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Fans — System effects and system effect factors

Ventilateurs — Effet système et facteurs d'effet système



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Foreword

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This document was prepared by Technical Committee ISO/TC 117, *Fans*.

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Introduction

ISO 5801 provides the information for accurately measuring the performance of fans when tested under standardised laboratory conditions. The ducting where specified ensures a fully developed symmetrical velocity profile at the fan inlet. There may also be sufficient straight ducting at the fan outlet to ensure efficient conversion of the distorted velocity profile at the fan outlet to a measurable stable and homogeneous profile at the measuring station.

This document shows how fan performance is affected by both inlet and outlet connections to it. System designers must not only look at the ideal performance curve and calculated system pressure drop but also take into account the losses at the entry and exit points of the fan. These are described in the document.

The concept of the system effect factor (SEF) was introduced to the fan industry by AMCA in 1973. Since its inception it has become widely accepted worldwide. In more recent years it has been realized that the SEF depends not only on the fan type and the fitting geometry but also on the fan design and manufacturing. Some less efficient fans may sometimes be less sensitive to system effect induced by poor inlet flow conditions than more efficient fans of the same type.

Furthermore, the origin of the system effect induced by a fitting at the fan inlet is different from the one due to the same fitting located on the fan outlet. That is why two different definitions of SEF are proposed in this document according to whether the appurtenance is at the fan inlet or fan discharge.