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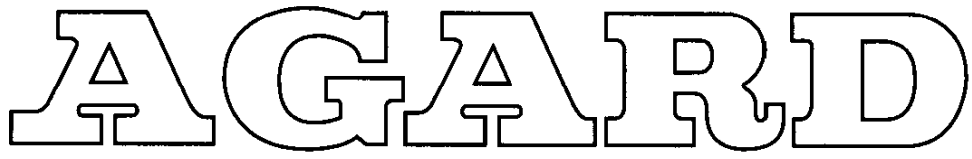

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AGARDograph 336

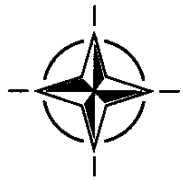
Wind Tunnel Wall Correction

(la Correction des effets de paroi en soufflerie)

by

B.F.R. Ewald (Editor)
Darmstadt University of Technology
Federal Republic of Germany

This AGARDograph has been produced at the request of the Former Fluid Dynamics Panel of AGARD.



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Blunt bodies

14. Abstract

This AGARDograph has been compiled by an international team of wind tunnel wall correction experts. The state of the art in wall corrections is presented with special emphasis given to the description of modern methods based on Computational Fluid Dynamics (CFD). Topics covered include:

- Open Test Sections
- Closed Test Sections
- Ventilated Test Sections
- Boundary Measurement Methods
- Transonic Wall Interference
- Bluff Body Corrections
- Adaptive Walls
- Panel Methods
- CFD Methods

Wind Tunnel Wall Corrections

(AGARD AG-336)

Executive Summary

This report was compiled by an international team of wind tunnel wall correction experts. It presents the present state of the art in wind tunnel wall corrections with a special emphasis given to the description of modern wall correction methods based on Computational Fluid Dynamics.

This AGARDograph was planned by the AGARD Fluid Dynamics Panel to be a modern sequel of the successful AGARDograph 109 "Subsonic Wind Tunnel Wall Corrections", which was published in 1966. AGARDograph 109 is still valid and continues to be used to provide wall corrections in many wind tunnels. Nevertheless, in the thirty two years since the publication of AGARDograph 109, much work has been done on the subject, and the influence of the new tool of numerical fluid dynamics was so strong, that a sequel to AGARDograph 109 was considered to be necessary.

As the reader will observe, the matter of wind tunnel wall corrections is not completely resolved and further developments are confidently expected. The wind tunnel will continue to play an important role as one of the two main tools of airplane aerodynamic development. In the future, new requirements for wind tunnel testing, new ideas about wind tunnel wall design, new understanding of wind tunnel wall influence and advanced numerical fluid dynamics codes run on more powerful computers will initiate new developments in the field of wind tunnel wall corrections.

La correction des effets de paroi en soufflerie

(AGARD AG-336)

Synthèse

Ce rapport a été rédigé par un groupe de spécialistes internationaux en correction des effets de paroi. Il présente l'état actuel des connaissances dans le domaine de la correction des effets de paroi de soufflerie, et accorde une importance particulière à la description des méthodes modernes de correction des effets de paroi basées sur l'aérodynamique numérique.

Cette AGARDographie a été conçue par le Panel AGARD de la dynamique des fluides comme la suite actualisée de l'AGARDographie 109 sur "La correction des effets de paroi en soufflerie subsonique" qui a reçu un accueil très favorable lors de sa publication en 1966. L'AGARDographie 109 reste valable et continue d'être utilisée pour le calcul de la correction des effets de paroi par bon nombre d'aérodynamiciens. Néanmois, beaucoup d'efforts ont été consacrés à ce sujet depuis la parution de l'AGARDographie 109 il y a trente deux ans, et l'influence du nouvel outil de la dynamique des fluides numérique a été si marquée qu'il était considéré nécessaire de fournir une suite à cette publication.

Il est évident que la question de la correction des effets de paroi n'est pas totalement résolue encore et il y a tout lieu de croire que d'autres développements suivront. Les souffleries continueront de jouer un rôle important comme l'un des deux principaux outils du développement de l'aérodynamique aéronautique. A l'avenir, de nouveaux développements dans le domaine de la correction des effets de paroi verront le jour sous l'impulsion de nouvelles exigences en matière d'essais en soufflerie, de nouveaux concepts de fabrication des parois, d'une meilleure compréhension de l'influence des parois et de nouveaux codes avancées de dynamique des fluides numérique, exploités sur des ordinateurs plus puissants.