BUSTA N.1

Il candidato:

1) illustri lo schema del quadro elettrico di MT presentato, indichi le manovre necessarie per poter accedere all'interno del box trasformatore n.1 e suggerisca eventuali miglioramenti da poter applicare al sistema.

2) Indichi quando è normativamente richiesto il comando di emergenza e ne illustri le tipologie di circuito.

3) in tema di manutenzione dei sistemi di rilevazione incendio, anche in riferimento alla norma UNI11224/2019, indichi la percentuale dei punti da verificare per ogni controllo periodico e in cosa consiste la verifica generale del sistema.

4) Con riferimento al programma Autocad descriva cosa sono i Layer, cosa ci permettono di fare e quando vengono applicati.

5) Traduca dall'inglese all'italiano i capoversi 1 e 2 dell'art. **4.2** **"Hazardous area classification objectives"** della Norma CEI EN IEC 60079-10-1.

6) L'autonomia organizzativa e gestionale dell'Università e i regolamenti previsti nello Statuto dell'Università di Pisa.

BUSTA N.2

Il candidato:

1) illustri lo schema del quadro elettrico di MT presentato, indichi le manovre necessarie per poter accedere all'interno del box trasformatore n.2 e riferisca in merito al PG ed SPG.

2) Con riferimento alla protezione contro i contatti indiretti in un sistema TT, indichi la tipologia dei dispositivi da utilizzare per la protezione delle linee di alimentazione delle pompe antincendio.

3) Descriva gli obblighi del datore di lavoro e le tempistiche previste nel Dpr 462/2001 in merito agli impianti di messa a terra e dispositivi di protezione contro le scariche atmosferiche.

4) Con riferimento al programma Autocad descriva cosa sono lo spazio carta, lo spazio modello e su quale spazio si stampa.

5) Traduca dall'inglese all'italiano i capoversi 3 e 4 dell'art. **4.2** **"Hazardous area classification objectives"** della Norma CEI EN IEC 60079-10-1.

6) Gli organi di dipartimento nell'ambito dello Statuto dell'Università di Pisa.

In the case of activities other than those of normal operation, e.g. commissioning or non-routine maintenance, the hazardous area classification may not be valid. It is expected that the activities other than those of normal operation would be dealt with by a safe system of work. The hazardous area classification should take into account any routine maintenance.

In a situation in which there may be an explosive gas atmosphere action should be taken to eliminate:

a) the likelihood of an explosive gas atmosphere occurring around the source of ignition, or

b) the source of ignition.

Where this is not possible, protective measures, process equipment, systems and procedures should be selected and prepared so the likelihood of the coincidence of a) and b) is so small as to be accepted as low as reasonably practicable. Such measures may be used individually, if they are recognized as being highly reliable or in combination to achieve the required level of safety.

NOTE 2 As Low As Reasonably Practicable (ALARP) is a recognised term in many jurisdictions and includes implementing controls as possible according to the current state of the art and in accordance with relevant codes and standards.

This document provides guidance on aspects that should be considered and the classification of hazardous areas requires the application of good engineering practice.

4.2 Hazardous area classification objectives

Hazardous area classification is a method of analysing and classifying the environment where explosive gas atmospheres may occur, so as to facilitate the proper selection, installation and operation of equipment to be used safely in that environment. The classification also takes into account the ignition characteristics of the gas or vapour such as ignition energy and ignition temperature. Hazardous area classification has two main objectives, the determination of the type of any zone, and the extent of the zone (see Clause 8 and Clause 9).

NOTE Selected characteristics might be designated for equipment e.g. ignition energy and temperature ratings (see ISO/IEC 80079-20-1).

In most practical situations where flammable substances are used, it is difficult to ensure that an explosive gas atmosphere will never occur. It may also be difficult to ensure that equipment will never give rise to a source of ignition. Therefore, in situations where an explosive gas atmosphere has a high likelihood of occurring, reliance is placed on using equipment which has a low likelihood of creating a source of ignition. Conversely, where the likelihood of an explosive gas atmosphere occurring is reduced, equipment constructed with less rigorous requirements may be used.

In particular, Zone 0 or Zone 1 areas should be minimized in number and extent by design or suitable operating procedures. In other words, plants and installations should be mainly Zone 2 or non-hazardous. Where release of a flammable substance is unavoidable, process equipment items should be limited to those which give secondary grade releases or, failing this (that is where primary or continuous grade releases are unavoidable), the releases should be of very limited quantity and rate. In carrying out plant design, these principles should receive prime consideration. Where necessary, the design, operation and location of process equipment should ensure that, even when it is operating abnormally, the amount of flammable substance released into the atmosphere is minimized, so as to reduce the extent of the hazardous area.

Once a plant has been classified and all necessary records prepared, it is important that no modification to equipment or operating procedures is made without reference to those responsible for the hazardous area classification. The hazardous area classification should be updated for any plant or operational changes. Reviews should be carried out during the lifetime of the plant.

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