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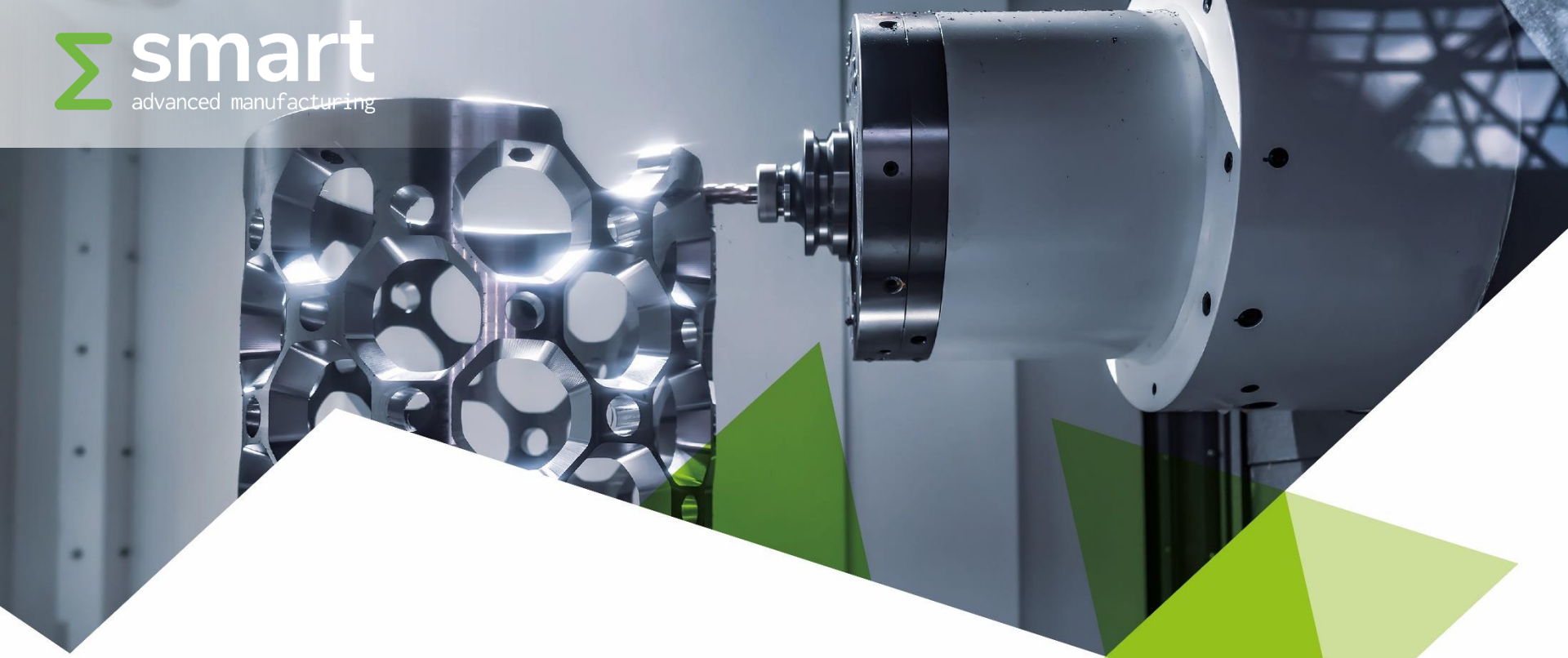

Carbonless moving

Lean energy sources powered by alternative fuels


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ORGANISATION PROFILE

Global warming, the main cause of which is greenhouse gas emissions, is the most serious crisis of our time, and it is happening even faster than we expected.

A huge amount of CO_2 emissions are produced by 2 billion piston engines, which perform most of the mechanical work in all modes of transport, industry, energy and agriculture and use extremely inefficient limited useful resources.

The electric drive is ideal for use in vehicles. But both during the operation of piston engines and during the generation of energy for electric vehicles, carbon dioxide is emitted. A significant part of emissions comes from thermal power plants using fossil fuels. In the global energy balance, this method of electricity production reaches 60%.

Electrification of transport using energy-intensive batteries requires significant costs for the creation of infrastructure and batteries themselves, additional generating capacities and energy transmission systems. At the same time, such transport has serious drawbacks – high cost, overweight, small power reserve, long charging time, susceptibility to natural anomalies.

The alternative solution proposed by our team for the electrification of transport using lighter batteries and additional resource-saving power sources will help eliminate the above disadvantages.

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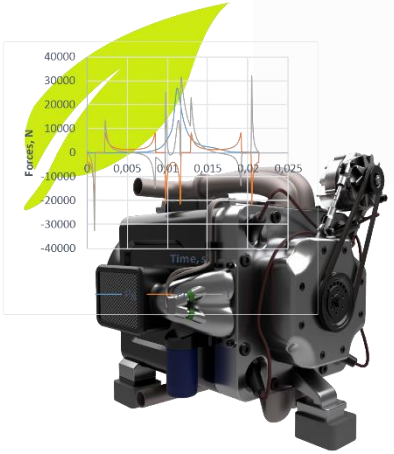

PROPOSAL INTRODUCTION (I)

Vision: The goal of our team is to save biofuels, provide cleaner air in cities, accelerate the electrification of transport and increase its mobility, reduce global consumption of useful resources and CO_2 emissions through the development and implementation of resource-saving powertrains. Our team has developed a comprehensive method for converting piston engines into eco-friendly, resource-saving power units, which includes three components:

- inexpensive engine upgrades based on patented technical solutions;
- use of renewable biofuels in engines;
- using machine learning of power units for their most economical operation.

Motivation: Updating piston engines based on patented technical solutions will allow them to meet environmental standards, maintain their position in the market and reduce the cost of electrification of transport, becoming efficient and environmentally friendly sources of mechanical energy in on-board generators of electric vehicles. Small-sized on-board generators will allow electric vehicles to be operated in regions with an underdeveloped network of charging stations, eliminate dependence on weather anomalies and "range anxiety". Additional power sources will charge the batteries of electric vehicles outside cities, as well as the batteries of ships at sea and aircraft in the air and will reduce their cost and weight by using lighter batteries.

Content: Eco-friendly subcompact engines of on-board generators will operate in the most economical modes when charging electric vehicle batteries using machine learning, which, according to the study, will allow to achieve a reduction in fuel consumption and CO_2 emissions by up to **70%** compared to working “in ragged modes” of traditional piston engines as the main power units.

PROPOSAL INTRODUCTION (II)

Expected outcome: It remains for our startup to take the final step – to manufacture and demonstrate a prototype of an on-board generator for an electric car with an updated engine from a well-known manufacturer that will run on biofuels and use machine learning.
Our team has conducted computational studies of patented technical solutions using advanced CAD and CAE tools, developed an engine layout and machine learning algorithms to control its operation modes on renewable fuel, which will allow us to use the results of the analysis of previous trips to choose the most economical route, taking into account fuel consumption and other factors. battery power, time saving, route traffic, weather forecast and other available data.

Impacts: At this stage of abandoning fossil fuels, resource-saving power units operating using machine learning on renewable fuels and saving a large amount of bioethanol, biodiesel, biogas or, in the future, hydrogen, will allow:

- reduce the burden on energy systems, the economy and the environment;
- to produce low-carbon electricity at hybrid power plants powered by solar energy, wind and biofuels, and to ensure uninterrupted power supply and high quality of life;
- electrify automobile, water transport and light aircraft in a short time and at no great cost, making them inexpensive, environmentally friendly and with a large power reserve;
- combine legitimate aspirations for mobility with reductions in biofuel consumption and CO_2 emissions;
- sustainably develop urban infrastructure and logistics, improve the convenience of living in cities and energy independence of the country.

Schedule: project start – 2024, completion – 2027. Duration - 48 months.

PARTNERS

Current The project team invites partners to jointly implement an environmental project within the framework of an international consortium.

Partner search: We invite:

- scientific and technical partners in the development, manufacture and testing of a prototype of a resource-saving on-board generator for an electric vehicle;
- IT partners in the development of software and hardware for machine learning for the on-board generator of an electric vehicle with the manufacture and testing of a control system.

We are ready to consider all possible mutually beneficial forms of cooperation with our partners.

The team of the startup project “Lean Energy Sources”

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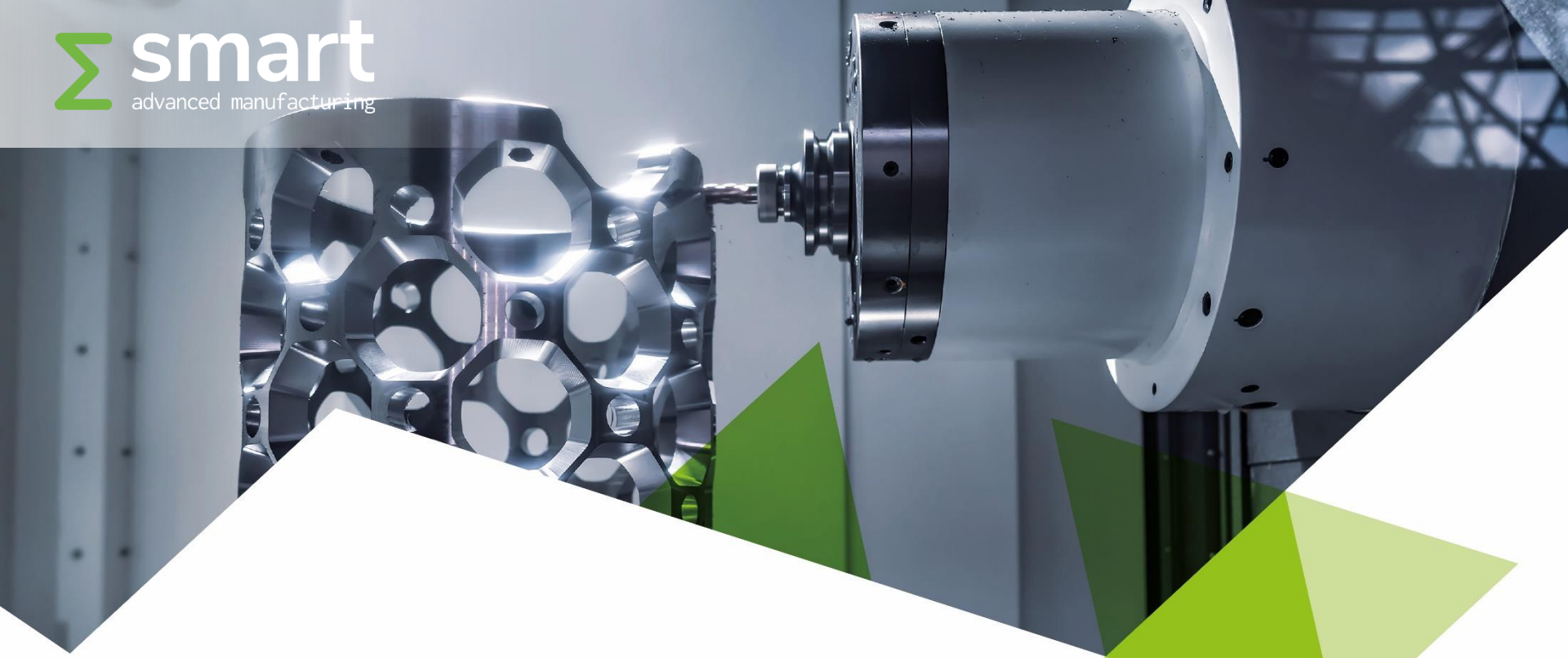

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