PD ISO/TR 22165:2018

BSI Standards Publication

Pneumatic fluid power — Application notes for the improvement of the energy efficiency of pneumatic systems

bsi.

National foreword

This Published Document is the UK implementation of ISO/TR 22165:2018.

The UK participation in its preparation was entrusted to Technical Committee MCE/18/-/9, Systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Published by BSI Standards Limited 2018

ISBN 978 0 580 99798 3

ICS 23.100.01

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 November 2018.

Amendments/corrigenda issued since publication

Date	Text affected

PD ISO/TR 22165:2018

TECHNICAL REPORT

ISO/TR 22165

First edition
2018-11-08

Pneumatic fluid power — Application notes for the improvement of the energy efficiency of pneumatic systems

Reference number
ISO/TR 22165:2018(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 9, *Installations and systems*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The energy consumption of a stationary machine is not only defined by the type of machine (e.g. turning machine, injection moulding machine) but significantly by the requirements of the machine manufacturer and the mode of use of the machine. Only if the machine is optimally adapted to need (e.g. working cycle, precision, grade of automatisation), can the energy concept developed for it work.

It follows that the pneumatic part in a drive system of a machine and the energy portion needed for its operation depend on the tasks and requirements the pneumatics has to fulfil in the machine.

Typical applications for pneumatics in stationary machines are:

— Movements (linear, rotary);

— Clamping, pressing, moving, separating, positioning and orienting of workpieces;

— Packing, filling, dosing, locking, opening.

This page deliberately left blank

TECHNICAL REPORT **ISO/TR 22165:2018**

Pneumatic fluid power — Application notes for the improvement of the energy efficiency of pneumatic systems

1 Scope

This document gives advice on how to conceive pneumatic systems, which under consideration of functionality and economic efficiency, can be operated with increased energy efficiency. It does not focus on compressed air generation and distribution.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5598, *Fluid power systems and components — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5598 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 General

The more precise the specifications on forces, cycle times, precision, life time etc. are, the more economically (also from an energetic point of view) machines can be designed, and drive concepts using, e.g. pneumatics, hydraulics, electrics or combinations of these technologies, can be developed.

Thus, when setting up an energy concept, the respective tasks as well as the interaction of the drive components in particular should be considered. It is also necessary to take the requested mode of operation into account.

Examples of measures are listed below, through which a pneumatic system can be optimally adapted to the demand. In this context it should be considered that some of the listed measures exclude each other and that they should be selected according to their requested functionality.

When determining measures, the general rules and safety requirements for pneumatic systems according to ISO 4414 should be considered.

The more precisely the requirements, with regard to function and economic efficiency, are specified, the more efficiently the pneumatics can be designed.

NOTE It is not possible to give a general statement on the energy saving potential, as no reference value exists.