

ELAPHE PRESENTATION

Elaphe is a high-tech SME active in the **development of direct drive propulsion system for electric vehicles**, more at www.in-wheel.com.

Company:

- Formally established in 2006, research since '80s
- Complete in-wheel drivetrain solution disrupting the mobility market
- Board member of **EGVI** – European Green Vehicle Initiative and **Batteries Europe** platform
- Member of **EPoSS** (European Platform for Smart System Integration)
- World leader in direct-drive

Technology

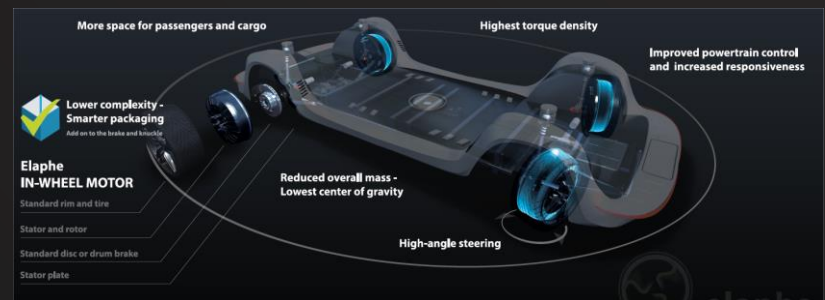
- Patented technology
- Market leading specific torque, light-weight & compact
- Complete propulsion system (motors, inverters, multiple motor control, advanced functionalities)
- From City, SUV, Delivery, Supercar to Monorail application

R&D Team

- Large & focused R&D centre (cca. 90 people, >10% PhD)
- Complete set of skills, knowledge and experience
- Analytical and CAE modelling, Mechanical design, Electronics, Validation, Vehicle testing, Industrialization

Our mission is being a top choice in-wheel motor technology company for the automotive industry – as a developer and as a manufacturer, offering best-in-class technology and know-how, based on safety, reliability, cost and performance. We plan to revolutionize passenger vehicles and leverage our quality and technology to spread our leading position into other mobility segments.

Simple and modular in-wheel based platform:



Gorazd Lampič, Founder & CEO



An ambitious entrepreneur with a technical background in physics and alternative energy sources. When Elaphe was founded in 2006, he became the CEO and assumed responsibility for directing the company's strategic goals. Gorazd has received **young manager of the year award** for 2016

Gorazd Gotovac, PhD, CTO



joined Elaphe in 2008 and heads the company's development road map. His market knowledge, physics background, and specialization in electromagnetics and heat transfer allows for informed decision-making based on a holistic approach to electric propulsion. Gorazd has received **Automotive Rising star award for Electrification** in 2018.

OUR REFERENCES: List of EU projects

Among other, we finished **two** FP7 projects and we are involved in **eleven** H2020 projects (including **SME Instrument phase II** project). Elaphe as SME **contributes in various ways**: it develops and provides vehicles with Elaphe in-wheel propulsion system, PCU and HMI for specific project needs, supports test model development and functional safety modelling for electric motors, develop requirements for vehicle batteries and provide test beds etc...

- **ASTRABAT** - All Solid-state Reliable BAttery for 2025 (2020-2023)
- **HiPERFORM** - High performant Wide Band Gap Power Electronics for Reliable, energy eEfficient drivetrains and Optimization through Multi-physics simulation (2018-2021)
- **STEVE** - Smart-Taylored L-category Electric Vehicle demonstration in hEterogeneous urban use-cases (2017-2020)
- **EVC1000** - Electric Vehicle Components for 1000 km daily trips (EVC1000) (2019-2021)
- **SYS2WHEEL** - Integrated components, systems and architectures for efficient adaption and conversion of commercial vehicle platforms to 3rd generation battery electric vehicles for future CO2-free city logistics (2019-2021)
- **ACHILES** - Advanced Architectures Chassis/Traction concept for Future Electric vehicles (2019-2022)
- **XILforEV** - Connected and Shared X-in-the-loop Environment for Electric Vehicles Development (2019-2021)
- **PRODRIVE** - Production-Ready Oriented Development of Radically Innovative Vehicle Electric Drive (2016-2018)
- **SILVERSTREAM** - Social innovation and light electric vehicle revolution on streets and ambient (2015-2018)
- **EU-LIVE** - Efficient Urban Light Vehicles (2015-2018)
- **Fortissimo 2** – Experiment: HPC CAESAR - HPC-Cloud-based simulation of coupled electromagnetic and structural-acoustical in in-wheel electric motors (2017-2018)
- **STABLE** - Stable high-capacity lithium-Air Batteries with Long cycle life for Electric cars (2012-2015)
- **COSIVU** - Compact Smart and reliable drive unit for fully electric vehicles (2012-2015)

EXPRESSION OF INTEREST:

Our company Elaphe is very much interested to participate in joint research projects. Elaphe is interested in following H2020 calls for proposals:

GV – Green Vehicles

- **LC-GV-07-2020** We propose the lightest and most efficient propulsion drive with integration of composite material for rotor housing and casted stator housing enabling the reduction of conventional powertrain by cca 20%. In addition to lower powertrain weight Elaphe solutions can benefit with space for cargo or passengers or energy source. It enables also to have a smaller vehicle segment and at the same time enabling the same amount of space as within a larger segment.
- **LC-GV-06-2020** We propose an electrification of light duty cargo vehicles (N1 category) with in-wheel electric motor. The vehicle will be designed with in-wheel motors enabling to harvest kinetic energy and use it to heat up or cool down the vehicle using regenerative braking via motors.

ICT - Information and Communication Technologies (SU-ICT-02-2020; ICT-53-2020)

Elaphe is interested to upgrade and pilot its connected car architecture to increase number of functionalities. We can serve also as use case for 5G connected CAM vehicle

ART - Automated Road Transport (DT-ART-05-2020; DT-ART-06-2020)

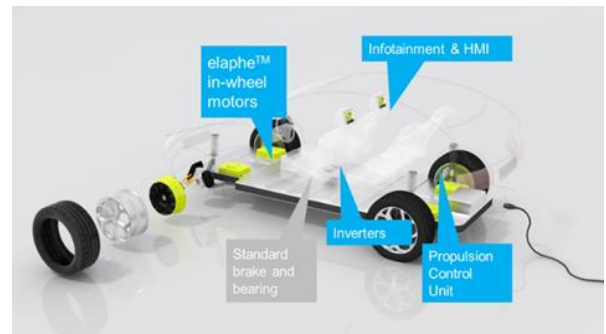
MG – Mobility for Growth (LC-MG-1-12-2020; MG-4-07-2020)

LC-BAT - Next-Generation Batteries (LC-BAT-13-2020; LC-BAT-14-2020; LC-BAT-10-2020)

- Elaphe can contribute with definitions of battery requirement, implementation of battery performance tests and integration of Elaphe control system (BMS-VCU).

In addition, FET, FOF, SPACE, NMBP, Smart Cities and Communities, Energy and Climate topics are also within our activity scope.

Elaphe expertise is commercialisation, development & delivery and research projects in the area of electric mobility, focused on in-wheel propulsion system. Elaphe possesses fully equipped laboratories for the research and development of high torque in-wheel propulsion system. The main laboratories for all development and testing activities are located in-house at Elaphe, as well as a small and pilot scale laboratory and production space. Testing activities are performed on components as well as vehicle level.



Complete in-wheel propulsion system include:

- In-wheel motors (<https://in-wheel.com/product-category/motors/>)
- Inverters
- PCU (Propulsion control unit) with condition monitoring, torque vectoring, grip detection capabilities
- HMI (Infotainment system)
- Elaphe Connected Car solution

Elaphe system brings:

- Ultimate powertrain packaging & flexibility
- Modularity & Simplicity
- More space for people or battery
- Vehicle lightweighting
- No maintenance and powertrain redundancy
- Improved vehicle responsiveness and control/handling possibilities



BESIDE THE CONTENT AND TECHNICAL EXCELLENCE, GOOD REFERENCES, SME STATUS AND GOOD GEOLOCATION THE COORDINATOR AND PROJECT PARTNERS WILL BENEFIT FROM WORKING WITH SKILLED AND MOTIVATED TEAM THAT SUPPORTS THE PREPARATION AND EXECUTION OF THE PROJECTS AND REALLY DELIVERS EXCELLENT RESULTS.