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Technical energy systems — Basic concepts

Systèmes d'énergie technique — Concepts fondamentaux



Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 13600 was prepared by Technical Committee ISO/TC 203, *Technical energy systems*.

Annex A forms an integral part of this International Standard.

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Introduction

The International Standards of the 13600 series are intended to be used as tools to define, describe, analyse and compare technical energy systems at micro and macro levels. The use of these tools provides an objective basis for discussion on energy options in the technical, economic, environmental and social context and thus helps consensus-building and decision-making.

Technical energy systems – Basic concepts

1 Scope

This International Standard gives the basic concepts needed to define and describe technical energy systems. It introduces the concept technosphere and its division into two sectors. The economic purpose of one of these is to supply the other with energy in the technical-economic sense, i.e. energyware, to be distinguished from energy in the physical sense. The items included in that concept are given in a closed list. The standard prescribes the input-output model and the consolidation principle applied to technical energy systems. The outputs from the model are the intended product or service, the releases from the technosphere to nature, the use of natural resources and the associated exploitative impacts.

2 Definitions

For the purposes of this International Standard, the following definitions apply.

2.1 ancillary input:

Additives, packaging materials, energywares and supplies needed to produce and deliver the output product or service.

2.2 by-product:

Output of a technical energy system that is neither the intended product of that system nor release.

2.3 commodity:

Product or service that is available on a market.

2.4 energy:

Quantity that obeys the laws of thermodynamics.

NOTE Energy, like all quantities in physics, is an abstract concept.

2.5 energy carrier:

Substance or phenomenon that can be used to produce mechanical work or heat or to operate chemical or physical processes.

2.6 energyware:

Tradable commodity used mainly to produce mechanical work or heat, or to operate chemical or physical processes, and listed in annex A.

NOTE Energywares form a proper subset of energy carriers. The set of energy carriers is open.

2.7 energyware consumption system:

Technical energy system consuming energyware and in many cases also other energy carriers and producing products and services.

2.8 energyware demand sector:

Portion of the technosphere whose purpose is to produce the desired services from energyware and natural resources.

2.9 energyware production system:

Technical energy system which transforms natural resources into energyware.