SLOVENSKI STANDARD
SIST EN IEC 63376:2024

01-april-2024

Sistem za energijsko upravljanje industrijskih objektov (FEMS) - Funkcije in informacijski tokovi (IEC 63376:2023)

Industrial facility energy management system (FEMS) - Functions and information flows (IEC 63376:2023)

Energiemanagementsystem für Industrieanlagen (FEMS) - Funktionen und Informationsflüsse (IEC 63376:2023)

Système de gestion d'énergie des installations industrielles (FEMS) - Fonctions et flux d'informations (IEC 63376:2023)

Ta slovenski standard je istoveten z: **EN IEC 63376:2023**

ICS:

25.040.01	Sistemi za avtomatizacijo v industriji na splošno	Industrial automation systems in general

SIST EN IEC 63376:2024 **en,fr,de**

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Septembre 2023

ICS 03.100.70

Version française

Système de gestion d'énergie des installations industrielles (FEMS) - Fonctions et flux d'informations (IEC 63376:2023)

Energiemanagementsystem für Industrieanlagen (FEMS) - Funktionen und Informationsflüsse (IEC 63376:2023)

Industrial facility energy management system (FEMS) - Functions and information flows (IEC 63376:2023)

La présente Norme Européenne a été adoptée par le CENELEC le 2023-09-20. Les membres du CENELEC sont tenus de se soumettre au Règlement Intérieur du CEN/CENELEC, qui définit les conditions dans lesquelles doit être attribué, sans modification, le statut de norme nationale à cette Norme Européenne.

Les listes mises à jour et les références bibliographiques relatives à ces normes nationales peuvent être obtenues auprès du CEN-CENELEC Management Centre ou auprès des membres du CENELEC.

La présente Norme Européenne existe en trois versions officielles (allemand, anglais, français). Une version dans une autre langue faite par traduction sous la responsabilité d'un membre du CENELEC dans sa langue nationale, et notifiée au CEN-CENELEC Management Centre, a le même statut que les versions officielles.

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung
European Committee for Electrotechnical Standardization

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Bruxelles

Avant-propos européen

Le texte du document 65/995/FDIS, future édition 1 de IEC 63376, préparé par le CE 65 de l'IEC, "Mesure, commande et automation dans les processus industriels", a été soumis au vote parallèle IEC-CENELEC et approuvé par le CENELEC en tant que EN IEC 63376:2023.

Les dates suivantes sont fixées:

• date limite à laquelle ce document doit être mis en application au niveau national par publication d'une norme nationale identique ou par entérinement	(dop)	2024-06-20
• date limite à laquelle les normes nationales conflictuelles doivent être annulées	(dow)	2026-09-20

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Notice d'entérinement

Le texte de la Norme internationale IEC 63376:2023 a été approuvé par le CENELEC comme Norme Européenne sans aucune modification.

Dans la version officielle, ajouter dans la Bibliographie la note suivante pour la norme indiquée:

IEC 62872-2:2022 NOTE Approuvée comme EN IEC 62872-2:2022 (non modifiée)

Annexe ZA
(normative)

Références normatives à d'autres publications internationales avec les publications européennes correspondantes

Les documents suivants cités dans le texte constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

NOTE 1 Dans le cas où une publication internationale est modifiée par des modifications communes, indiqué par (mod), l'EN/le HD correspondant(e) s'applique.

NOTE 2 Les informations les plus récentes concernant les dernières versions des Normes Européennes listées dans la présente annexe sont disponibles à l'adresse suivante: www.cenelec.eu.

Publication	Année	Titre	EN/HD	Année
IEC 62264	série	Intégration des systèmes entreprise-contrôle	EN 62264	série
IEC/TS 62872-1	2019	Industrial-process measurement, control and automation - Part 1: System interface between industrial facilities and the smart grid	-	-
IEC/TR 62837	-	Energy efficiency through automation systems	-	-
ISO 22400-1	2014	Systèmes d'automatisation et intégration - Indicateurs de la performance clé pour le management des opérations de fabrication - Partie 1: Aperçu, concepts et terminologie	-	-
ISO 22400-2/AMD1	2014/2017	Systèmes d'automatisation et intégration - Indicateurs de la performance clé pour le management des opérations de fabrication - Partie 2: Définitions et descriptions - Amendement 1 : Indicateurs de la performance clé pour le management de l'énergie	-	-

IEC 63376

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INTERNATIONAL STANDARD

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colour inside

Industrial facility energy management system (FEMS) – Functions and information flows

Système de gestion d'énergie des installations industrielles (FEMS) – Fonctions et flux d'informations

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INDUSTRIAL FACILITY ENERGY MANAGEMENT SYSTEM (FEMS) – FUNCTIONS AND INFORMATION FLOWS

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental, and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 63376 has been prepared by IEC technical committee TC 65: Industrial-process measurement, control and automation.

The text of this International Standard is based on the following documents:

Draft	Report on voting
65/995/FDIS	65/1014/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

The world's energy use has been increasing along with economic growth. Energy use by Organization for Economic Co-operation and Development (OECD) countries is no longer increasing. According to World Energy Outlook 2020 [3], energy demand in OECD countries has been on a declining trend since 2007 with continued increase of their gross domestic product. On the other hand, energy use in developing countries has been increasing in both growth rate and value. Energy use by the industry sector is more than 50 % of the total consumption and it is forecast to increase by about 10% between 2018 and 2030. Although the rate of increasing energy demand is lower than the rate in the report published in 2012, this increase causes serious concerns for environmental impact and presents opportunities for energy management. To control global warming, the energy from renewable resources will be increasing globally. It is expected that the share of renewable energy to total demand will increase from about 30 % in 2019 to about 40 % in 2030. Outputs of renewable energy resources such as solar photovoltaics and wind etc. require power regulation to manage integration with the overall grid. Industrial facilities are major energy consumers and, also major energy generators. Therefore, the industrial sector is expected to play a significant role to satisfy the power regulations for the smart grid using renewable energy for decarbonization. Consequently, it is quite urgent for the industrial sector to deploy energy management systems to improve the energy efficiency to support the decarbonization of society.

Energy management in the manufacturing industries is linked to production and depending on the industry it can have a very wide range of requirements. To date, energy management systems have been custom developed for/by each company and then enhanced based on practical experiences thus further customizing them. Therefore, there are many different EMS for each organization. As coordination between related organizations becomes necessary for the optimal operation of each facility, the functions of an industrial Facility Energy Management System (FEMS) are required to be standardized to realize the benefits of making better use of the available energy within and across enterprises and organizations.

Production systems have a hierarchical layered structure such as Enterprise Resource Planning (ERP), Manufacturing Operations Management (MOM) / Manufacturing Execution Systems (MES) and Control. FEMS may have been installed parallel to each layer of the production system to communicate with them. As the production system is integrated for overall optimization, expanding the boundary of FEMS for the horizontal and/or vertical integration of FEMS is also required to have an input to that integrated production system structure.

For overall optimization, the production system executes under the multiple constraints such as safety, cost, quality of products, production schedule, market requirement, energy, and others particular to the industry and application. These multiple constraints are prioritized according to the business situation and used as the objective functions for optimization. Due to the complexity and continuous variability of practical operation conditions, the objective functions for optimization, in most cases, are set to the production system manually by an experienced engineer or operator who has deep knowledge of the operation. FEMS have been supporting those people by providing necessary information for their decision-making processes during the operation.

As a FEMS needs to collect energy related information from many kinds of production systems, MOM/MES and ERP, the volume of information has been increasing extensively. It is necessary to clarify the necessary information and functions for energy management. It is also necessary to automate the execution processes of functions of FEMS including the decision-making processes for optimization as possible.

Automation technologies including modelling, simulation, Artificial Intelligence (AI), and others enable automating the process for optimization thus reducing manual operation / intervention. FEMS provide necessary functions and information for the above-mentioned optimization.