AI IN

12 MINUTES FOR MANUFACTURING

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1/24
MOTIVATION - WHY AI?

Enhancing production efficiency
Predictive maintenance for machinery
Quality control optimization
Supply chain and inventory management
Customization and design innovation

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2/24
INDUSTRY

Production and Assembly Lines
Supply Chain Management
Quality Control and Assurance
Machinery and Equipment Maintenance
Research and Development

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3/24
STRATEGIC TRENDS

AI in predictive maintenance
Robotics and automation in production
Machine learning for quality control
AI-driven supply chain optimization
Data analytics for process improvement
IoT in manufacturing operations
Customization through AI and 3D printing
AI in energy management
Augmented reality for training and maintenance
AI for sustainable manufacturing practices

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WHY CHANGE?

Increased operational efficiency
Reduced downtime and maintenance costs
Improved product quality
Responsive supply chain management
Sustainable and eco-friendly practices

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LEADING THE CHANGE

Siemens (Digital industries and smart manufacturing)
General Electric (AI in industrial manufacturing)
Toyota (Automotive manufacturing and AI)
Samsung (Electronics manufacturing with AI)
Boeing (AI in aerospace manufacturing)

6/24
DIGITAL TRANSFORMATION

AI algorithms for real-time machine monitoring
Predictive analytics in equipment failure
Robotics in assembly and material handling
AI for defect detection and quality assurance
Data-driven production planning
AI in inventory and logistics management
Machine learning for design and prototyping
AI-powered energy efficiency solutions
Augmented reality for skill development
AI in waste reduction and recycling processes

7/24
AI DISRUPTION

AI-driven autonomous manufacturing processes
Enhanced precision and speed in production
AI in optimizing manufacturing workflows
Predictive analytics for market demand
Customized production based on AI insights
AI for real-time supply chain adjustments
Machine learning in material innovation
AI-assisted employee safety and ergonomics
Digital twins for process simulation
AI in tracking and reducing carbon footprint

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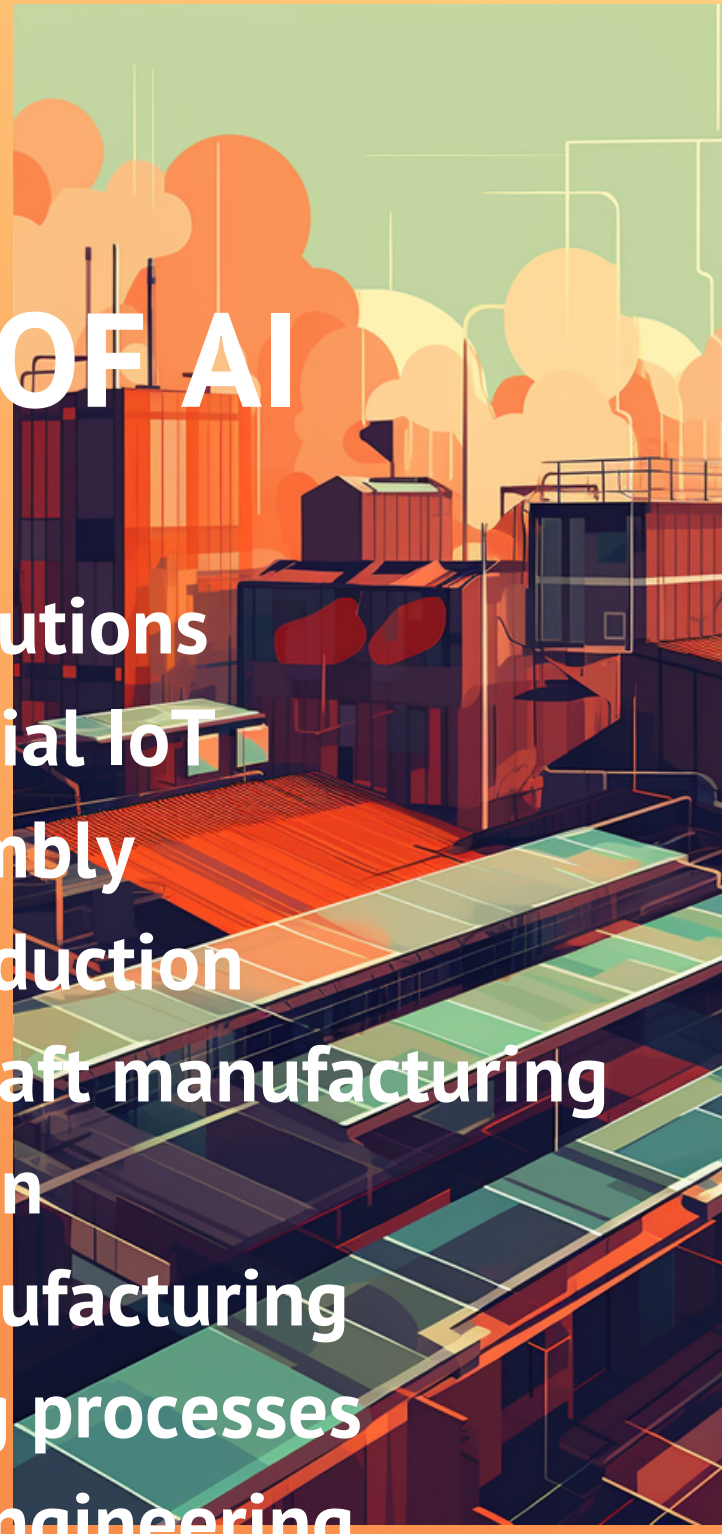
GREAT EXAMPLES OF AI



Siemens’ AI in smart factory solutions
GE’s Predix platform for industrial IoT
Toyota’s AI in automotive assembly
Samsung’s AI in electronics production
Boeing’s AI applications in aircraft manufacturing
KUKA Robotics’ AI in automation
Intel’s AI in semiconductor manufacturing
Tesla’s AI-driven manufacturing processes
Airbus’ use of AI in aerospace engineering
Bosch’s AIoT in manufacturing efficiency

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9/24 ECOSYSTEM REQUIREMENTS

Robust digital infrastructure for AI integration
Skilled workforce in AI, robotics, and manufacturing
Collaboration between tech companies and manufacturers
Strong focus on data security and privacy
Regulatory compliance and ethical standards

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AI ⏩ SUSTAINABILITY

AI for energy-efficient manufacturing

Reduced waste and material optimization

AI in sustainable production methods

Data-driven environmental impact assessment

Eco-friendly product design with AI

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NEW RISKS - ETHICAL, LEGAL, SOCIAL

AI and automation impacting employment
Data privacy and security challenges
Dependence on AI systems for critical operations
AI biases affecting production decisions
Cybersecurity threats in connected manufacturing

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AI MISUSE EXAMPLES

Misuse of AI in production quality control
Unauthorized access to manufacturing data
AI biases in supply chain management
Over-automation leading to skill erosion
Misrepresentation of AI capabilities in manufacturing

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THREE
AI DILEMMAS

Balancing AI automation with workforce implications?
Ensuring ethical use of AI in manufacturing?
AI's role in sustainable versus cost-driven manufacturing?

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14/24 ORGANIZATIONAL REQUIREMENTS

Strategic AI adoption in manufacturing processes
Continuous training in AI and related technologies
Collaborative approach to technology and innovation
Ethical and responsible AI use
Regular monitoring and adaptation of AI systems

15/24
STEP BY STEP APPLICATION

Identify AI applications in manufacturing
Deploy AI for production, maintenance, and quality control
Train staff in AI, robotics, and digital technologies
Integrate AI in supply chain and inventory management
Continuously assess AI effectiveness and adapt strategies

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16/24 BEST PRACTICES

Start with pilot AI projects

Focus on AI for efficiency and quality improvement

Maintain transparency in AI-driven processes

Foster a culture of continuous learning and innovation

Prioritize sustainable manufacturing practices

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AI TOOLS & MODELS

Predictive models for machine maintenance

AI algorithms for production optimization

Machine learning in quality control

Data analytics for supply chain management

Neural networks for design and prototyping

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USEFUL
DIGITAL TWINS

Digital twins of manufacturing processes
Virtual models of factory layouts
AI simulations for production optimization
Digital replicas of supply chains
Virtual reality for employee training and safety

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19/24
COOL NORWEGIAN CASES

Norsk Hydro (Aluminium and renewable energy)
Aker Solutions (Engineering and manufacturing services)
Kongsberg Gruppen (Technology and defense manufacturing)
Equinor (Energy and manufacturing technology)
Yara International (Chemicals and manufacturing)
Fieldmade (3D printing solutions for manufacturing)

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20/24
GLOBAL LEADERS

China (Massive manufacturing sector with AI integration)
Germany (Advanced in automotive and industrial manufacturing)
United States (Leader in technology and manufacturing innovation)
Japan (Pioneer in robotics and automation)
South Korea (Rapidly growing in smart manufacturing)

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21/24
FUTURE JOBS

AI specialists in manufacturing processes
Data analysts for production optimization
Robotics and automation engineers
Sustainable manufacturing consultants
AI-driven quality control analysts

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22/24
THE FUTURE OF AI

Fully autonomous smart factories
AI in personalized and bespoke manufacturing
Advanced AI in sustainable production practices
AI-driven innovation in materials science
Integration of AI in all manufacturing aspects

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23/24 RECOMMENDED READING

"The Fourth Industrial Revolution" by Klaus Schwab

"Lean Thinking: Banish Waste and Create Wealth in Your Corporation" by James P. Womack and Daniel T. Jones

"The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer" by Jeffrey K. Liker

"Digital Manufacturing: In Design and Architecture" by Asterios Agkathidis

"The Innovator’s Dilemma" by Clayton M. Christensen

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24/24 GOOD TED TALKS

"How AI can bring on a second Industrial Revolution" by Kevin Kelly

"The future of manufacturing" by Olivier Scalabre

"New ways of manufacturing" by Skylar Tibbits

"How to embrace digital transformation in the industrial sector" by Antony Bourne

"The making of a smart manufacturing facility" by Tanja Rueckert

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WHAT WOULD YOU ADD?

LET ME KNOW!

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