

CONTENTS

INFORMATION SYSTEMS AND TECHNOLOGIES

Chapter 1

Ensuring cyber resilience transformation of personnel management processes in a multi-project environment (Dotsenko N. V., Chumachenko I. V., Nekrasov I. B.)	2
1. Analysis of existing methods for solving the problem of transforming human resource management processes and formulating the task	3
2. Main research material	5

Chapter 2

Software methods for environmental threat assessment based on real-time data analysis (Oleshchenko L. M.)	14
1. Software methods for environmental threat assessment	18
2. Real-time radiation monitoring integrated with data processing and analysis of solar activity and solar flares	24

MATERIALS SCIENCE

Chapter 3

The effect of modification with rare earth metals on the crystallization of iron-carbon alloys (Bosyi M. V., Kuzyk O. V.)	41
1. Modifying effect of REM on iron-carbon alloys	42
2. Study of the influence of REM on the crystallization of iron-carbon alloys	46

Chapter 4

Damage of concrete and reinforced concrete structures (Dorofeyev V. S., Pushkar N. V., Zinchenko H. V.)	56
1. Formation of the structure of building composites	57
2. The nature of the distribution of internal interface surfaces and technological cracks in concrete	60

Chapter 5

High-temperature technologies for creating multifunctional composite materials and coatings using glass and aluminosilicate microspheres (Kazymyrenko Yu. O.) 74

1. Analysis of technological issues and formulation of the research problem 74
2. Technological link of production and operational orientation of composite materials and coatings. 78
3. Physicochemical processes of structure formation of composite materials and coatings. 81

Chapter 6

Creation and testing of auxiliary technological equipment for solving current problems of laser welding of thin-walled products made of stainless steels (Yurchenko Yu. V.) 88

1. Analysis of the disadvantages of common methods for welding thin-walled products. 90
2. Analysis of the growth and spread of laser tech for welding thin-walled products. 91
3. Analysis of the main problems of laser welding of thin-walled products. 93
4. Development and testing of auxiliary technological equipment for laser welding 112

INDUSTRIAL ENGINEERING

Chapter 7

Substantiation and research of the design of the slatted coulter of a row-type seeder with reduced draft resistance (Artemenko D. Yu.) 134

1. Statement of the problem 135
2. Analysis of the design features of the openers of row-type seed drills. 136
3. Problem solving 147

HEAT POWER ENGINEERING

Chapter 8

Gas hydrate technology for natural gas transportation by sea transport (Bosyi M. V.) 164

1. Analysis of known technologies for transporting natural gas in the gas hydrate state 168

2. Technological cycle and technological scheme of using gas hydrate technology for the production and preparation for transportation of natural gas	172
--	-----

ELECTRONICS AND TELECOMMUNICATIONS

Chapter 9

Analysis of Time Delay Formation in FANET with Spatially Distributed Aerial Nodes (Saiko V. H., Komarov V. O., Medved Yu. H.)	183
1. FANET as a Class of Spatially Distributed Ad Hoc Networks	185
2. Decomposition of Time Delay in FANET	187
3. Impact of Spatial Distribution and Mobility of Aerial Nodes on Time Delays	189
4. Role of Medium Access Mechanisms and Time Synchronization in Delay Formation	191
5. Methodological Analysis of Antenna and Physical-Layer Methods for Delay Reduction in FANET	193

TRANSPORT

Chapter 10

Sustainable development in logistics as a key strategic orientation (Bilonoh O. Ye.)	211
1. The relationship between sustainable development and logistics.	212
2. The role of logistics in achieving sustainable development goals.	218
3. Approaches to tracking progress in achieving sustainable development goals	224

Chapter 11

Management of Partnership Relationships in the Supply Chain as a Tool for ESG Integration and Enhancing the Sustainability of a Logistics Service Provider (Halak I. I.)	240
1. Key Elements of Sustainable Management and the ESG Strategy of a Logistics Service Provider	243
2. Analysis of Existing Methods for Addressing the Problem and Formulation of the Objective for Optimal Development of the Approach	249
3. Research Methodology for Managing Partnership Relationships in the Context of ESG Integration	257

Chapter 12

**Reducing the life cycle cost of railway traction rolling stock
through the introduction of additive technologies
in locomotive repair production (Karashchuk V. O.) 271**

1. Use of additive technologies by global companies
for the railway industry. 272

2. Types and classification of methods and materials for 3-D printing . . . 281

3. Reducing the life cycle cost of railway traction rolling stock
through the introduction of 3-D printing technologies for spare parts. . . . 289