



EMAC

Map of Standards

Short descriptions



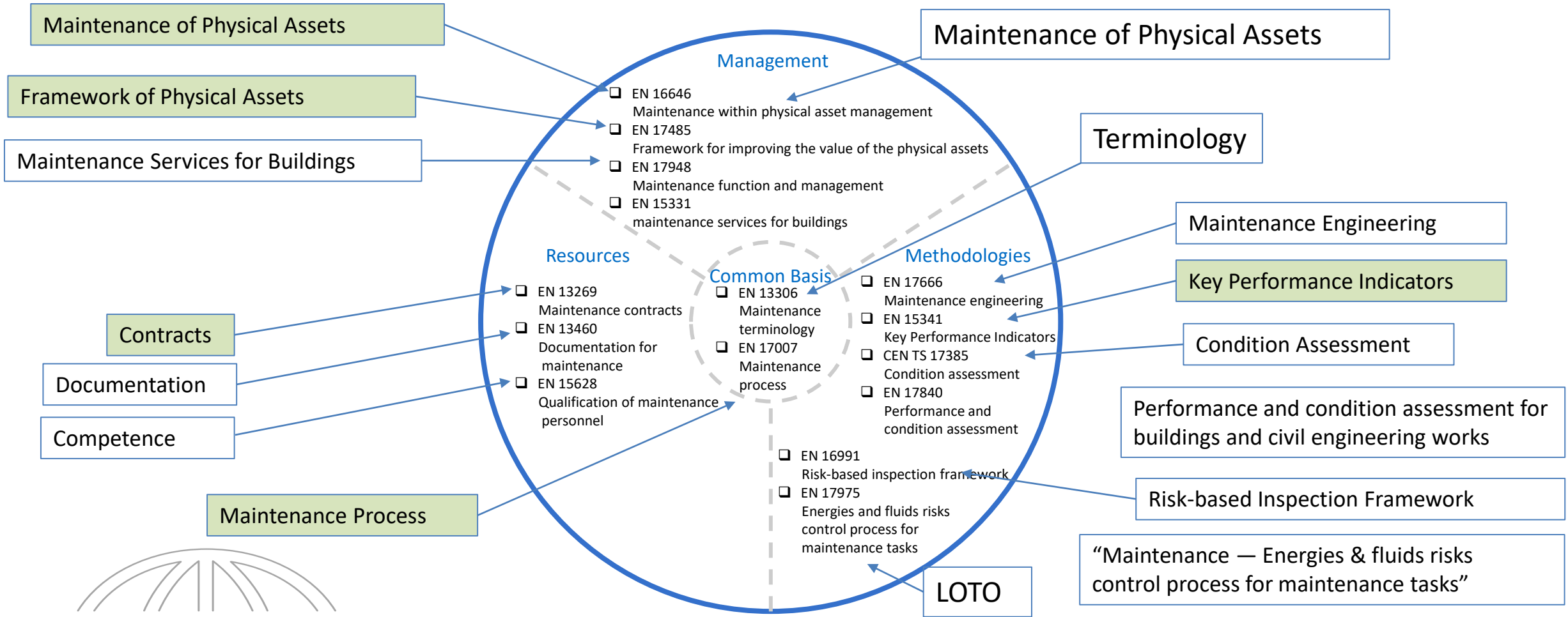


EMAC

The CEN TC319 Map of Standards

Short descriptions

The Map of TC319 Standards



Distribution of responsibility for approval and updating

Standard	Member	App. Date
Terminology	Juraj	20231020
Maintenance Process	Tom	20220419
Maintenance within physical asset management	Reinhard	2021108
Framework for improving the value of the physical assets	Reinhard	2021108
Maintenance Services for Buildings	Reinhard	20240503
Maintenance Engineering	Reinhard	20240503
Maintenance Key Performance Indicators	Andrej	20220603
Condition Assessment	Reinhard	20240503
Risk-based Inspection Framework	Reinhard	20240503
LOTO	Reinhard	20240503
Guideline on preparation of maintenance contracts	Andrej	20220603
Qualification of maintenance personnel	István	20231020
Maintenance Documents	Christer	20231020
Maintenance function and management	Reinhard	
Petroleum, petrochemical and natural gas industries — Collection and exchange of reliability and maintenance data for equipment	Tom	3.5.2024
Framework for assessment for buildings and civil engineering works	Reinhard	

Structure of summary

Purpose - Intention

What wanted the authors of the standard to achieve

Field of Application

Where the standard can be applied

Value

Which value is generated to the business / organization by application of the standard.

Recommendations

Subjective view of EMAC

What has to be considered in the application of the standard in order to get the best value out of it. Includes hints for the „How to“.

EN 13306

Maintenance Terminology

Purpose - Intention

The purpose of EN 13306 is to provide a comprehensive terminology containing the most basic terms with associated definitions and interrelationships.

Field of Application

The maintenance function's ability to be able to fulfil its assignment presupposes the ability to quality-assuredly communicate the division of responsibilities, strategies, goals and results internally and externally with all stakeholders and other functions. To achieve this, a standardized way of naming and defining necessary, basic terms and structures is required. A standardized, agreed way of communicating Maintenance nationally and internationally is facilitated as most countries have translated EN 13306 into their own language based on the three standardized languages, English, German and French.

Value

EN 13306 provides the conditions for correctly understanding and using the other, additional standards for maintenance produced by CEN TC 319 * Provides basic structures and terms for a maintenance system with the intention of being able to create and provide a database for the maintenance function with the intention of monitoring, controlling and evaluating the business.

Recommendation

EMAC finds EN 13306 fundamental to a modern and efficient Maintenance function in its role in the management of physical assets and therefore recommends that this standard be used actively in European business.

EN 17007

The Maintenance Process

Purpose - Intention

The standard describes the maintenance process from the idea phase, via the operational phase to disposal. The emphasis in the standard is on the operational phase with a clear connection to other processes within the company. It is divided into three overarching processes: the management process; Execution processes and Support processes

Field of Application

The standard has a generic approach and can therefore be used for all types of maintenance functions. It provides very good support for building up and/or developing a maintenance function and also clarifies which process steps may be missing at the moment.

Value

By actively applying the standard, it is possible to identify and / or create clearer working methods and clarify roles and responsibilities for maintenance personnel. In addition, relevant contact areas with other processes within the company are stated, as well as clear input and output data between the various processes.

Recommendation

In summary, the standard provides a powerful tool for optimizing and streamlining maintenance operations in collaboration with other processes within the company. Therefore, EMAC recommends that this standard be used actively in European business.

EN 13460

Maintenance Documents

Purpose - Intention

This standard helps the user to normalize the quality, scope and schedule for delivery of the documentation in the acquisition phase and instructs how the documentation should be managed throughout the life cycle.

Field of Application

The standard is aimed at designers, manufacturers, suppliers as it provides information needed to perform the various tasks included in the maintenance function and relationships with other organizational areas. It is therefore very important for plant owners.

Value

V1-This standard relates to the maintenance process according to EN 17007 where the purpose of the documentation process is stated as that the documentation must be useful to be able to perform the work expected of the maintenance function. Together with EN 17007, the EN 13460 maintenance function therefore provides the opportunity to create, improve and maintain the necessary and quality-assured documentation to meet the requirements for accessibility, safety, environment and costs.

Recommendation

The content of the standard lists and defines the scope of the documents and information data that should be taken into account when procuring all units, equipment and systems with the intention of enabling organized maintenance. EMAC recommends that this standard should be used actively in European industry.

EN 15628

Qualification of maintenance personnel

Purpose - Intention

This European Standard specifies requirements such as competences, essential knowledge as well as basic and target qualifications. These requirements are recommended to obtain a specific qualification and to ensure highly qualified professional personnel at the different functions and/or positions in maintenance.

Field of Application

The Standard specifies the qualification of the personnel about the tasks to be performed in the context of the maintenance of plant, infrastructure and production systems. The standard guides to define the knowledge, skills and competences required for the qualification of maintenance personnel, covering Technician specialists, Supervisors, Engineers and Maintenance Managers as well.

Value

The standard can support the performance improvement of the internal resources and processes referring to the recruitment and training of the maintenance personnel, defined by the EN 17007 standard, concerning KPI's from EN15341 standard.

Recommendation

EMAC recommends the use of this standard when outlining the training system of the maintenance personnel for different roles and competences as well for the implementation of the verification criteria system for knowledge and skills of maintenance people working in European industry.

EN 15341

Maintenance Key Performance Indicators

Purpose - Intention

This standard lists Key Performance Indicators (KPIs) of the Maintenance Function and gives guidelines to define a set of suitable indicators, to appraise and to improve effectiveness, efficiency and sustainability in the maintenance of the existing physical assets. The indicators are grouped in eight areas covering the activities of the Maintenance function and the aim of each indicator is given by the level in respective sector.

Field of Application

The integrated framework of the standard makes it possible to support all the disciplines of Maintenance Function in the challenge to achieve the objectives assigned to the Maintenance of the Physical Assets. Choosing and Using the right indicators on a periodic basis, will indicate what is important from maintenance strategy point over time.

Value

Together with EN 17007, EN 15341 provides the maintenance function the opportunity to create, improve and maintain a necessary and quality-assured maintenance process to meet the requirements for availability, safety, environment and costs. By using the standardized, defined indicators, quality is ensured in the planning and reporting of the implementation of the maintenance strategy.

Recommendation

EN 15341 provides the possibility to develop a culture of continuous improvement and streamline maintenance operations by sector and process. EMAC recommends that this standard should be used actively in the European industry.

EN 16646

Maintenance within physical asset management

Purpose - Intention

The standard puts the maintenance function in relation to the management of physical assets according to ISO 55000 - Asset management system.

Field of Application

The target group is the business management and the users of the assets who strive to develop an organization's ability to manage physical assets. For maintenance management, the standard provides good support for the development of its own operations.

Value

It explains the importance of the maintenance function in the life cycle of assets. The standard describes roles and responsibilities, input and output for the maintenance function and other administrative functions. It also describes the different competencies required within the maintenance function to be able to support asset management based on its different life cycle phases.

Recommendation

The standard EN 16646 provides benefit for the entire management operation and in particular for the maintenance function. EMAC therefore recommends the standard as support for management. Knowledge of ISO 55000 – ISO 55002 at conceptual level facilitates the introduction of EN 16646. The standard also refers to EN 13306 Maintenance - terminology. The standard EN 17485 provides the details for the application of the standard EN 16646.

EN 17485

Maintenance within physical asset management

Framework for improving the value of the physical assets through their whole life cycle

Purpose - Intention

This Standard provides methods and procedures about maintenance within physical asset management for all the levels and functions of the organizations' management.

Field of Application

EN 17485 guides the reader in developing the asset management and maintenance strategy in alignment with overall business objectives. Moreover, the standard provides help in understanding the necessary actions in managing a portfolio of physical assets in their different life cycle phases in changing and uncertain business environment.

Value

Consequently, the standard is both: A guideline for asset and maintenance managers and a comprehensive explanation of recommended structures and methods in physical asset management and related maintenance management for all involved functions including corporate planning management, plant management, technical management, production management, financial management, asset management, maintenance management, and quality management.

Recommendation

This standard must be seen in its relationship with all other EN maintenance standards, especially EN 16646, which build the foundation of this implementation orientated standard. Moreover, it is helpful to know ISO 55000 – ISO 50002 in order to better understand this standard guiding the building of the bridge between asset management and maintenance.

CEN/TS 17385

Condition Assessment

Purpose - Intention

This standard provides a method to assess physical condition of an asset in a uniform way. Assessment will describe technical state of maintenance of an asset on a six-point scale and by repeating the assessment at regular intervals it will be possible to monitor the degradation of asset over time.

Field of Application

This technical specification can be used for every mechanical, electrical immobile asset to measure its condition based on severity, degradation level and extent.

Value

With the presented method in this standard an evaluation of physical condition of a single asset or portfolio of assets will be possible. This can help to establish a maintenance strategy based on the actual condition of assets, supports financial planning and encourage the support communication about the actual condition versus desired condition.

Recommendation

This methodology for only condition assessment of each element in an asset hierarchy. For a more complete assessment of an organisation other aspect such as reviewing general maintenance, work planning, cost management, material management, failure analysis and so on would be necessary to consider.

EN 17666

Maintenance Engineering

Purpose - Intention

This standard gives guidance on how maintenance engineering can contribute to the assurance of required dependability to achieve a balance between performance, risk and cost within maintenance throughout the entire life cycle of an asset.

Field of Application

This standard can be used to have understanding about maintenance engineering activities in different stages of asset lifecycle with its inputs, outputs, stakeholders, interfaces and constraints.

Value

This standard provides a methodological overview about maintenance engineering and its activities and requirements to give understanding about the role of maintenance engineering and its input, output and constraints in different stages of asset lifecycle.

Recommendation

As this standard is only a guideline, more detailed instructions and methodologies are needed to be studied to implement mentioned activities.

EN 13269

Maintenance – Guideline on preparation of maintenance contracts

Purpose - Intention

This standard provides assistance in the drafting and negotiation of maintenance contracts to improve their quality and minimize the chances of disputes. It offers a clear interface between the company and the maintenance contractor and puts an emphasis on the scope of maintenance services and on identifying options for their provision. It identifies types of maintenance contracts and makes recommendations for the allocation of rights and obligations between the parties, including risks.

Field of Application

The contract structure and content proposed by the standard can be used for establishing national or cross-border relationships with maintenance contractors for the whole range of maintenance services. It can be used for various maintenance activities, including planning, management and control. It can be applied to every type of item with the exception of computer software unless it is maintained as an integral part of technical equipment. The structure of the contract can be easily adapted to the specific needs of any contractual relationship.

Value

The demand for contracted maintenance increases as the technical and economic developments evolve. Solid contracting suggested by the standards supports the idea of generating value from the physical assets. By using standardized approach to contracting, the effectiveness of the outsourcing relationships can be improved, and the comparison of maintenance contracts is simplified. The standard can provide valuable assistance not only to the realization and management processes as explained in EN 17007, but also to many support processes therein.

Recommendation

The standard enables improvement of contracting practices and, consequently, value generation in maintenance as a constituent part of the physical asset management, hence EMAC recommends this standard to be used actively in the European industry.

EN 17975

Energies and fluids risks control process for maintenance tasks

Purpose - Intention

This standard provides uses and guidance on preventing risks related to energies and fluids during maintenance activities in operational plants. It also deals with grey zones occurring in practice in maintenance activities shared between personnel from operations and maintenance departments.

Field of Application

The guidelines of the standard can be used for the development of isolation procedures, which need to address specific needs of an organisation. Further, they support the inclusion of isolation steps into the work ordering process.

Value

Using the guidelines, safety of workers involved in maintenance activities can be improved significantly. This standard relates to the maintenance processes, more specifically to ACT and HSE, as defined by EN 17007.

Recommendation

This standard creates a guidance for use of isolation procedures which needs to be carried out by maintenance and operation personnel for their own safety and avoiding any damage to facilities. Therefore, personnel need to have complete understanding about this standard and risk assessment of maintenance activities shall be carried out and documented. Additionally, documented communication between all stakeholders will improve the safety of plant continuously.

EN 17948

Maintenance function and management

Purpose - Intention

EN 17948 is aimed to provide guidance to maintenance managers and asset managers in industries to achieve the success factors of organisations. The main goal is to ensure effective maintenance management, including defining maintenance activities, establishing organisational structures, promoting interaction with other functions of the organisation, and implementing systematic procedures for cooperation.

Field of Application

This standard can be applied in industrial sectors both manufacturing and services. It provides guidance to maintenance managers and asset managers responsible for the maintenance of items in these sectors to achieve the success factors of the organisations.

Value

EN 17948 adds value by optimising maintenance processes, enhancing communication, reducing costs, managing risks, aligning with business objectives, and create a culture of continuous improvement.

Recommendation

EN 17948 provides only a framework for maintenance management, therefore, to extract the full value from this guideline, organisations should use this standard to their specific context and objectives and create more detail methods for implementation of this standard.

EN 15331

Criteria for design, management and control of maintenance services for buildings

Purpose - Intention

This standard specifies the general criteria that can be used in the design, management and control of maintenance in buildings and their surrounding area according to the applicable legal requirements, objectives of the owners and users and the required quality of maintenance.

Field of Application

This standard aims to provide a maintenance management system for building owners and those carrying out building maintenance activities by introducing maintenance strategy, planning, information system, management and monitoring.

Value

It provides just a general overview about different types of maintenance strategies, way of planning, information system and monitoring for building maintenance.

Recommendation

This standard is only a guideline for an overview about maintenance for buildings and each mentioned aspect of maintenance in this standard shall be studied in more detail in other methodological corresponding standards such as EN 17840 for building assessment.

EN 17840

Performance and condition assessment for buildings and civil engineering works - Framework for assessment within physical asset management

Purpose - Intention

This standard is aimed to establish a methodological framework for the assessment of the performance and condition of buildings within the context of physical asset management. This framework is intended to provide guidance on evaluating the effectiveness and efficiency of assets to support decision-making processes related to their management and maintenance. The objective of the standard is to facilitate the consistent and systematic assessment of assets to ensure they meet the desired performance and condition requirements.

Field of Application

This standard is an umbrella standard for physical assets and refers to other standards for detailed methods. It is specifically designed for assessing physical assets in the utilization stage, from commissioning, operation to the end of life. The intended audience for this document is asset owners, asset managers, facility managers, property managers and consultants.

Value

As this standard outline the stepwise methodology for assessment and observation process, the application of it led to more efficient asset management practices, improved decision-making processes, and cost savings for businesses and organizations.

Recommendation

In use of this standard several considerations should be considered such as: Determining the appropriate level of assessment based on asset portfolio, aggregated assets, or individual assets, clear definition of assessment purpose and observation.

EN 16991

Risk-based inspection framework

Purpose - Intention

EN 16991 provide a framework for Risk-Based Inspection (RBI) within the energy, chemical, petrol and other industries. This standard aims to guide organisations in evaluating and managing risks associated with infrastructure, equipment, and facilities which will help organisations enhance safety, reliability, and efficiency while optimising resource allocation.

Field of Application

This document is intended for managers and engineers establishing the RBI policies in different industries as a common reference for developing inspection and maintenance programs. It can be used to for risk assessment, resource optimisation, decision-making processes and planning and it will enhance reliability as a continuous improvement tool.

Value

Use of RBI framework enables industries to boost operational efficiency, minimize risks, and ensure the integrity of their assets. Embracing this standard allows organisations to create a proactive maintenance culture and optimizing the returns on their investments.

Recommendation

Implementation of this standard requires competence and expertise which is vital for implementing this standard. This standard shows the guideline which needs to be customised based on industry and facility to suit the unique characteristics and requirements of an organisation and furthermore, it needs to be integrated with the asset-related maintenance strategies and the Computerised Maintenance Management System (CMMS).



EMAC

Relevant ISO/IEC Standards

Short descriptions

ISO 14224

Petroleum, petrochemical and natural gas industries

Collection and exchange of reliability and maintenance data for equipment

Purpose - Intention

Originally the standard ISO 14224 derives from the upstream oil and gas business. The standard was used in a data collection process for failures, failure frequencies and failure modes. The scope of the standard has expanded from being used only in the oil and gas business, to be a standard for: Data collection, asset breakdown structure and failure modes in almost all industries.

Field of Application

The standard offers the maintenance community guidelines for breakdown structure and boundaries for typical equipment from the oil and gas industry as well as for the chemical business. The logic and structure behind the breakdown structure can easily be adopted and tailor made to other businesses outside the oil and gas business. The breakdown structure covers e.g. generators, turbines, valves, electrical motors and sensors, just to give a few examples.

Value

Using the suggestions from ISO 14224 as a template can save time when defining assets and asset boundaries. Here the templates is a useful help when defining assets and equipment in an ERP system. The failure modes and functional failures is a useful tool for facilitators and reliability engineers managing RCM and FMECA analysis since they can benefit from some of the failure modes and functional failures.

The suggested tables for failure modes can also be useful for organisation looking for a structured method to report and analyse failures. Here the ISO 14224 is a starting point offering a structure which need to be adjusted for meet the company's requirements.

Recommendation

The standard can be used in risk analysis such as RCM and FMECA and preventive maintenance planning as well as a source of inspiration giving hand on examples for breakdown-structures. Realising the standard derives from the oil and gas businesses the logic and structure can be applied to all businesses and help the maintenance and reliability professionals to rely on general accepted practices.