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""1.6.4 Requirements for fresh-air hose apparatus"""""1.6.5 Requirements for compressed-air-line apparatus""; ""1.6.6 High-efficiency dust respirators""; ""1.7 Positive-pressure, powered dust respirators""; ""1.7.1 Design""; ""1.7.2 Power pack""; ""1.8 Respirators for protection against harmful dust and gas""; ""1.9 Dust respirators""; ""1.9.1 Design""; ""1.10 Gas respirators, canister type""; ""1.10.1 Design""; ""1.10.2 Canisters""; ""1.11 Gas respirators, cartridge type""; ""1.11.1 Design""; ""1.12 Positive-pressure, powered dust hoods and suits""; ""1.12.1 Design""; ""1.12.2 Hood and suit""
""1.12.3 Power pack"""""1.13 Underwater breathing apparatus""; ""1.13.1 Cylinders""; ""1.13.2 Compressed air for human respiration""; ""1.14 Ventilatory resuscitators""; ""1.14.1 Classification""; ""1.14.2 Physical requirements""; ""1.14.3 Gas-Powered resuscitators""; ""1.14.4 Gas supply""; ""1.15 Nominal protection factor""; ""2 Masks and respiratory equipment materials""; ""2.1 Introduction""; ""2.2 Masks and respiratory equipment (Breathing apparatus)""; ""2.2.1 Classification of respiratory equipment""; ""2.2.2 Classification of environment""
""2.2.3 Classification of respiratory protective devices (see Figure 2.2)"""""2.2.4 Breathing apparatus""; ""2.3 Selection of breathing apparatus""; ""2.4 Respirators for dusts and gases""; ""2.4.1 Filtering facepiece dust respirators""; ""2.4.2 High-efficiency dust respirators""; ""2.4.3 Positive-pressure dust respirators""; ""2.4.4 Filters""; ""2.4.5 Harness""; ""2.4.6 Connecting fittings""; ""2.4.7 Performance requirement""; ""2.4.8 Marking""; ""2.5 Positive-pressure, powered dust hood and suits""; ""2.5.1 Construction""; ""2.5.2 Hood and suits""; ""2.5.3 Power pack""
""2.5.4 Performance requirement""

Sommario/riassunto

Oil and gas companies are repeatedly cited by regulatory organizations for poor training and maintenance on providing personal protective equipment to their refinery workers. Managers of refinery and petrochemical plants are responsible for instructing their workers with the types of equipment available, how to properly wear the equipment, how to properly care and maintain the equipment, and, most importantly, it's their responsibility to enforce these regulations and safety requirements. While there are many reference materials on the subject, most are too broad to apply directly to the uniq

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dimensional Piezoelectric Continuum under Electrical and Mechanical Loading; 2.2 Finite Element Equations for Piezoelectric Problems; 2.2.1 Variational Principles
2.2.2 The Case of Linear Constitutive Relations 2.2.3 Finite Element Discretization of the Linear Piezoelectric Equations; 2.2.4 Finite Element Solution; 2.2.5 An Iterative Approach to the Solution; 2.2.6 The Case of Nonlinear Constitutive Relations; 2.3 Finite Element Simulation of Piezoelectric Analyses of Practical Interest; 2.4 Beam, Plate and Shell Models; References; 3 Actuation and Sensing Mechanisms; 3.1 The Induced Strain Actuation Mechanism; 3.2 Axial Actuation; 3.2.1 Static Actuation; 3.2.2 Dynamic Actuation; 3.3 Bending Actuation; 3.3.1 The Thermocouple Analogy
3.3.2 Pure Bending Induced by Patched Actuators 3.3.3 Pure Axial Extension Induced by Patched Actuators; 3.3.4 The Pin-force Model; 3.4 The Generalization of Pin-force and Euler-Bernoulli Beam Actuation; 3.4.1 Pin-force Model; 3.4.2 Euler-Bernoulli Model; 3.5 Static Response of a Beam Subjected to Bending Actuation; 3.6 Dynamic Response of a Beam Actuated in Bending; 3.7 Higher Order Models for Beam Bending Actuation; 3.7.1 Single Layer Higher Order Model; 3.7.2 Multilayer Higher Order Model; 3.7.3 Equilibrium Equations; 3.8 Sensing Mechanism; 3.9 Control Issues
3.9.1 The Use of Piezoelectric Materials for the Control of Structural Vibrations 3.9.2 Experimental Case Study; References; 4 Active Composites; 4.1 The Concept of Active Composites; 4.2 Piezoelectric Fibre Composites; 4.3 Interdigitated Electrodes for Piezoelectric Components; 4.4 Micromechanics of a Piezoelectric Fibre Composite; 4.4.1 Elastic Properties of a Fibre Composite; 4.4.2 Dielectric Properties of a Fibre Composite; 4.5 Finite Element Evaluation of the Piezoelectric Properties of the Active Composite; 4.6 Macromechanics of Active Composites
4.6.1 Constitutive Relations of a Piezocomposite Lamina

Sommario/riassunto

Synthesizing knowledge acquired as a result of significant research and development over recent years, Smart Structures clearly illustrates why these structures are of such intense current interest. Gaudenzi offers valuable insight into both how they behave and how and at what cost they could be designed and produced for real life applications in cutting edge fields such as vibration control, shape morphing, structural health monitoring and energy transduction. Smart Structures offers a basic and fundamental description of smart structures from the physical, mathematics,