

Aleksandr Mikhalevich

INNOVATIONS OF INDUSTRY 4.0 AND SUSTAINABLE DEVELOPMENT

ECOLOGY AND INTELLIGENT
ADAPTIVE TECHNOLOGIES

2025

Arrow Science & Technology

DOI: 10.29013/II4SD.MikhalevichA.40.2025

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Innovations of Industry 4.0 and Sustainable Development. Ecology and Intelligent Adaptive Technologies /
A. Mikhalevich, – Urbana, : Arrow Science & Technology,
LLC – 2025. – 40 c.

ISBN 978-1-967596-18-8

In the context of rapid technological change and growing environmental challenges, the creation of intelligent and environmentally friendly systems is becoming a key element of sustainable development. The book reveals modern approaches to the implementation of innovative robotic technologies, electrochemical solutions and smart control systems for industrial premises and life support ecosystems. Particular attention is paid to water purification and recycling, clean air supply, smart production line management, and the development of technical specifications for electrochemical systems. Readers will find descriptions of systems based on adaptive algorithms and self-optimisation, with the possibility of integrating IoT technologies. This allows for the creation of an industry with high efficiency and rational resource consumption. Real-life examples of the application of developments, their scalability, and the synthesis of engineering, environmental, and digital technologies are presented.

The book is of practical value for engineers, researchers and specialists in the field of innovation and sustainable development. Implemented projects in water treatment, water regeneration and smart ecosystem management are already being used in production and life support systems and are recognized in Russia and abroad.

Subscribe to print 18/12/2025. Format 60×84/16.

Offset Paper. Arno Pro. Pec. liter. 14. Circulation of 300 copies.

Typeset in Arrow Science & Technology, LLC, USA.

Publishing by Arrow Science & Technology, LLC

805 Silver St., Urbana, IL 61801

ISBN 978-1-967596-18-8

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