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Nota di contenuto	Industrial Moisture and Humidity Measurement: A Practical Guide; Contents; Preface; 1 Water - Substance of Life; 1.1 Water as a Natural Resource; 1.2 Physical and Chemical Properties of Water; 1.2.1 The Water Molecule; 1.2.2 Physical Properties; 1.2.3 Chemical Properties; 1.3 Significance of Water for Energy Conversion; 1.4 General Terminology; Further Reading; 2 Thermodynamic Terms and Definitions; 2.1 Terms in Humidity Measurement; 2.1.1 Description of the Gas Water Vapor Pressure; 2.1.2 Gas Temperature Definitions; 2.1.3 The Psychrometric Equation 2.1.4 Definitions of Parameters Expressed in Amounts of Substance, Concentrations, and Ratios 2.1.5 Additional Terms and Definitions; 2.2 Terms in Moisture Measurement in Solid and Liquid Materials; 2.2.1 Types of Water Bonds in Solids and Liquids; 2.2.1.1 Water in Solids;

2.2.1.2 Water in Liquids; 2.2.1.3 Surface Pores, Gradation, and Capillaries; 2.2.2 Terms and Definitions of Moisture Measurement Parameters in Solids; 2.2.3 Gas Humidity and Moisture in Solids; 2.2.4 Terms and Definitions of Drying Process Parameters; 2.2.5 Additional Terms and Definitions  
2.3 Terms and Definitions in Measurement and Controlling Technology  
2.3.1 Description of Sensors in Monitoring and Control Technology; 2.3.2 Terms used in Control; 2.3.3 Sensor Parameters; 2.3.4 Measurement Uncertainty; References; Further Reading; 3 Water in Solid, Liquid, and Gaseous Materials; 3.1 Specialties of Solid and Liquid Materials; 3.2 Contact and Noncontact Measurement Methods; 3.3 Bonding Types of Water in Solid and Liquid Materials; 3.4 Analogy Models; References; Further Reading; 4 Moisture and Humidity Measurement Methods in Solid, Liquid, and Gaseous Substances  
4.1 Introduction  
4.2 Measurement of Electrical and Magnetic Properties; 4.2.1 Measurement Principle; 4.2.2 Low-Frequency Method; 4.2.2.1 Measurement Principle; 4.2.2.2 Technical Implementation; 4.2.3 High-Frequency Method; 4.2.3.1 Measurement Principle; 4.2.3.2 Technical Implementation; 4.2.4 Microwave Method; 4.2.4.1 Measurement Principle; 4.2.4.2 Technical Implementation; 4.2.5 Radar Method; 4.2.5.1 Measurement Principle; 4.2.5.2 Technical Implementation; 4.2.5.3 Specialties; 4.3 Measurement of Water Vapor Pressure in Gases; 4.3.1 Metal Oxide Sensors; 4.3.1.1 Physical Principle 4.3.1.2 Technical Implementation 4.3.1.3 Principal Application; 4.3.2 Quartz Microbalance; 4.3.2.1 Physical Principle; 4.3.2.2 Technical Implementation; 4.3.2.3 Principal Application; 4.3.3 Psychrometer; 4.3.3.1 Physical Principle; 4.3.3.2 Technical Implementation; 4.3.3.3 Mathematical Description of Psychrometers; 4.3.4 Capacitive Polymer Sensors; 4.3.4.1 Physical Principle; 4.3.4.2 Technical Implementation; 4.3.4.3 Specialties; 4.3.5 Dew Point Mirror; 4.3.5.1 Physical Principle; 4.3.5.2 Technical Implementation; 4.3.6 Zirconium Oxide Devices; 4.3.6.1 Technical Implementation  
4.3.7 Measurements Based on Geometric Changes of Natural and Artificial Materials

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Sommario/riassunto

Written by experts with over 20 years of experience in the field, this one-stop guide covers all aspects, including both the theory and a wealth of practical know-how. As such, it includes guidelines on the installation, realization of standards for absolute and relative humidity, verification and traceability measurements, equipment calibration methods and the latest research developments. As a result, the scientist or engineer has all the information required for accurate, reliable, economically viable and efficient moisture measurement. Backed by numerous case studies, this practical boo

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