

Non-Destructive Testing and Technical Diagnostics of Power Facilities

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In the book general information about the methods and means of non-destructive testing and technical diagnostics of power facilities is provided. One is to especially note the contemporary methods of environmental and anti-terrorist diagnostics and measurement. Recommendations about the choice and applications of methods and means of non-destructive testing and technical diagnostics for a number of industrial and transport facilities are provided.

Numerous methods of non-destructive testing are presented. They include ultrasonic, radiation, acoustic emission, magnetic, eddy current, liquid penetration, leak, visual measurement, vibration, electric, thermal, optical, radio wave and a number of other methods of non-destructive testing.

Another important problem described in the book is diagnostic monitoring of a number of industrial facilities. They include pipelines, vessels operating under high pressure, lifting cranes and other types of industrial equipment. Contemporary methods and devices for diagnostic monitoring are described in detail.

Results of scientific research performed by the authors in the creation and development of numerical – experimental method of vibrodiagnostic control of energy equipment are presented.

The book provides basic knowledge in contemporary methods and means of non-destructive control and technical diagnostics of power facilities as well as tendencies of their developments. It reveals the importance of monitoring and diagnostics for industrial, ecological and anti-terrorist safety.

In order to ensure safety of objects thousands of types of various devices for non-destructive testing and technical diagnostics have been developed and are produced. Currently it is important to ensure automatic operation of such devices using the methods of artificial intelligence, creation of multi-level systems with local diagnostic centers for monitoring of large spaces and structures. For electrical power stations, transport systems for gas, oil and other products, metal production and chemical industries, space flight technologies and other complicated objects means of complex diagnostics are required. They enable to obtain multi-parametric data for estimation of acceptable time periods of operation of industrial objects.

In the book the importance of international cooperation in the field of non-destructive control and technical diagnostics is emphasized. Thus the international organizations in this field play a very important role. First of all the role of the Russian Society for Non-Destructive Testing and Technical Diagnostics headed by the Academician of the Russian Academy of Sciences V. Klyuev is noted.

This book is based on the investigations performed by the well known scientists in the field of non-destructive testing and technical diagnostics.

The book is recommended for scientists, researchers and engineers, as well as the staff of inspection services and those who are involved in maintenance and repair of equipment of fuel and energy complex enterprises, machine building and hazardous production facilities, for employees of supervision and control departments.