



Overview of Case Studies And Public Funding Opportunities





#### key trends in modernizing manufacturing

- The key enablers to modernization can be grouped in • three categories: digitization (team collaboration tools, virtual assistant, digital twin), data (predictive analytics, self-service BI, real-time data processing), and infrastructure (5G/Wifi 6, IoT, data as a service).
- Investments in smart factories projected to reach USD • 244.8 billion in 2024.
- By the end of 2021, 25% of manufacturers will apply • machine learning to data.
- Working with digitization and other modern tools at a • client in heavy industry, EY managed to reduce unplanned stops and increase uptime. This reduced material loss and operational expenditures and produced a Euro 1.048 million annualized benefit.
- Using Smart Daily Management, EY helped a major tire • maker increase its OEE results over a four week period by 9%.
- Implementing IWS methodology, EY helped a tobacco • company increase average module output and reduce the number of workshifts.



Building a bette

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# EY Smart Factory Video

1	2
Smart Deployment Console	Smart Daily Management
Supports sustainable phase progression by providing 24/7 digital access to the manufacturing excellence work system to guide self-directed teams on the journey to capability development and performance improvement.	Standard work processes are transformed from whiteboards and clipboards to a digital environment that significantly improves adoption and execution across the network.
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#### EY Smart Factory framework



Digital strategy and transformation management -





#### the Steelanol case study

- Using a process similar to traditional fermentation that replaces yeast with a biocatalyst that ferments gases containing carbon, the project is helping to reduce Arcelor Mittal's European carbon emissions by 50% by 2030, and the process creates a by-product-bioethanol- demanded by the market.
- The project involves multiple companies– Arcelor Mittal, E4 Tech, Lanzatech, Primetals, and Rockwell– to gather the resources, knowledge and technology necessary to create an open innovation model. The key is identifying the expertise needed. For instance, since the Steelanol project included bioreactors more often used in the pharmaceutical industry, bringing in a pharma process expert helped achieve larger gains.
- Effective implementation of IoT requires a four "floor" construction. The first floor are the sensors, and, in order to capture the right information at the right time, companies need to think about what sensors should be placed where. The second floor consists of processors and connects the sensors to the processes, such as supply chain simulation or asset performance. The third floor takes the output from the second floor processors, analyzes and visualizes it so that the processes can be optimized. The fourth floor integrates the output from the third floor and translates it into operational and financial assessments that inform business-related decisions.
- Achieving the required 50% drop in carbon emissions by 2030 will challenge all producers. Heavy industry is already late in reacting to this deadline. The first step is to get a precise reading on how much carbon a site emits and through what processes. Then managers can run cost benefit analysis on reducing, removing, or converting carbon to a byproduct in each process to determine what is the most effective way to meet the target and where to start.





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## the Whirlpool case study

- The Poprad factory implementation strategy towards Industry 4.0 unified business and world-class manufacturing (WCM) goals to target improvements in four areas: top quality products, added-value creation & competitive advantage, online data collection, development & effective allocation of high-qualified people.
- At the start of the process, Whirlpool assessed the digital maturity of its organisation and was dedicated to become a global Whirlpool pilot for Industry
  4.0. Digital maturity is measured from isolated technology usage through predictive capability with final stage of self-adaptability of technologies.
- Based on this analysis, Whirlpool selected ten areas for improvement: shop floor transparency, quality data visibility and analytics, automated material flow, material flow transparency, collaborative robots, predictive maintenance, test automation, workstation design, operators development, and lean administration.
- The key to the project was to start with collecting data and then analyzing that data to determine what advance to implement first strictly based on data prioritization and ROI.
- Shop floor transparency consisted of online collecting data directly from processes,
- Energy and environmentally friendly solutions are represented by introducing self learning autonomous heating solution as the most advanced solution among the whole EMEA whirlpool perimeter.
- Quality data visibility included defect data collection, Al vision system, and online work instructions for changeover management as part of poka yoke and human error proof tools utilisation.
- Predictive maintenance has improved using selflearning machines conducting sound analysis. This allows managers to exchange parts at the optimal point to maximize components lifetime and avoid breakdown.





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- Costs and time for new product process design have been achieved through advanced ergonomic analysis and engineering of workstation with utilization of augmented reality.
- A system of operator development has been developed internally in Poprad site to inform operators whether they have the qualification to operate that station, what safety equipment is needed at the workstation, what quality issues have been identified, and what stations the operator needs to work at to meet development goals.
- The more than 500 audits that are performed in the factory on a monthly basis, are done paperless. By reduction of nonvalue added activity and process optimisation are team members more willingly participate in the less time consuming process.
- As a result of these changes, Whirlpool has achieved a significant cost reduction since 2017 and a stable annual efficiency improvement year over year.





#### the Doosan Bobcat case study

- Doosan Bobcat wanted to 1) increase competitiveness and profitability, 2) improve health & safety, 3) offer more and better services to customers and increase service revenue, and 4) enable better sales and marketing through the digitization of information.
- The idea was not only to improve the performance in production, but also to integrate sale & marketing in the process so that new service offerings could be developed.
- Through the introduction of IoT, the company was able to improve production visibility, order management, associate management, quality management, and maintenance management.
- Competitiveness and profitability was improved by increasing production performance, reducing rework and repair costs, eliminating additional repair station movement, providing live tracking and genealogy of man, material & machine and the real time parameters. Part of the solution was to optimize the use of individual workers by merging production demand, worker capability, and worker development plans so that they would receive assignments each day on their mobile phone.
- Health & safety were increased by providing clear work instruction and providing incident management. The order work-interface instruction was introduced that recognized the experience of the worker with the machine and adjusted what steps the machine required each worker to confirm.
- Quality was increased through reducing quality cost, increasing failure capture, eliminating quality issues in filling station, analyzing quality aspects in production.
- Service to customer and increase in service revenue will be achieved by a proactive equipment view and the provision of service information.





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# Current Public Funding Opportunities





# EU FUNDING OVERVIEW 2020-2021 SELECTED OPEN CALLS 2021 RELATED TO MANUFACTURING

#### Ministry of Environment

# © Operational Programme Environment Elimination of environmental burden Call 155

Deadline: June 30, 2021, subdeadline April 30, 2021

Total allocation: 50 mil. CZK

**Focus**: Implementation of exploratory works and processing of risk analyses of contaminated or potentially contaminated sites.

**Contact**: dotazy@sfzp.cz

#### Ministry of Industry and Trade, API

# Operational Programme for Innovation and Competitiveness <u>OP PIK</u> (2014-2020) ENERGY SAVINGS (ÚSPORY ENERGIE)

Deadline: May 31, 2021

Subsidy available: 500 000 - 200 mil. CZK

**Focus:** Final energy consumption reduction. Energy efficiency and savings via Energy Performance Contracting (**EPC** – the amount of energy savings is guaranteed, the savings repay the investment in modernization. If the savings are lower, the difference is paid by the supplier).

**Contact:** regional offices of the Government agency API https://www.agentura-api.org/cs/kontakty/

# Ministry of Industry and Trade, API POTENTIAL (POTENCIÁL)

Deadline: call VIII to be launched May 27, 2021

Allocated funds: 1 000 000 000 CZK

**Focus**: Low carbon approach, climate change. Direct cooperation between a large company and an SME on a specific research and development project. Establishment of centers for industrial research, development and innovation.

**Call VII details.** <u>Examples</u> of supported projects in the past: Research and development centers, labs. Extended R&D capacities, industrial research.



**Contact:** regional offices of the Government agency API https://www.agentura-api.org/cs/kontakty/



## Ministry of Industry and Trade, API APPLICATION (APLIKACE)

Deadline: call IX to be launched May 28, 2021

Allocated funds: 2 500 000 000 CZK

**Focus:** Industrial research and experimental development with a result: prototype, industrial / utility model, open technology, certified methodology or software.

#### Call VIII details.

Contact: regional offices of the Government agency API https://www.agentura-api.org/cs/kontakty/

# Ministry of Industry and Trade, API

## **INNOVATION – INNOVATIVE PROJECT (INOVACE)**

Deadline: call IX to be launched May 28, 2021

Allocated funds: 1 000 000 000 CZK

**Focus:** Product, process, organizational or marketing innovation. Projects with a significant positive impact on the environment - low carbon, circular economy.

Call VIII deadline extended to April 30, 2021, total allocation for the program is 3 bn CZK.

Contact: regional offices of the Government agency API https://www.agentura-api.org/cs/kontakty/

#### Ministry of Industry and Trade, API

# ICT and SHARED SERVICES – DIGITAL BUSINESS (ICT A SDÍLENÉ SLUŽBY - DIGITÁLNÍ PODNIK)

Deadline: call to be launched May 28, 2021

#### Allocated funds: 300 000 000 CZK

**Focus:** Digital transformation. Logistics and warehouse technologies. Connectivity, cybersecurity. Purchase and introduction of technologies leading to a fundamental change in the production process, expansion of the capacity of the existing plant or expansion of the product range. Digital transformation of companies, production automation, data digitization, efficient interconnection and management of business processes.

Contact: regional offices of the Government agency API https://www.agentura-api.org/cs/kontakty/





#### Technology Agency of the Czech Republic

🔿 THÉTA

Deadline: May 12, 2021

**Total allocation**: 645 mil. CZK, max. subsidy per project generally not set, defined within project subcategories

Focus: Modernization of energy sector, including research in public interest and energy strategies.



 Examples of projects: Project to create a model of impact of regulation and simulation of long-term energy development.
 Research project on hydrogen technologies potential for energy mix transformation.
 Project to increase the efficiency of turbine stages.
 Battery storage integration project.
 Project for the development and testing of hybrid cables.
 Project focused on advanced plasma technology.
 Project focused on advanced flow electrochemical energy storage.

Contact: https://helpdesk.tacr.cz/

#### Ministry of Transport/ Technology Agency

## DOPRAVA/TRANSPORT 2020+

Deadline: June 16, 2021

Total allocation: 500 mil. CZK (can be increased by 350 mil. CZK)

Subsidy per project available: 50 mil. CZK (intensity of support max. 80%)

**Focus:** Applied research in transportation, commercial application. Research related to all modes of transport, ie land, water and air, including all types of transport and transport infrastructure.

Examples of projects: • Research of clean delivery of air to fuel hydrogen systems • System for managing the offer of services monitoring parking capacity

Contact: https://helpdesk.tacr.cz/

#### Technology Agency of the Czech Republic

# M-ERA.NET

AmCham Technology Council Deadline: June 15, 2021

Total allocation: €2 mil., max. subsidy per project €350 000 (intensity of support max. 85%)

Focus: Materials research and Innovation. Modeling for materials engineering, processing, properties and durability; innovative surfaces; high performance composites; functional materials; new strategies for advanced material-based technologies in health applications (*no support to regenerative medicine*); materials for additive manufacturing. Project proposals may be submitted by **international project consortia** composed of at least three independent entities from at least two countries participating in the call. The standard size of a consortium is three to six partners. Applied, experimental research.

Contact: https://helpdesk.tacr.cz/ Kateřina Volfová, katerina.volfova@tacr.cz



## Technology Agency of the Czech Republic

# 🔗 DELTA 2

Deadline: call to be announced on May 12, 2021, deadline July 14, 2021

Total allocation: 300 mil. CZK

Subsidy per project available: unlimited (intensity of support max. 74%)

**Focus**: Applied research, experimental development and innovation, international cooperation in applied research and experimental development of Czech enterprises and research organisations and their **foreign partners**.

Examples of projects: • Research and development of the industrial production technology for distance fabrics with large variable distances on air jet weaving machine.

Contact: https://helpdesk.tacr.cz/

## Czech-Moravian Investment and Guarantee Bank

# SMART Guarantee

Deadline: open from April 6, 2021

Loan cap: CZK 4 million

Duration: 6 years

**Focus:** 80% guarantee on loans for digital transformation of SMEs, including manufacturing and logistics. Covering operational and investment costs.

Contact: https://www.cmzrb.cz/podnikatele/zaruky/smart-zaruka/





Future Public Funding Opportunities





EU FUNDING OVERVIEW 2021+

(RELATED TO MANUFACTURING)

(new programming period 2021-2027, calls not yet announced)

#### Ministry of Industry and Trade

OP TAK - Operational Program Technologies and Application for Competitiveness 2021-2027

OP TAK is a direct successor of the Operational Program Enterprise and Innovation for Competitiveness (OP PIK 2014-2020). OP TAK subsidy program is being negotiated and **first calls could be announced** in the **second half of 2021, most calls to be** announced in the first half of 2022.

OP TAK will include small and medium-sized businesses as well as companies with **more than 249 employees** and some subsidy programs will be open to **Prague businesses**. (This program is not available for the businesses located within the city of Prague. The location, where the project can be realized, has to be outside of the city of Prague. But headquarters of this business can be located in Prague.) The Program document with details is not finalized yet.

#### Allocated funds: €3.1 billion

**Focus:** Support of innovation, research and development, digitization, technological equipment, energy -saving solutions, regeneration of brownfields and other areas. Skills for smart specialization, industrial transformation and entrepreneurship. Increasing the added value of products and services in the production chain. Introducing advanced technologies and Industry 4.0 principles in companies. Modernizing and streamlining the production, distribution and storage of energy. Deployment of low carbon technologies. Technological reduction of water consumption and adaptation measures in business premises, especially in manufacturing, construction and energy sectors, etc.

Contact: programy@agentura-api.org

## **Ministry of Regional Development**

IROP - Integrated Regional Operational Programme 2021-2027

The program document with details is not finalized yet.

Allocated funds: €4.7 billion

**Focus:** Development of urban, suburban and regional transport (incl. the rolling stock, transfer terminals, etc.). Risk prevention, resilience against threats, climate change, natural disasters, related skills, equipment, technology. Community-led projects.







# Ministry of Environment

# 🔊 OP ŽP - Operational Program Environment

Allocated funds: €2.3 billion

**Focus**: Circular economy and waste management and re-use (re-use centers, including food industry). Quality of air (including manufacturers with monitoring services, systems).

**Contact**: dotazy@sfzp.cz

# P Technology Agency of the Czech Republic (TA CR)

Allocated funds: around CZK 4 bn/year

Focus: Research and development projects in industry, energy, transport or the environment.

## **EU Generation Next**

complementary to Operational Programs 2021-2027 with possible application to manufacturing

In the area of industrial transformation, the Czech Republic sees the production of microchips and batteries, for example, as crucial. "An example of good practice and a way to strengthen strategic autonomy in the field of batteries can be our initiative to build such a manufacturing plant. We are discussing it with representatives of car manufacturers, " said Minister of Industry and Trade and Deputy PM Karel Havlíček.

V oblasti průmyslové transformace ČR vnímá jako zásadní budoucnost například výrobu mikročipů či baterií. "Příkladem dobré praxe a cestou, jak posílit strategickou autonomii v oblasti baterií, může být naše iniciativa na vybudování takové výrobní továrny. Jednáme o ní se zástupci automobilek, " řekl místopředseda vlády Karel Havlíček.



https://www.mpo.cz/cz/rozcestnik/pro-media/tiskove-zpravy/mistopredseda-vlady-karel-havlicek-naneformalni-rade-pro-konkurenceschopnost-podporil-posilovani-otevrene-strategicke-autonomie-eu--260279 /





#### Just Transition Fund

Allocated funds: CZK 45 bn. Administered by the Ministry of Environment.

**Focus:** Development and transformation of coal regions (Ústí nad Labem, Karlovy Vary and Moravia-Silesia) and greater diversification of the economy in these areas. Development, innovation, digitization, renewable energy sources or decontamination and regeneration of traditional industry.

#### Modernization Fund

Allocated funds: CZK 150 bn. Administered by the Ministry of Environment.

**Focus:** As Fund for Just Transformation, focus on landscape transformation. Sustainable technologies and the use of renewable resources. Complementary to OPPIK/OPTAK or other programs. Program document.

**Contact**: modernizacni.fond@sfzp.cz

Program 4 ENERG – similar to subprogram Energy savings in OP PIK, but only for the businesses which have a facility in the city of Prague.

Contact: karel.kovarik@sfzp.cz, ondrej.sejkora@sfzp.cz

Program 5 TRANSCom – similar to OPPIK and OPTAK. Program will support purchase of alternative fuel vehicles, but only for the businesses which have facility in the city of Prague.

## Innovation Fund

Allocated funds: €10 billion in 2020-2030. Administered by the Ministry of Environment.

**Focus**: Clean technologies contributing to addressing the climate change. Compatible with Modernization Fund, Cohesion Fund, InvestEU and national programs supporting research and development.

Contact: oldrich.muzik@sfzp.cz, jaroslav.blazek@sfzp.cz



#### Recovery fund (Recovery and Resilience Facility – Národní plán obnovy) Allocated funds: around 170 billion CZK. Administered by the Government. This program is currently being prepared. Some topics can be relevant for businesses.

**Focus**: • digital transformation of the business (allocation CZK 3 bn) • energy consumption transformation (allocation CZK 6 bn) and transition to renewable sources (allocation CZK 8 bn) • circular economy (allocation CZK 5 bn) • research & development • digital economy, new technologies (allocation CZK 5 bn) • clean mobility (CZK 9 bn) • high-speed internet, infrastructure (CZK 5 bn), etc

Contact: https://www.planobnovycr.cz/

#### > Horizon Europe

Allocated funds: €100 billion in 2021-2027

Focus: Excellent research and development, industrial competitiveness, innovation ecosystems.

