellflug leichter Thermikmodelle)

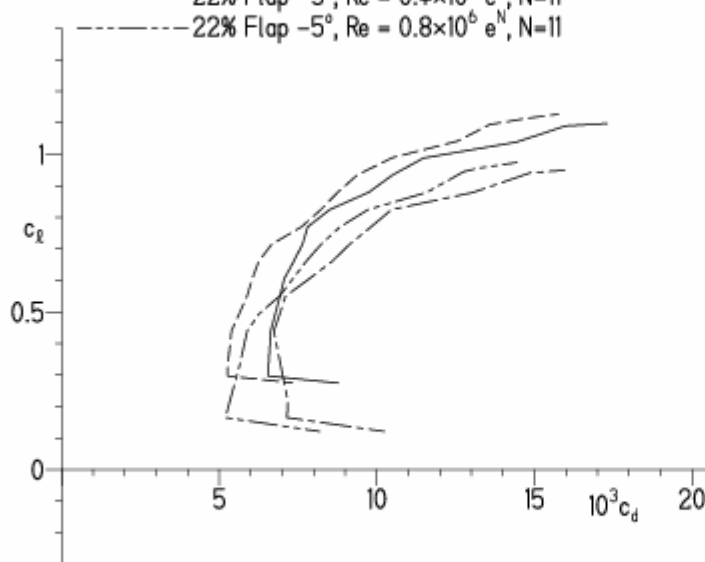
EPPLER 2005 V. 8.5.07 RUN 30.12.10 17:58



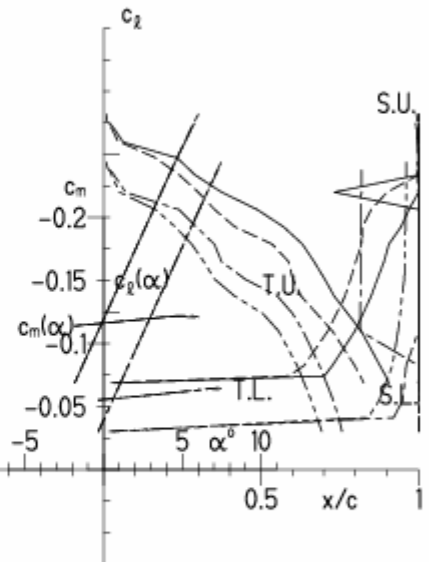
EPPLER 2005 V. 8.5.07 RUN 30.1

HQ/W-3/8 8%

- $Re = 0.4 \times 10^6 e^N, N=11$
- - -  $0.8 \times 10^6 e^N, N=11$
- · - · 22% Flap -5°,  $Re = 0.4 \times 10^6 e^N, N=11$
- · - · 22% Flap -5°,  $Re = 0.8 \times 10^6 e^N, N=11$

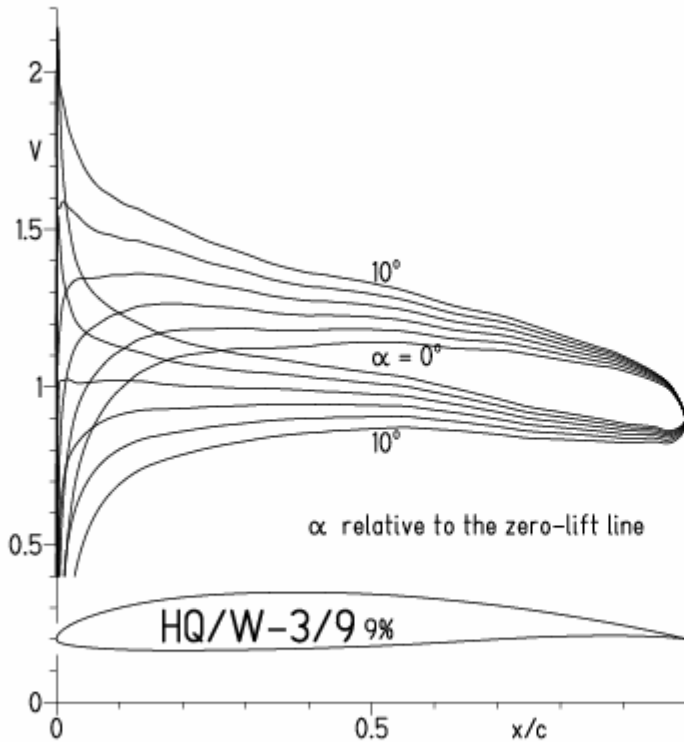


- T. boundary layer transition
- S. boundary layer separation
- U. upper surface
- L. lower surface



# HQ/W-3/9, N=11, Re-Zahlen für leichtere Thermikmodelle

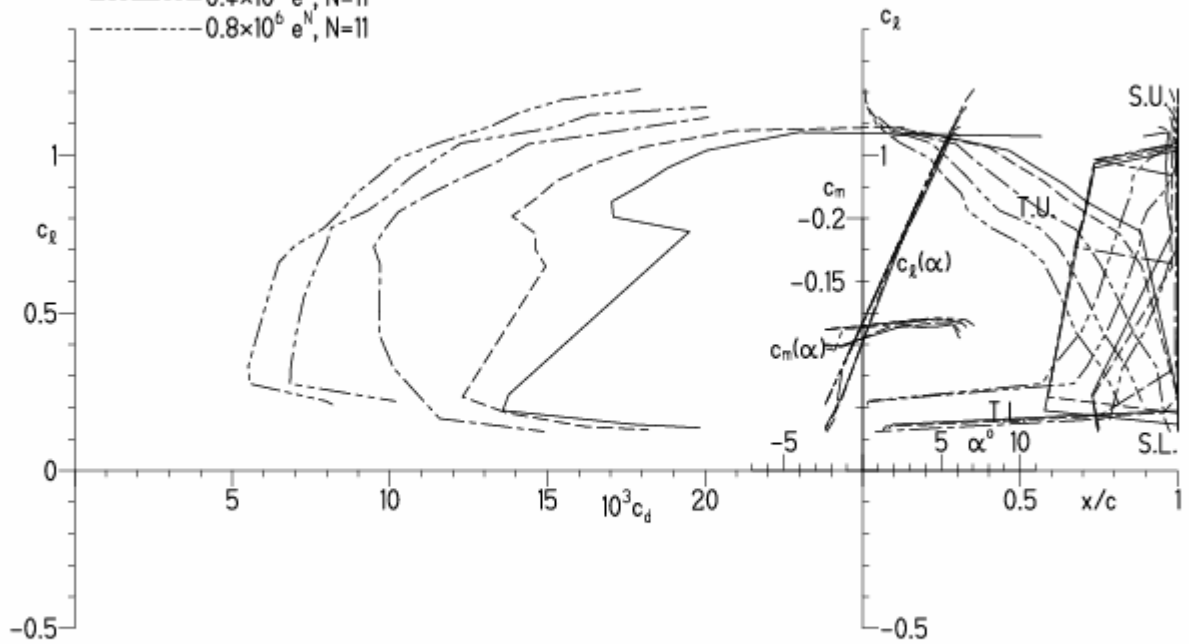
EPPLER 2005 V. 8.5.07 RUN 23.12.10 13:02



EPPLER 2005

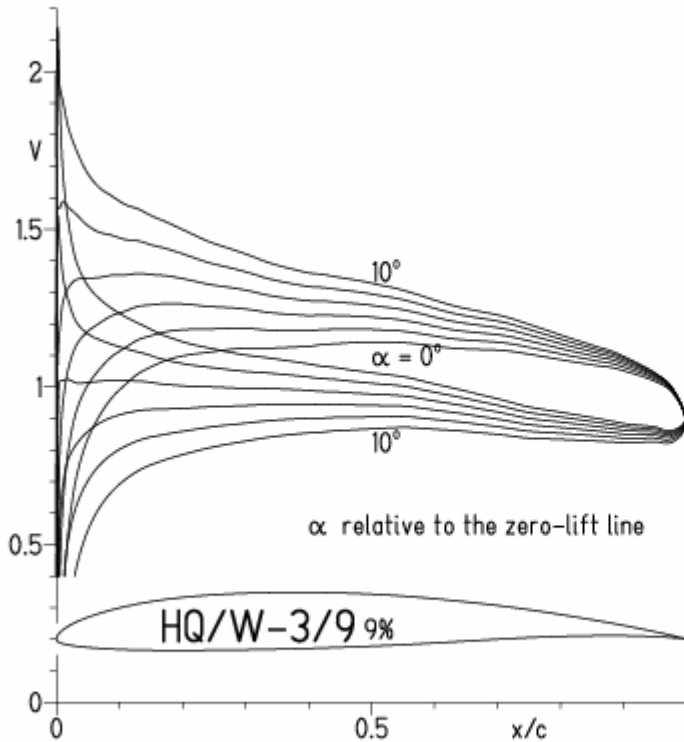
## HQ/W-3/9 9%

- $Re = 75\,000 e^N, N=11$
- - -  $0.1 \times 10^6 e^N, N=11$
- · -  $0.2 \times 10^6 e^N, N=11$
- · -  $0.4 \times 10^6 e^N, N=11$
- · -  $0.8 \times 10^6 e^N, N=11$



# HQ/W-3/9, N=9, Re-Zahlen für leichtere Thermikmodelle

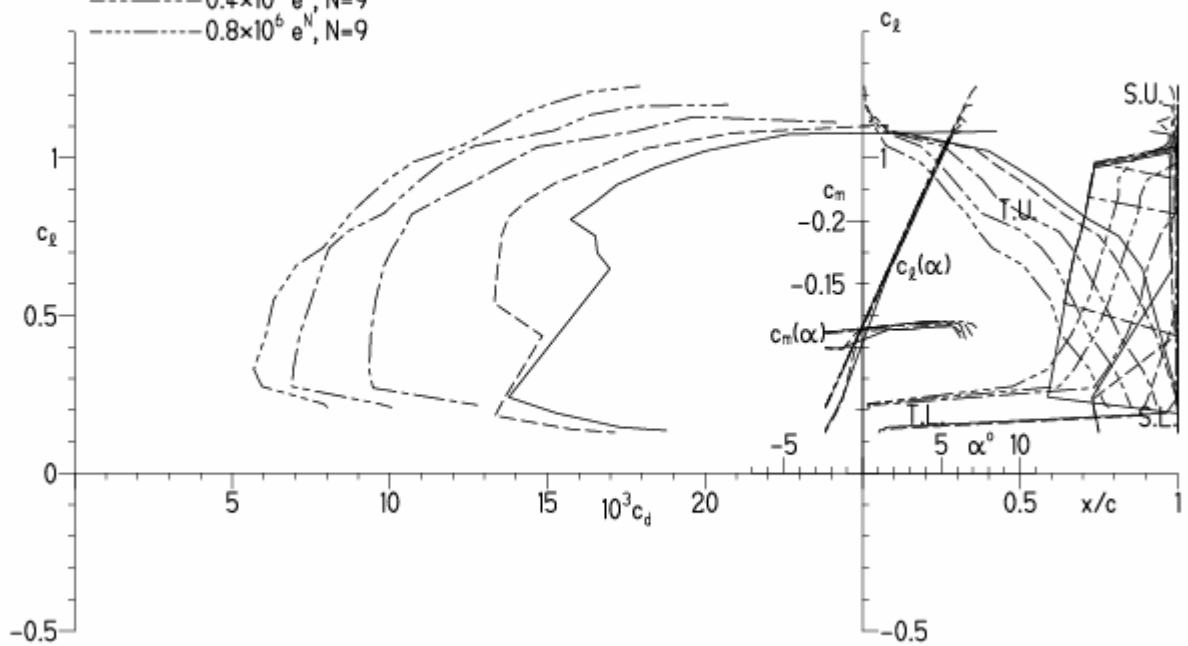
EPPLER 2005 V. 8.5.07 RUN 23.12.10 13:19



EPPLER 2005 V. 8.5.07 RUN 23.12.

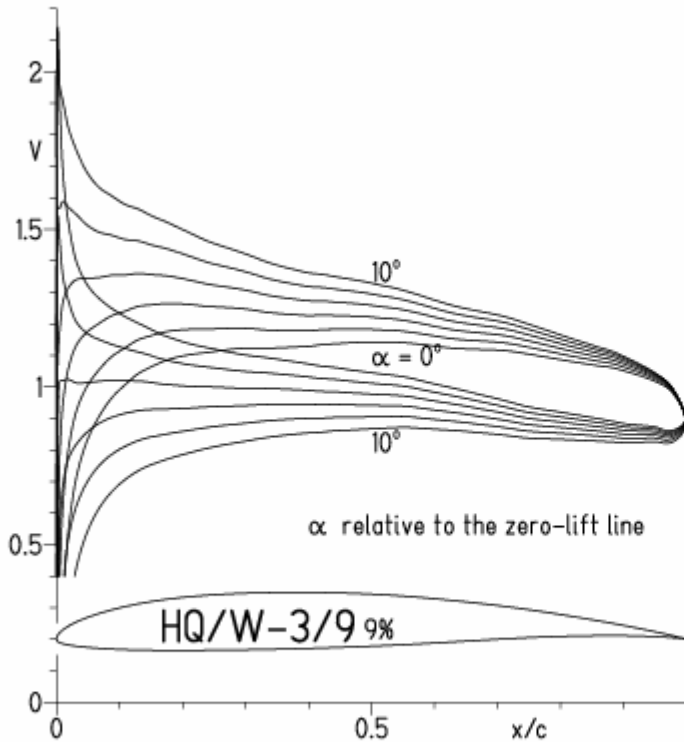
## HQ/W-3/9 9%

- $Re = 75\,000 e^N, N=9$
- - -  $0.1 \times 10^6 e^N, N=9$
- · -  $0.2 \times 10^6 e^N, N=9$
- · -  $0.4 \times 10^6 e^N, N=9$
- · -  $0.8 \times 10^6 e^N, N=9$



HQ/W-3/9, N=9, Turbulatoreffekt bei Re-Zahlen für leichtere Thermikmodelle

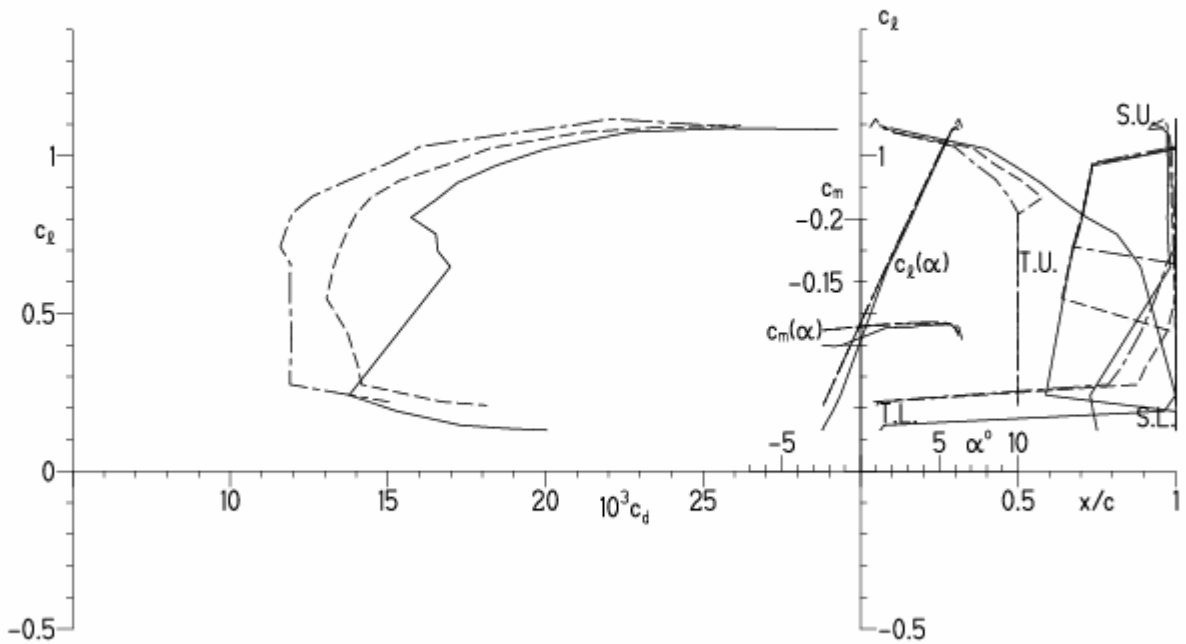
EPPLER 2005 V. 8.5.07 RUN 23.12.10 16:05



EPPLER 2005 V.

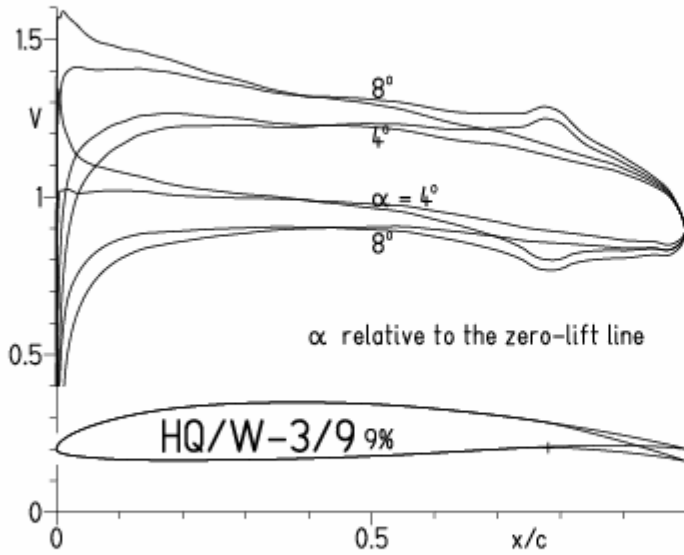
HQ/W-3/9 9%

- $Re = 75\,000 e^N, N=9$
- - -  $0.1 \times 10^6$ , Turb. upper 50%  $e^N, N=9$
- · -  $0.15 \times 10^6$ , Turb. upper 50%  $e^N, N=9$



HQ/W-3/9, N=9, mit 5° Wölbklappenausschlag bei Re-Zahlen für leichtere Thermikmodelle

EPPLER 2005 V. 8.5.07 RUN 23.12.10 16:48

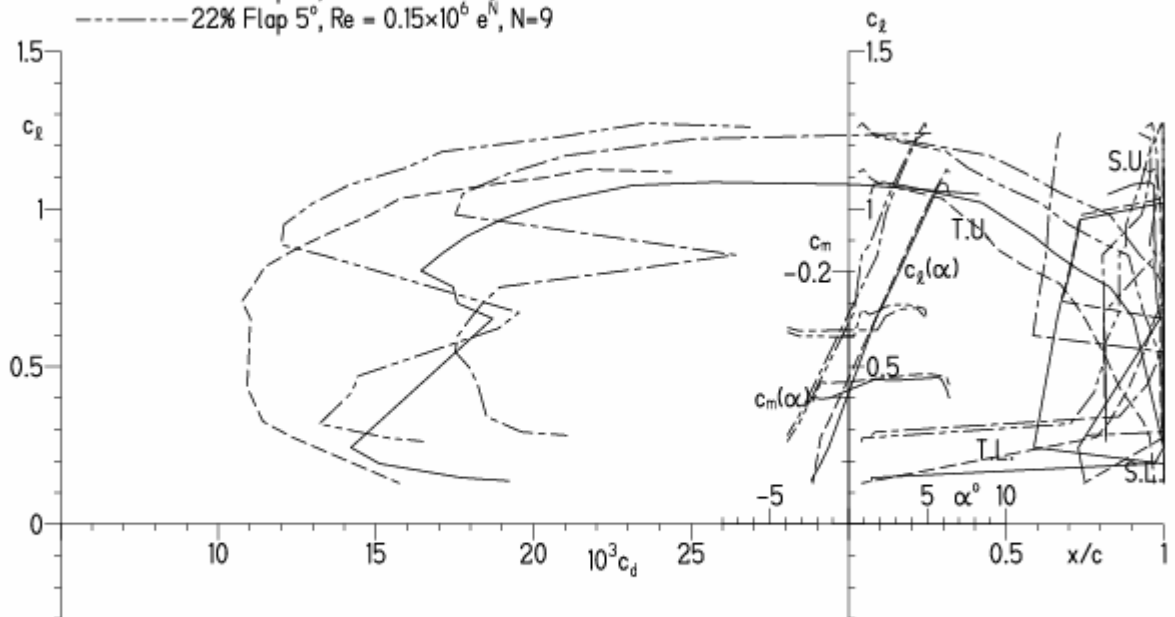


EPPLER 2005 V. 8.5.07 RUN 23.12.10 16:48

**HQ/W-3/9 9%**

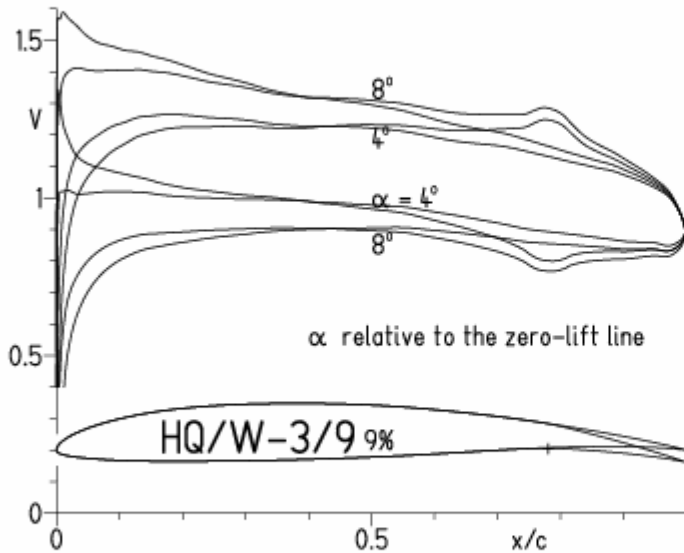
- $Re = 70\,000 e^N, N=9$
- - -  $0.15 \times 10^6 e^N, N=9$
- · - · 22% Flap 5°,  $Re = 70\,000 e^N, N=9$
- · - · 22% Flap 5°,  $Re = 0.15 \times 10^6 e^N, N=9$

- T. boundary layer transition
- S. boundary layer separation
- U. upper surface
- L. lower surface



**HQ/W-3/9, N=9, mit 5° Wölbklappenausschlag, Turbulatoreffekt bei Re-Zahlen für leichtere Thermikmodelle (optimale Turbulatorposition bei 50% - 60% der Profiltiefe)**

EPPLER 2005 V. 8.5.07 RUN 23.12.10 16:32

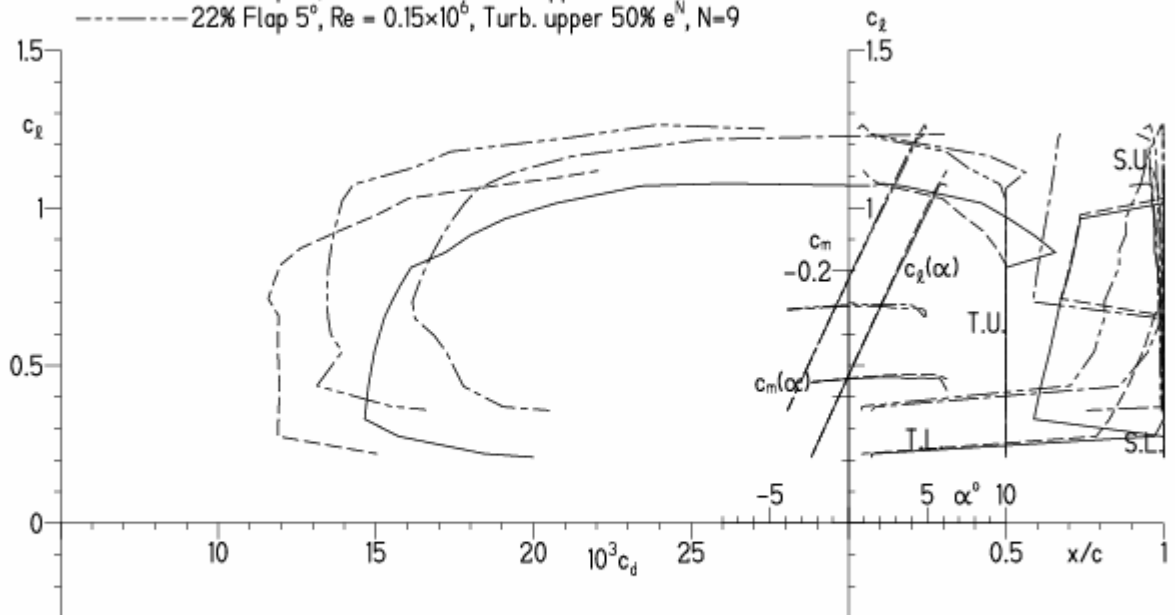


EPPLER 2005 V. 8.5.07

**HQ/W-3/9 9%**

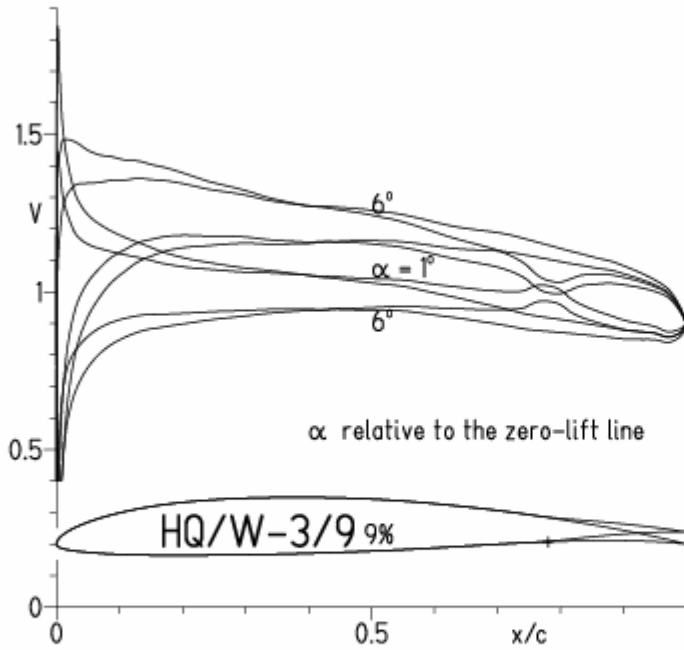
- Re = 70 000, Turb. upper 50% e<sup>N</sup>, N=9
- - - 0.15x10<sup>6</sup>, Turb. upper 50% e<sup>N</sup>, N=9
- · - 22% Flap 5°, Re = 70 000, Turb. upper 50% e<sup>N</sup>, N=9
- · - 22% Flap 5°, Re = 0.15x10<sup>6</sup>, Turb. upper 50% e<sup>N</sup>, N=9

- T. boundary layer transition
- S. boundary layer separation
- U. upper surface
- L. lower surface

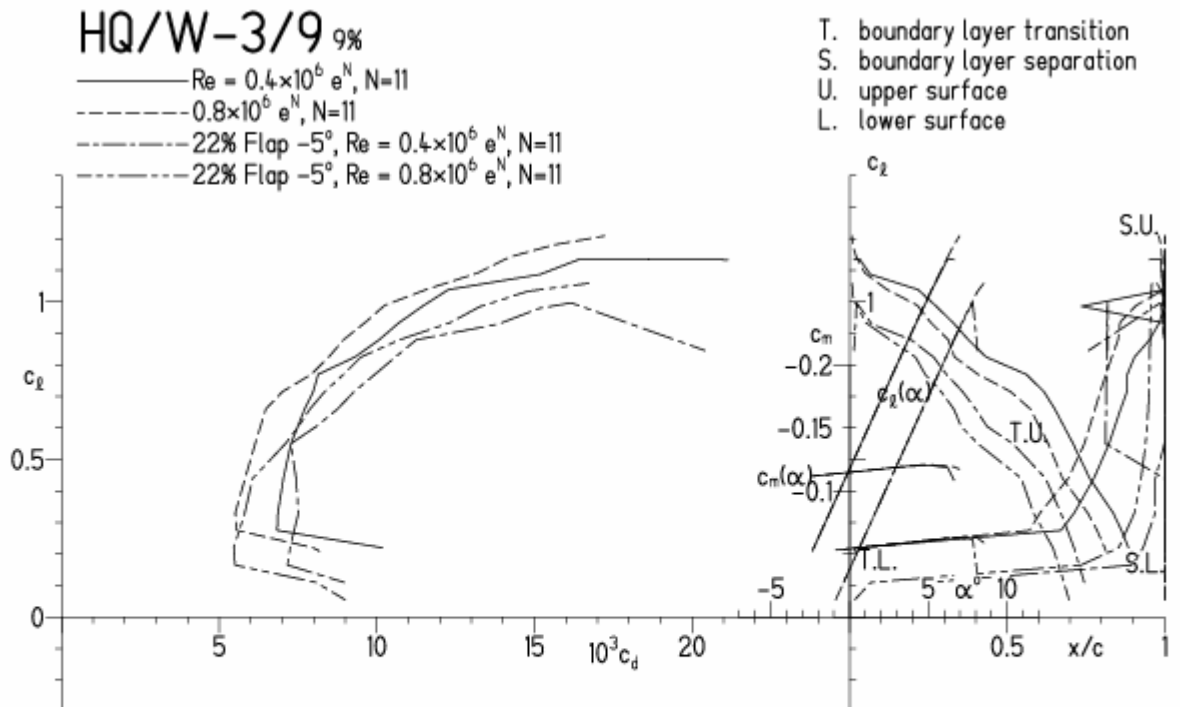


HQ/W-3/9, N=11, mit -5° Wölbklappenausschlag (Schnellflug leichter Thermikmodelle)

EPPLER 2005 V. 8.5.07 RUN 23.12.10 17:47

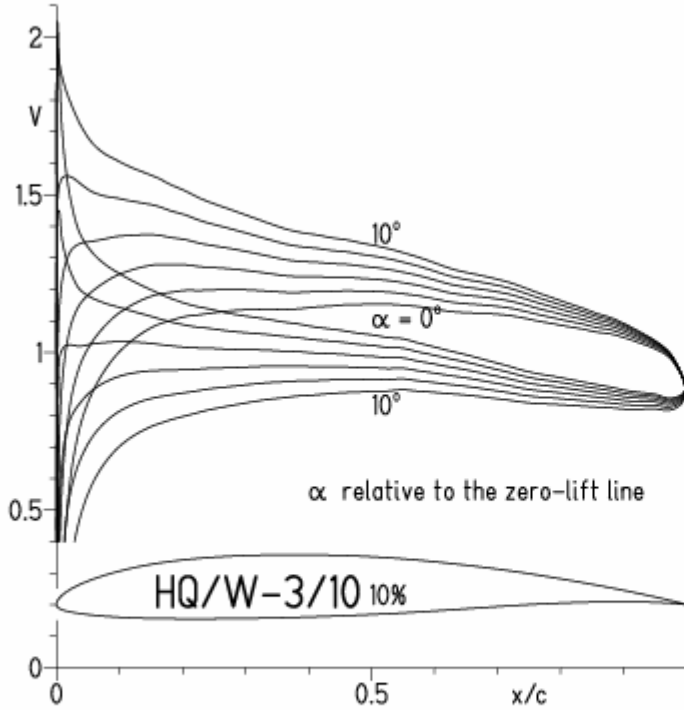


EPPLER 2005 V. 8.5.07 RUN 23.12.1



HQ/W-3/10, N=11, Re-Zahlen für leichtere Thermikmodelle

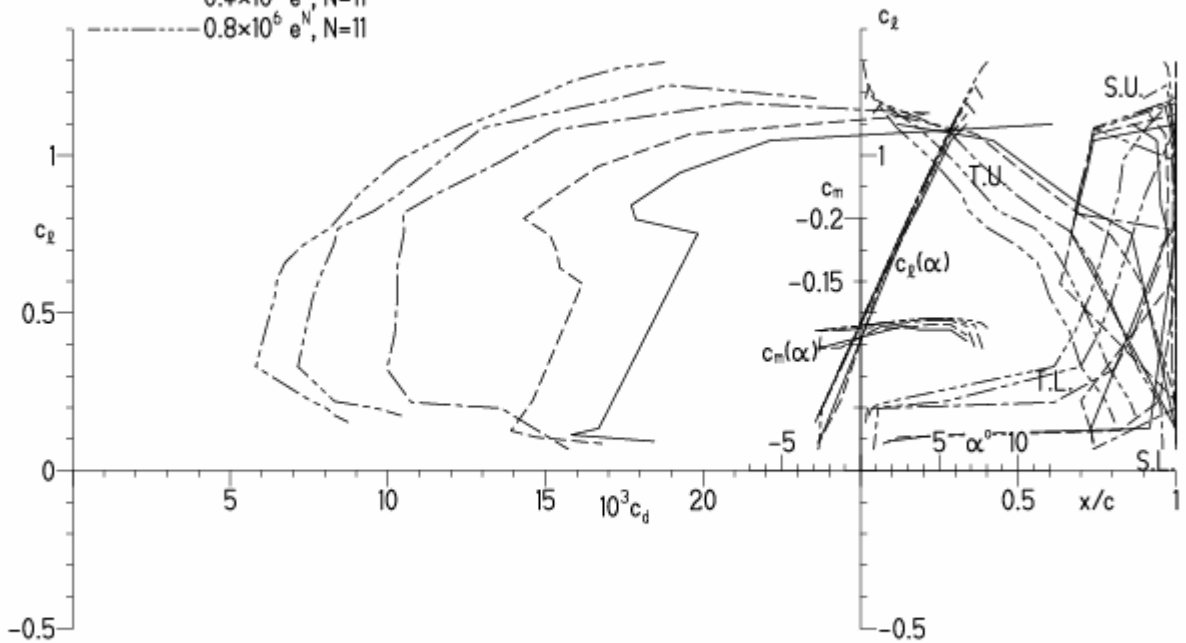
EPPLER 2005 v. 8.5.07 RUN 22.12.10 17:46



EPPLER 2

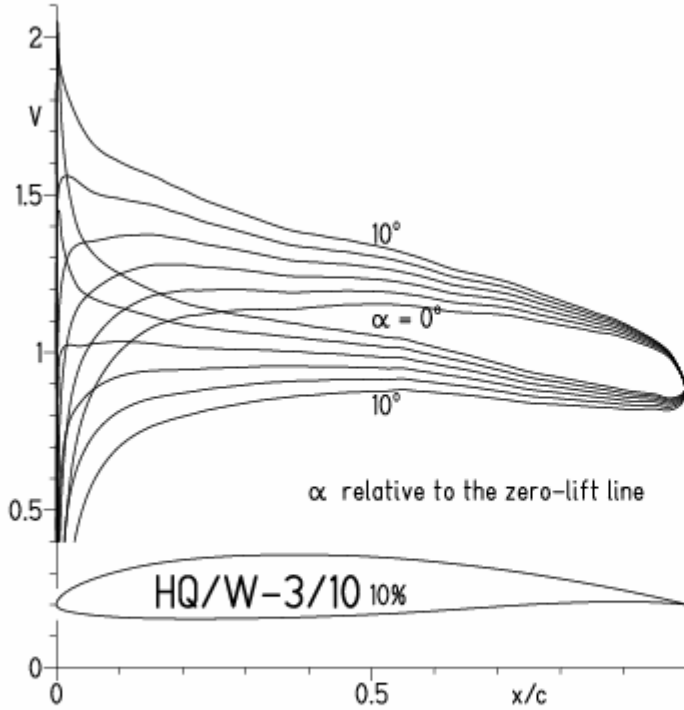
HQ/W-3/10 10%

- $Re = 75\,000 e^N, N=11$
- - -  $0.1 \times 10^6 e^N, N=11$
- · -  $0.2 \times 10^6 e^N, N=11$
- · · -  $0.4 \times 10^6 e^N, N=11$
- · · · -  $0.8 \times 10^6 e^N, N=11$



HQ/W-3/10, N=9, Re-Zahlen für leichtere Thermikmodelle

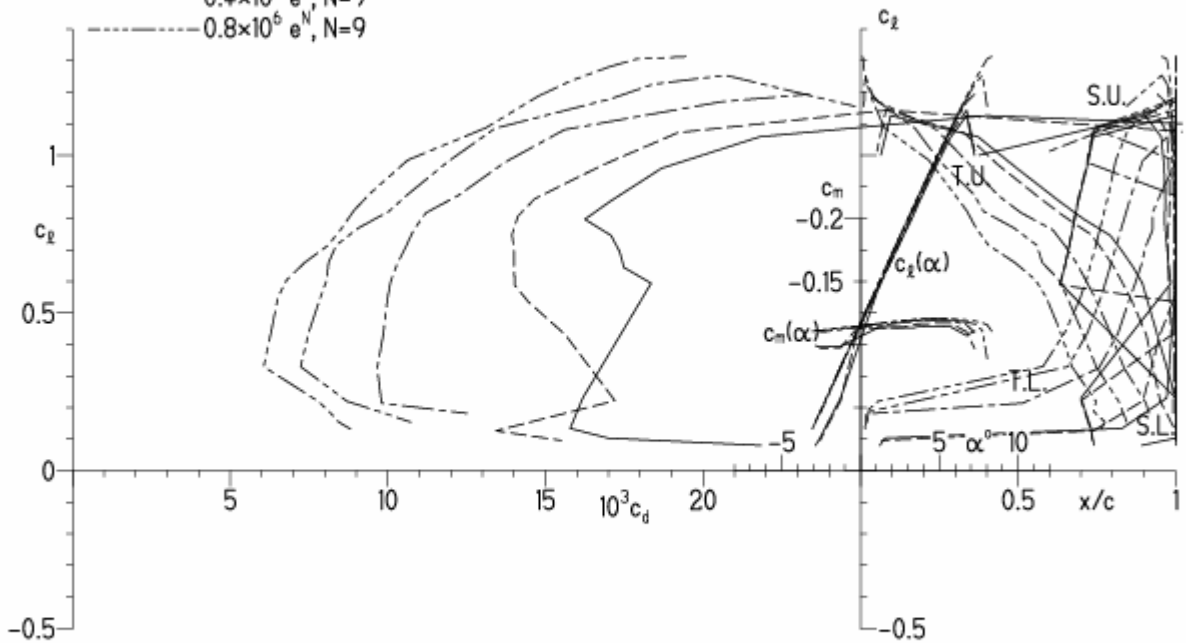
EPPLER 2005 V. 8.5.07 RUN 22.12.10 18:02



EPPLER 2005 V. 8.5.07 RUN 22.12.10 18:02

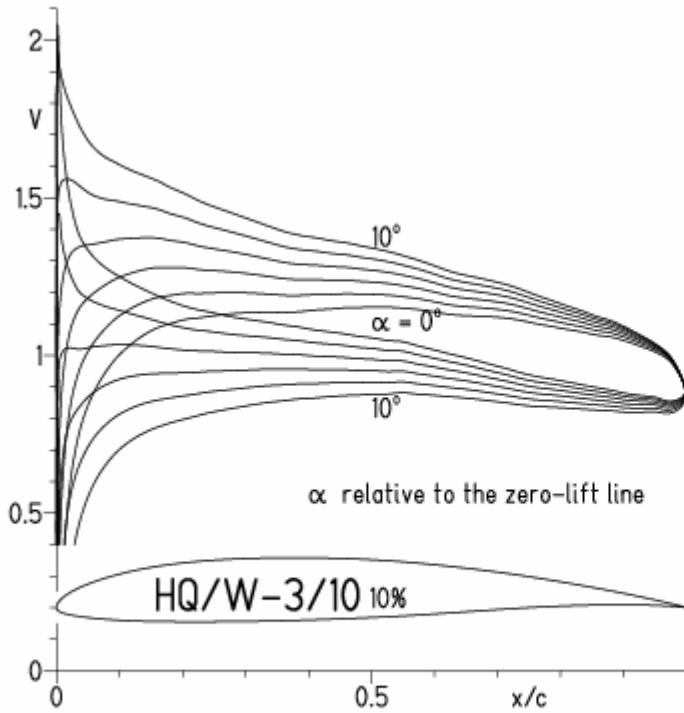
HQ/W-3/10 10%

- $Re = 75\,000 e^N, N=9$
- - -  $0.1 \times 10^6 e^N, N=9$
- · -  $0.2 \times 10^6 e^N, N=9$
- · · -  $0.4 \times 10^6 e^N, N=9$
- · · · -  $0.8 \times 10^6 e^N, N=9$



HQ/W-3/10, N=9, Turbulatoreffekt bei Re-Zahlen für leichtere Thermikmodelle

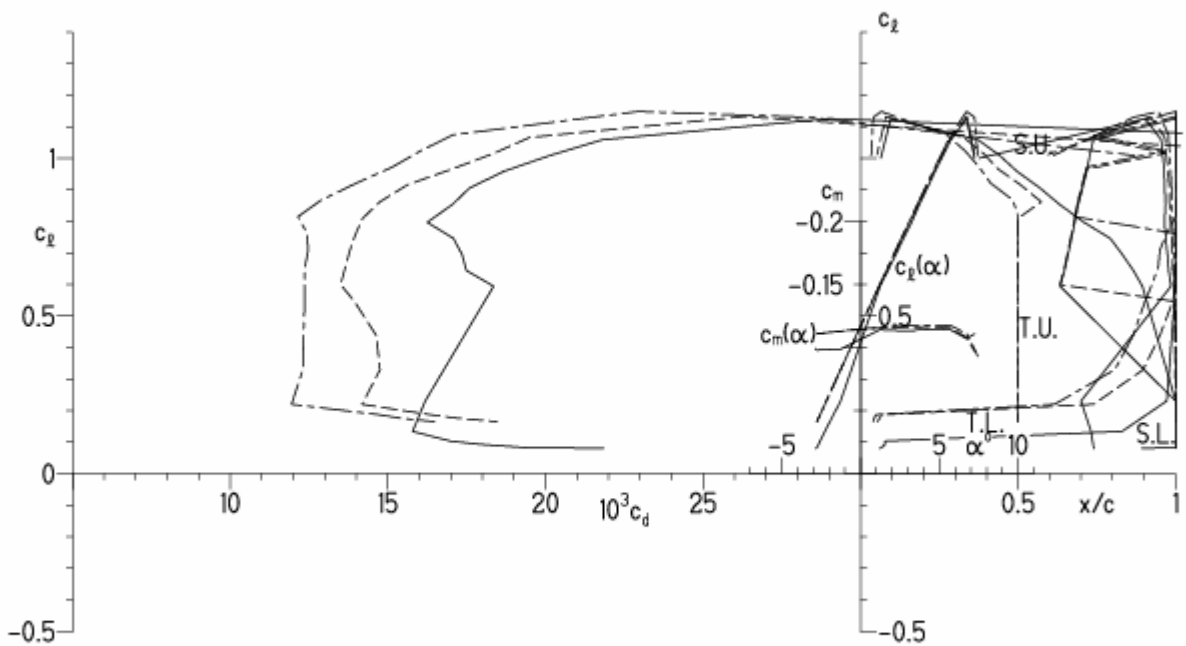
EPPLER 2005 V. 8.5.07 RUN 22.12.10 18:38



EPPLER 2005 V. 8.5

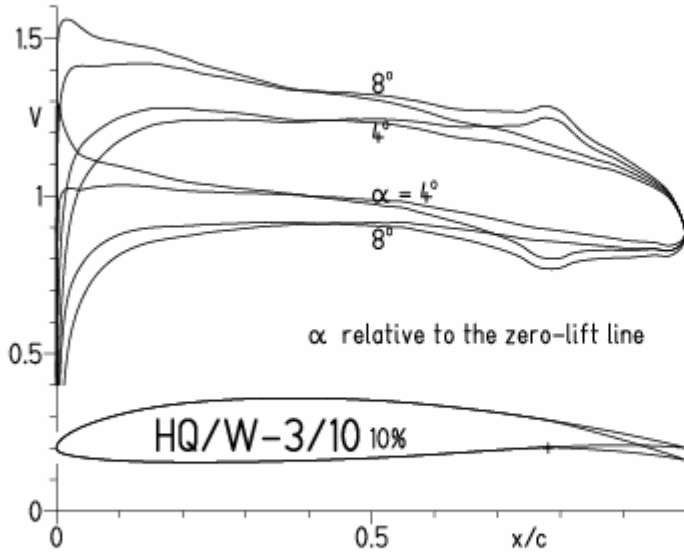
HQ/W-3/10 10%

- $Re = 75\,000 e^N, N=9$
- - -  $0.1 \times 10^6$ , Turb. upper 50%  $e^N, N=9$
- · -  $0.15 \times 10^6$ , Turb. upper 50%  $e^N, N=9$



HQ/W-3/10, N=9, mit 5° Wölbklappenausschlag bei Re-Zahlen für leichtere Thermikmodelle

EPPLER 2005 V. 8.5.07 RUN 22.12.10 18:49

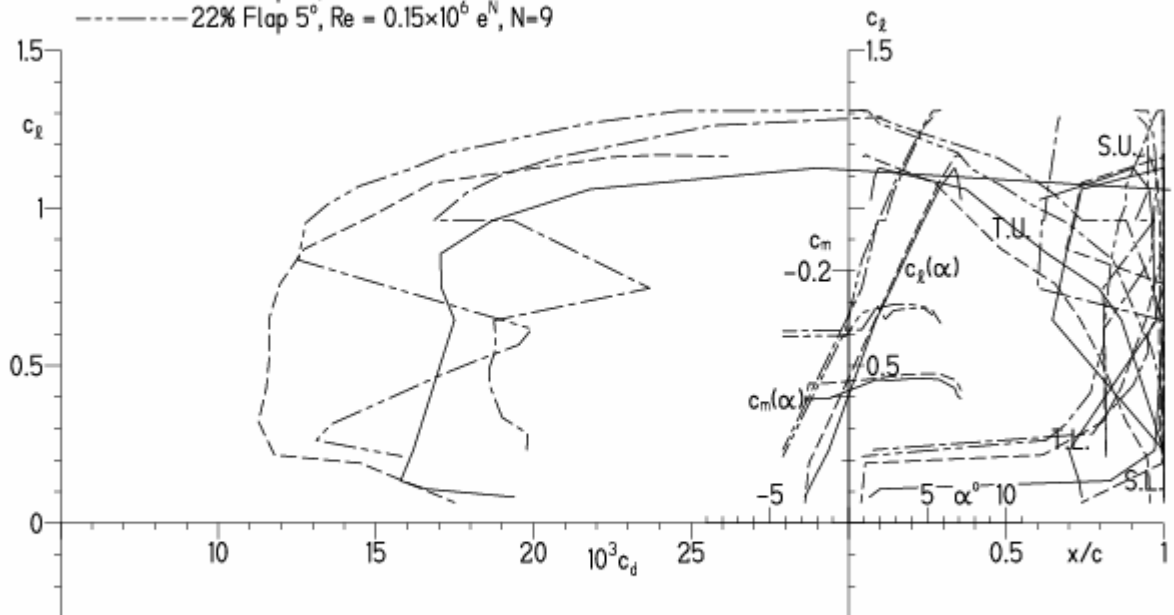


EPPLER 2005 V. 8.5.07 RUN 22.12.10 1

HQ/W-3/10 10%

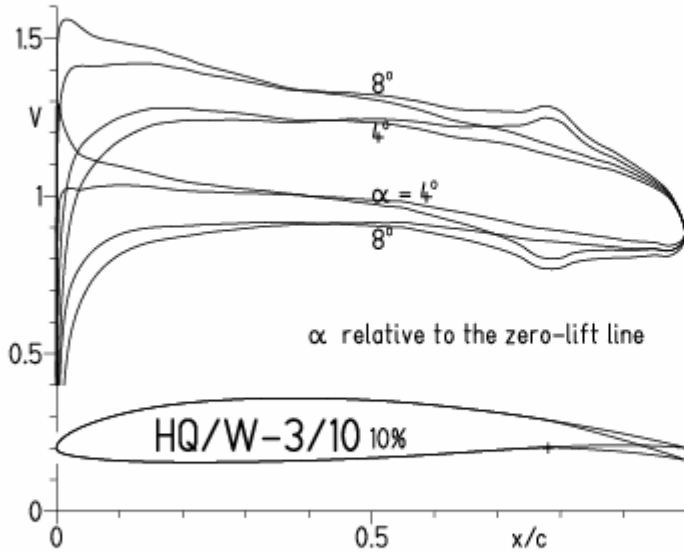
- $Re = 75\,000 e^N, N=9$
- - -  $0.15 \times 10^6 e^N, N=9$
- · - · 22% Flap 5°,  $Re = 75\,000 e^N, N=9$
- · - · 22% Flap 5°,  $Re = 0.15 \times 10^6 e^N, N=9$

- T. boundary layer transition
- S. boundary layer separation
- U. upper surface
- L. lower surface



HQ/W-3/10, N=9, mit 5° Wölbklappenausschlag, Turbulatoreffekt bei Re-Zahlen für leichtere Thermikmodelle (optimale Turbulatorposition bei 50% - 60% der Profiltiefe)

EPPLER 2005 V. 8.5.07 RUN 22.12.10 19:15

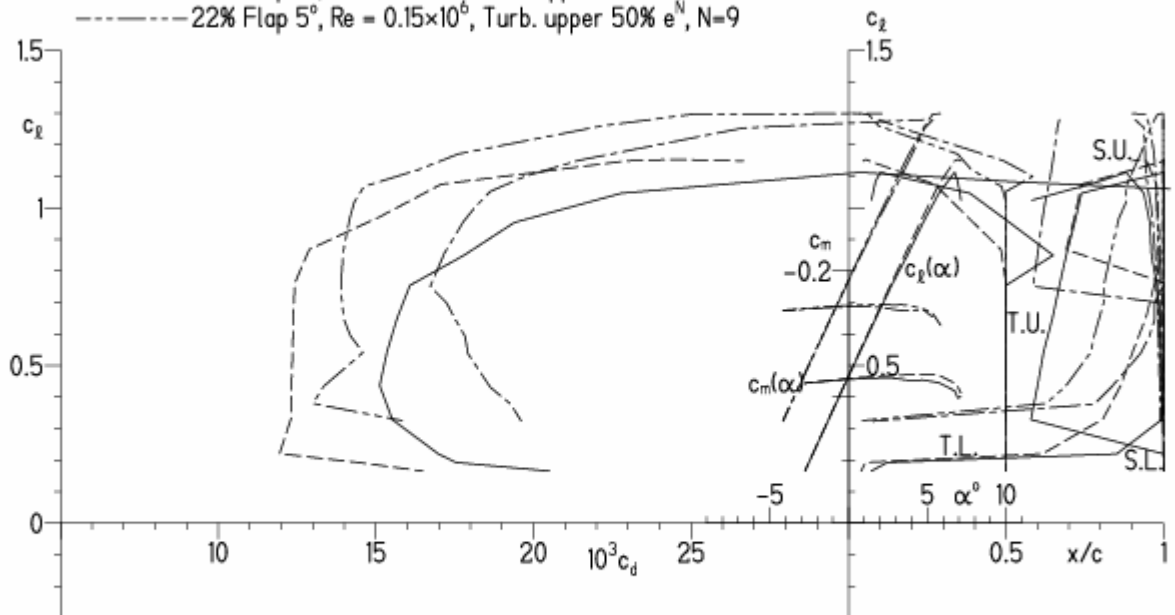


EPPLER 2005 V. 8.5.

HQ/W-3/10 10%

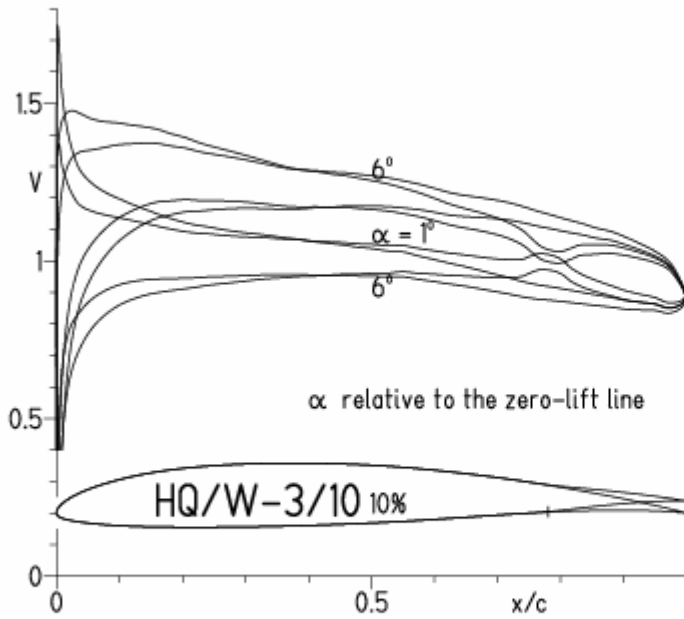
- Re = 70 000, Turb. upper 50% e<sup>N</sup>, N=9
- - - 0.15x10<sup>6</sup>, Turb. upper 50% e<sup>N</sup>, N=9
- · - 22% Flap 5°, Re = 70 000, Turb. upper 50% e<sup>N</sup>, N=9
- · - 22% Flap 5°, Re = 0.15x10<sup>6</sup>, Turb. upper 50% e<sup>N</sup>, N=9

- T. boundary layer transition
- S. boundary layer separation
- U. upper surface
- L. lower surface

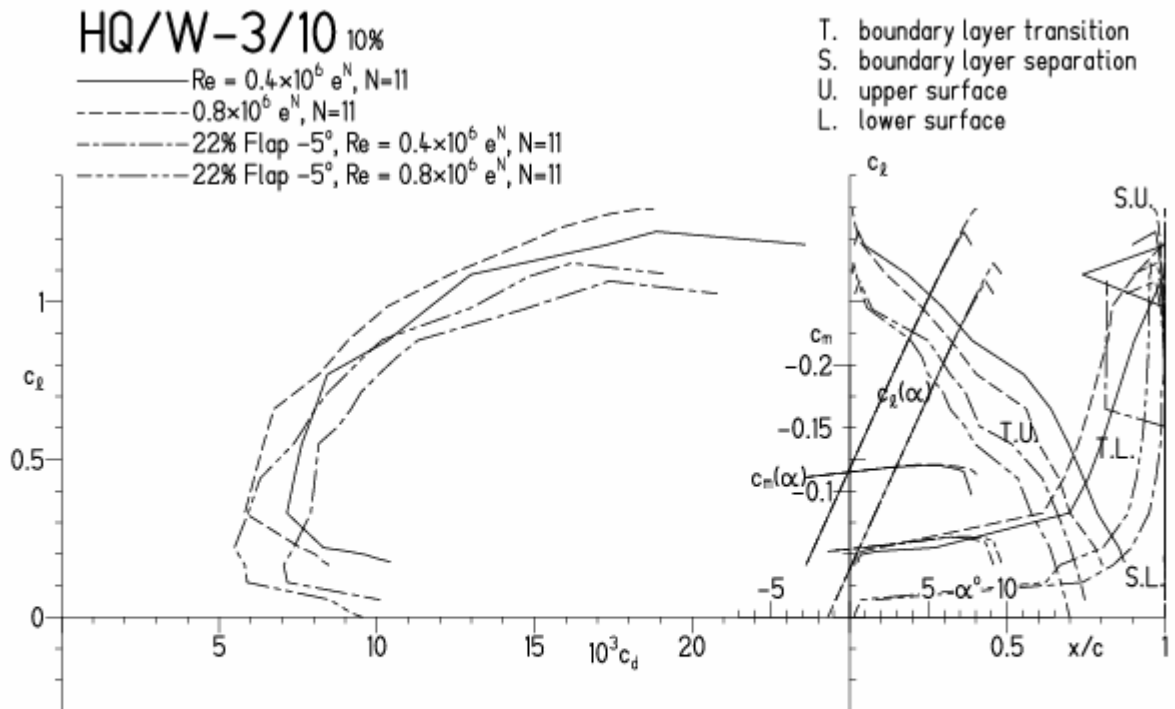


HQ/W-3/10, N=11, mit -5° Wölbklappenausschlag (Schnellflug leichter Thermikmodelle)

EPPLER 2005 V. 8.5.07 RUN 23.12.10 17:17

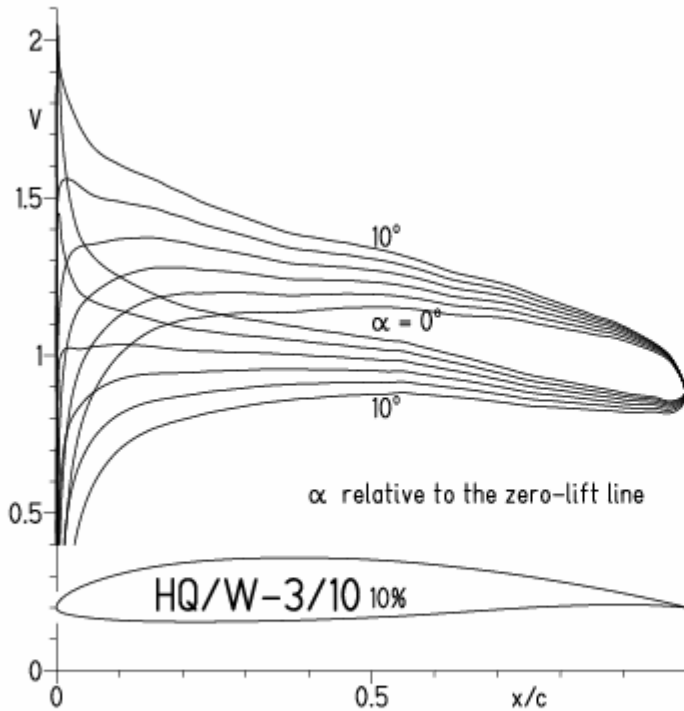


EPPLER 2005 V. 8.5.07 RUN 23.12.10 17:17

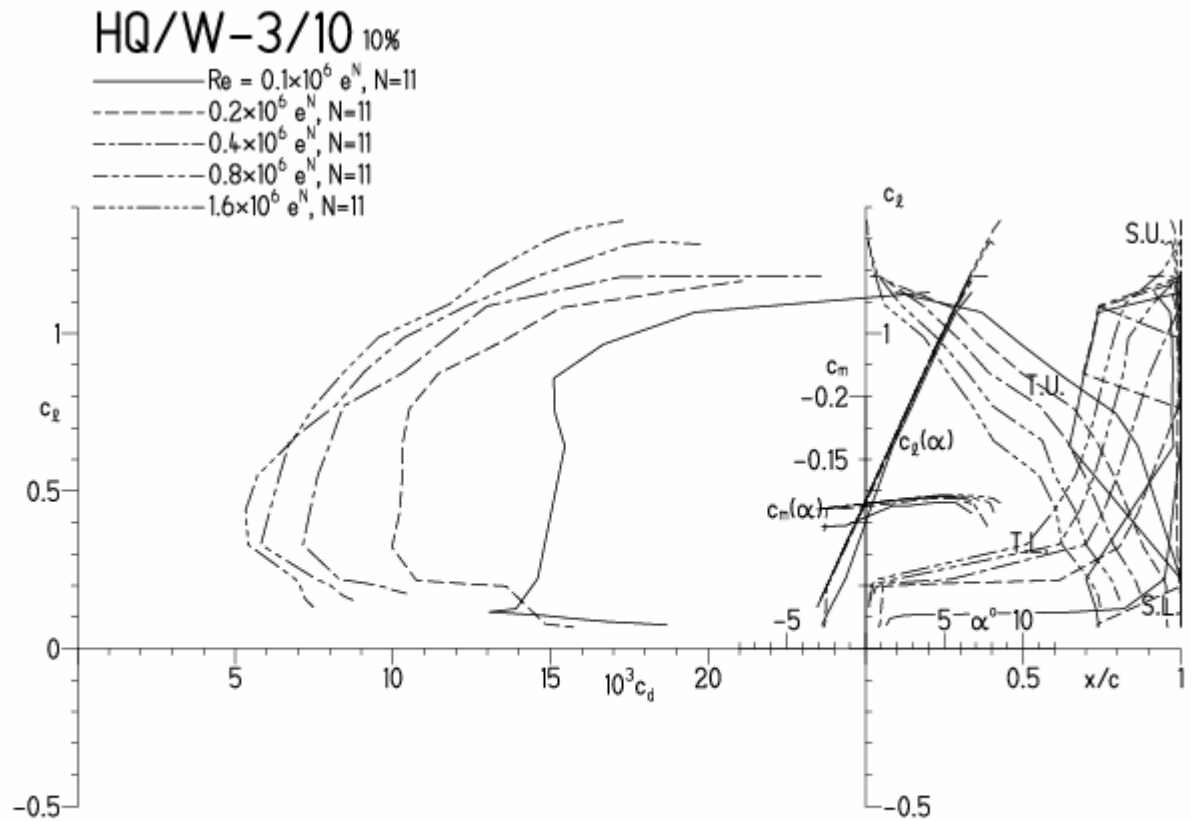


HQ/W-3/10, N=11, Re-Zahlen für größere Segelmodelle

EPPLER 2005 V. 8.5.07 RUN 16.12.10 16:42

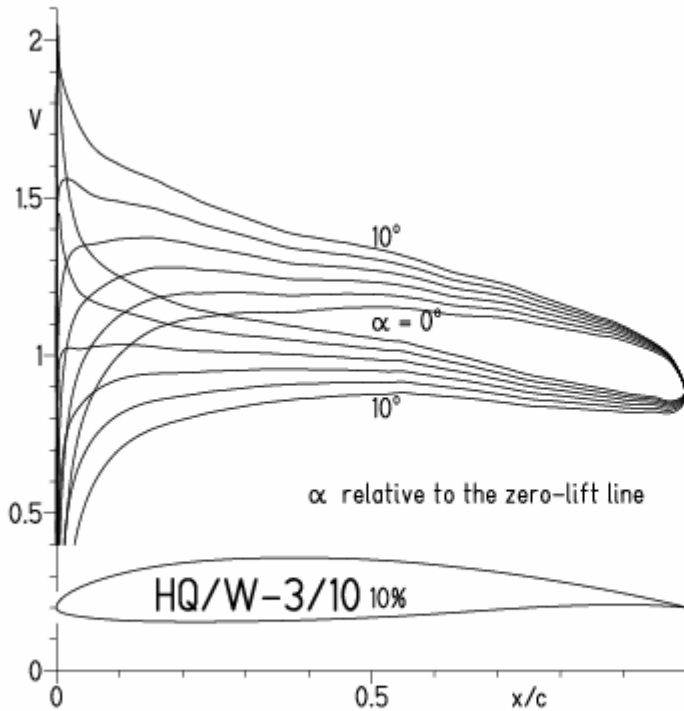


EPPLER 2005 V. 8.5.07 RUN 16.12.10 16:42

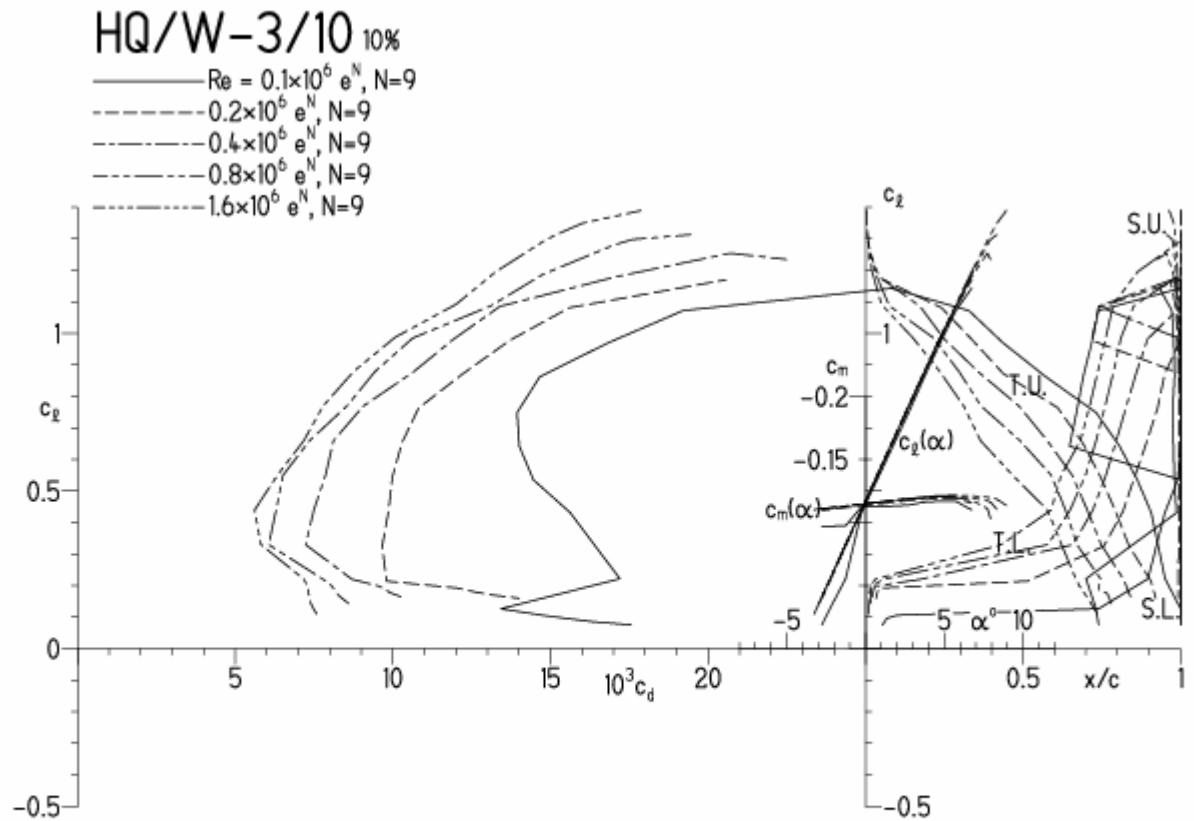


HQ/W-3/10, N=9, Re-Zahlen für größere Segelmodelle

EPPLER 2005 V. 8.5.07 RUN 16.12.10 16:38

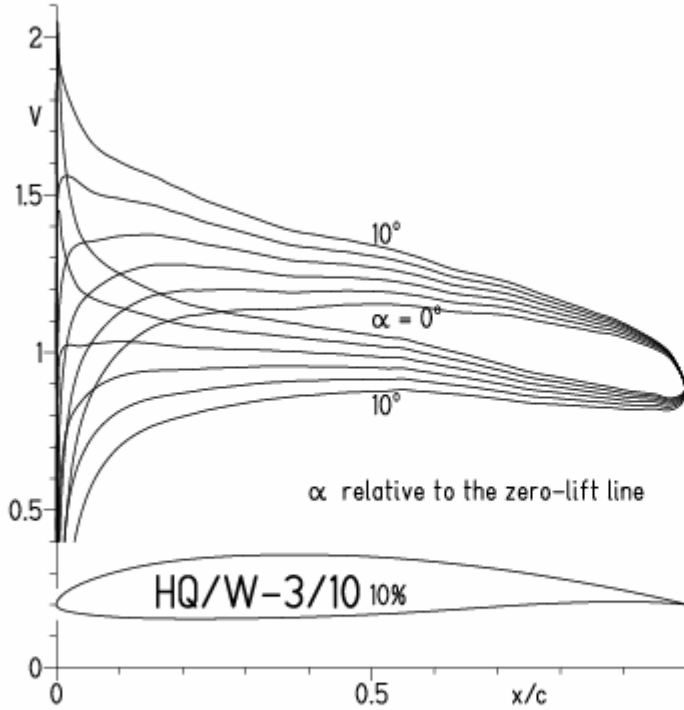


EPPLER 2005 V. 8.5.07 RUN 16.12.10 16:38



HQ/W-3/10, N=9, Turbulatoreffekt bei niedrigen Re-Zahlen

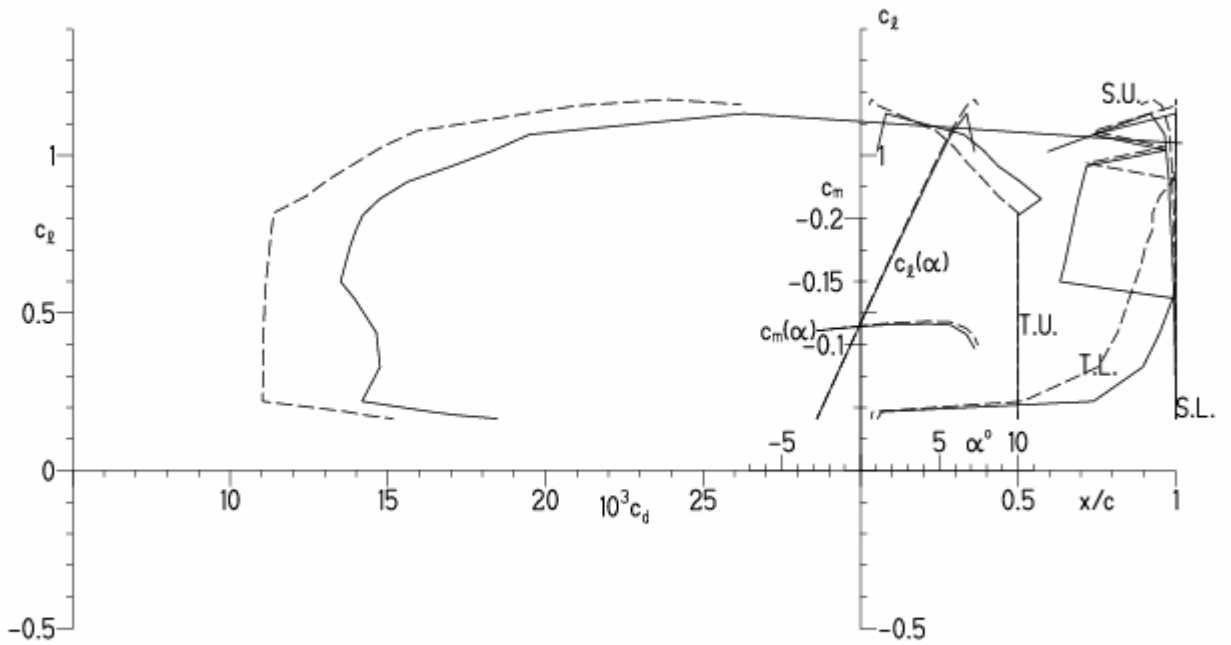
EPPLER 2005 V. 8.5.07 RUN 22.12.10 18:25



EPPLER 2005 V. 8.5.07 RUN 22.1

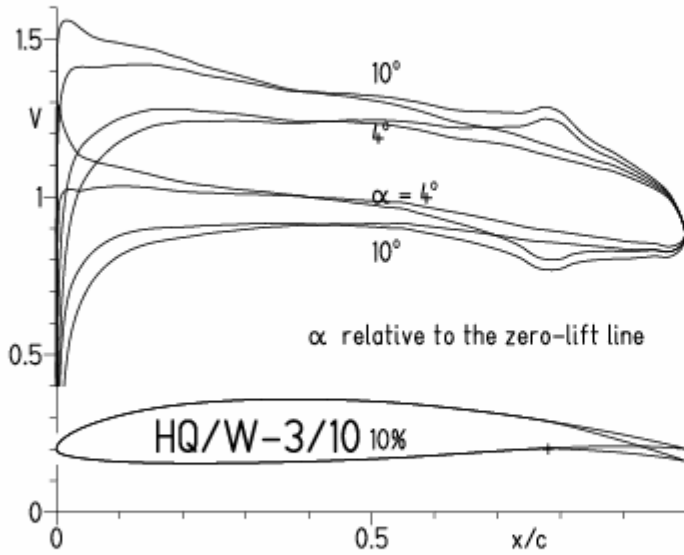
HQ/W-3/10 10%

—  $Re = 0.1 \times 10^6$ , Turb. upper 50%  $e^N$ ,  $N=9$   
 - - -  $0.2 \times 10^6$ , Turb. upper 50%  $e^N$ ,  $N=9$



HQ/W-3/10, N=11, mit 5° Wölbklappenausschlag

EPPLER 2005 V. 8.5.07 RUN 16.12.10 17:40

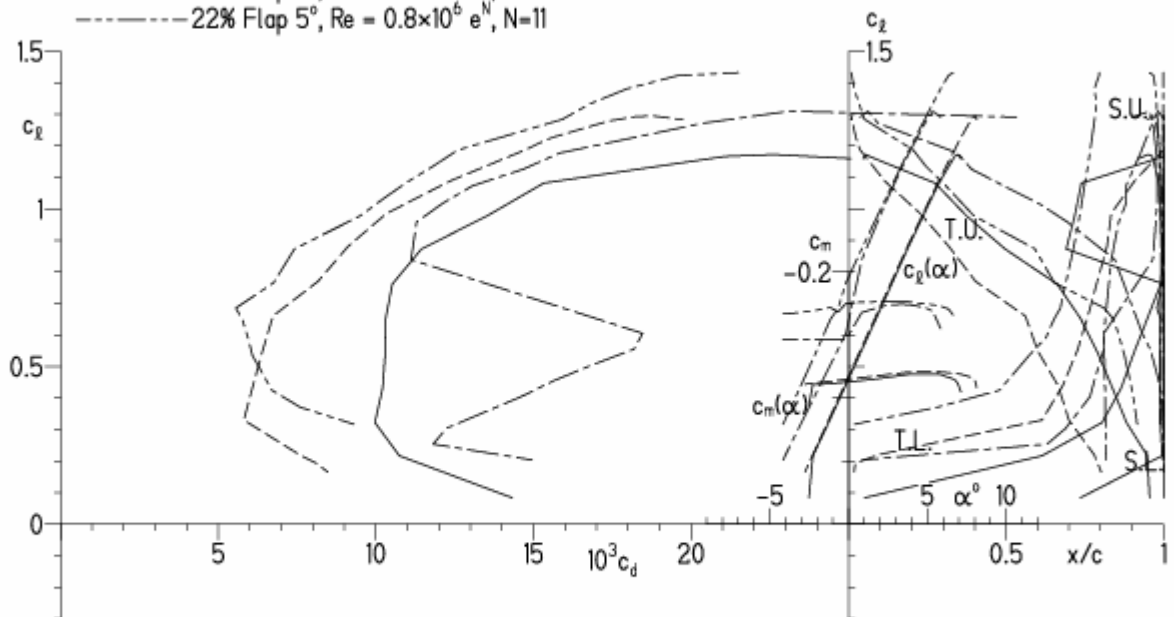


EPPLER 2005 V. 8.5.07 RUN 16.12.10 17:40

HQ/W-3/10 10%

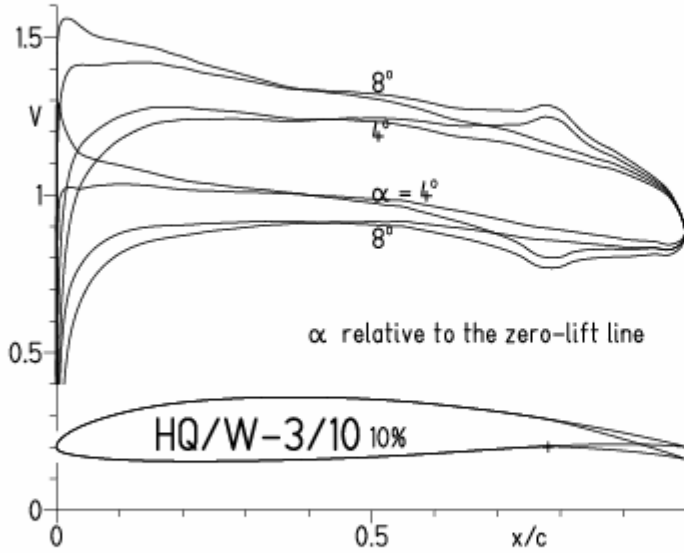
- $Re = 0.2 \times 10^6 e^N, N=11$
- - -  $0.8 \times 10^6 e^N, N=11$
- · -  $22\% \text{ Flap } 5^\circ, Re = 0.2 \times 10^6 e^N, N=11$
- · -  $22\% \text{ Flap } 5^\circ, Re = 0.8 \times 10^6 e^N, N=11$

- T. boundary layer transition
- S. boundary layer separation
- U. upper surface
- L. lower surface



HQ/W-3/10, N=9, mit 5° Wölbklappenausschlag

EPPLER 2005 V. 8.5.07 RUN 16.12.10 17:52

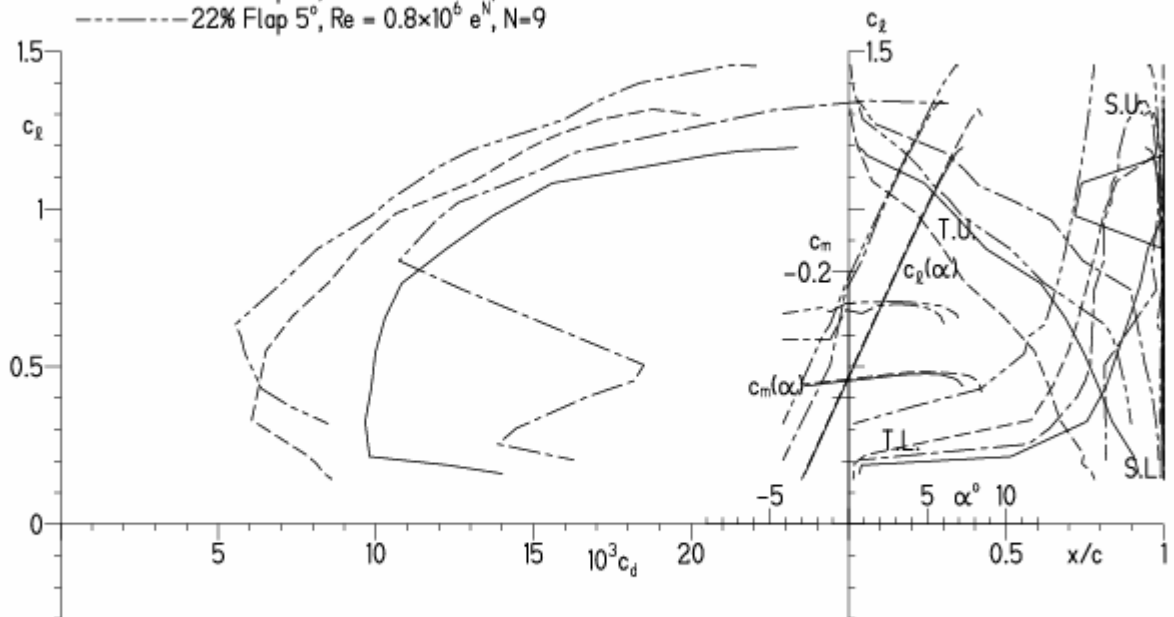


EPPLER 200

HQ/W-3/10 10%

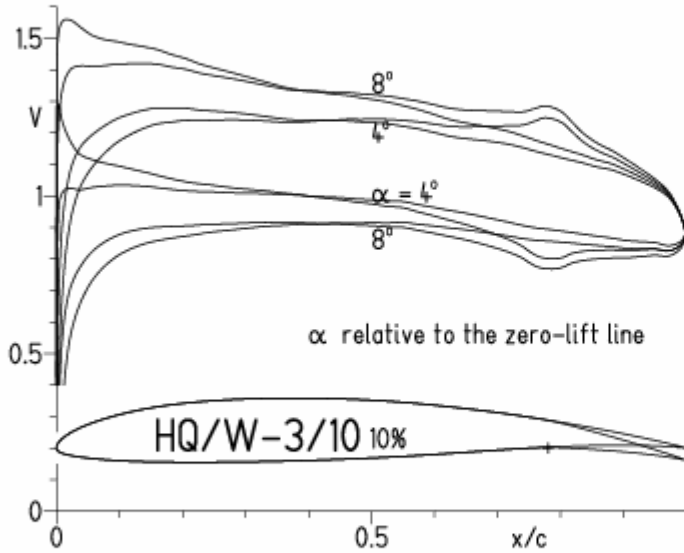
- $Re = 0.2 \times 10^6$  e<sup>N</sup>, N=9
- - -  $0.8 \times 10^6$  e<sup>N</sup>, N=9
- · -  $22\%$  Flap  $5^\circ$ ,  $Re = 0.2 \times 10^6$  e<sup>N</sup>, N=9
- · -  $22\%$  Flap  $5^\circ$ ,  $Re = 0.8 \times 10^6$  e<sup>N</sup>, N=9

- T. boundary layer transition
- S. boundary layer separation
- U. upper surface
- L. lower surface



HQ/W-3/10, N=9, mit 5° Wölbklappenausschlag, Turbulatoreffekt  
 (optimale Turbulatorposition bei 50% - 60% der Profiltiefe)

EPPLER 2005 V. 8.5.07 RUN 16.12.10 17:57

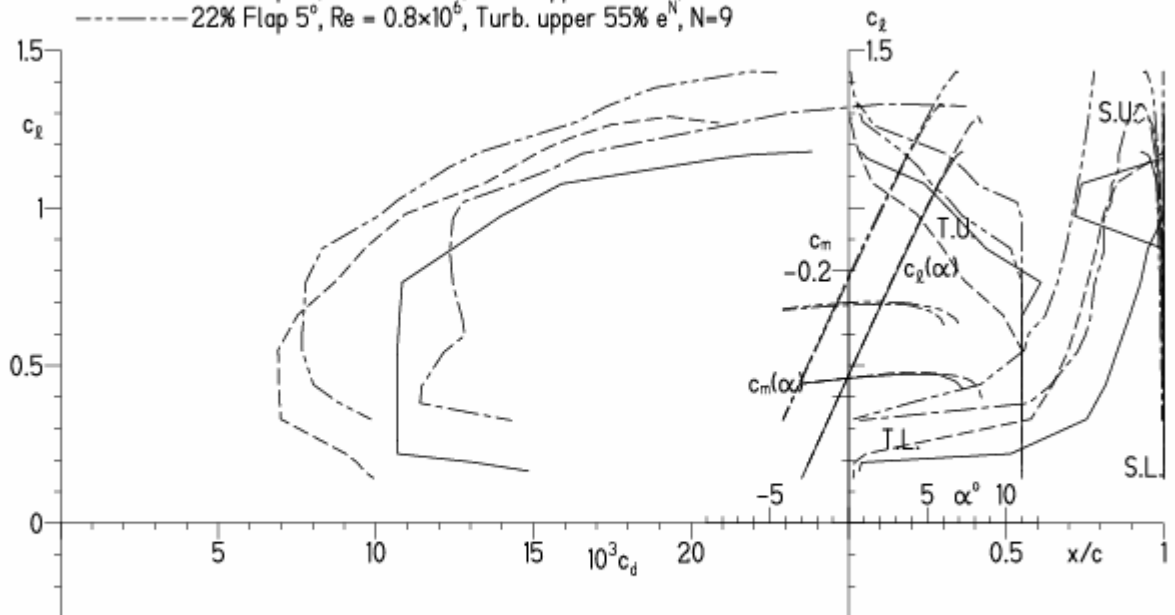


EPPLER 2005 V. 8.5.07 RUN 16.12.10 17:57

HQ/W-3/10 10%

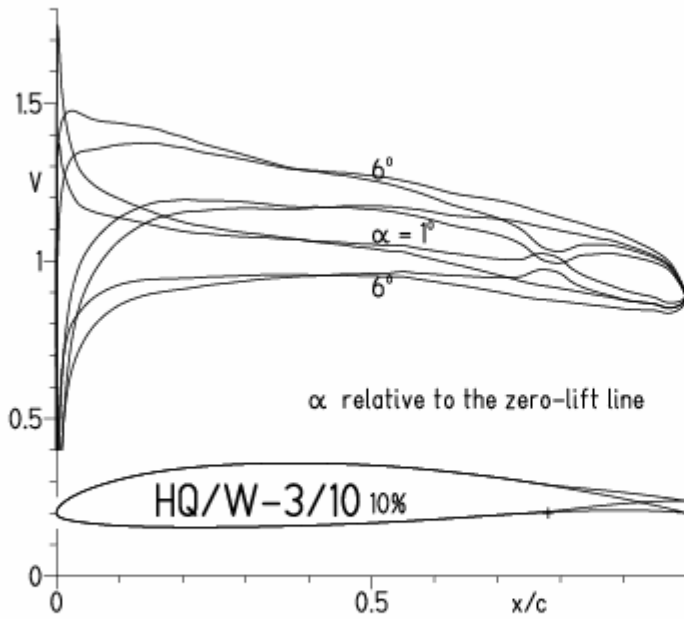
- Re =  $0.2 \times 10^6$ , Turb. upper 55%  $e^N$ , N=9
- - -  $0.8 \times 10^6$ , Turb. upper 55%  $e^N$ , N=9
- · - · 22% Flap 5°, Re =  $0.2 \times 10^6$ , Turb. upper 55%  $e^N$ , N=9
- · - · 22% Flap 5°, Re =  $0.8 \times 10^6$ , Turb. upper 55%  $e^N$ , N=9

- T. boundary layer transition
- S. boundary layer separation
- U. upper surface
- L. lower surface



HQ/W-3/10, N=11, mit -5° Wölbklappenausschlag (Schnellflug)

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EPPLER 2005 V. 8.5.07 R

