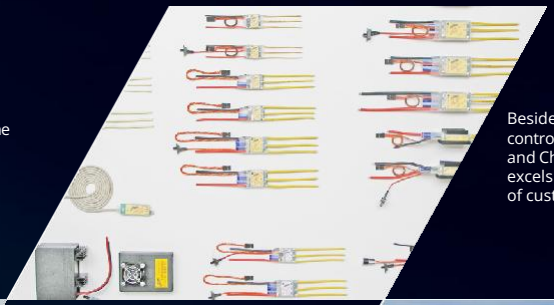

COMPRO

HISTORY

1990

MGM COMPRO amazed the market with the world's first line of intelligent speed controllers for DC electric motors full of outstanding parameters and innovative features.

2002



Besides electronic speed controllers, BMS, Battery Packs and Chargers MGM COMPRO excels also in the field of custom-built solutions.

1997

Company founding, entering the market with unique solutions in the field of medical devices and other special processor-controlled electronics.

2010

Launch of the first line of speed controllers for BLDC electric motors with unrivalled motor management, smooth motor starting, connectivity and exceptional reliability.

2013

Projects focusing on the development of high-power electric propulsion systems for propeller and ducted fan applications.

2018

The world premiere of the first fully electric 2-seater LSA airplane equipped with the MGM COMPRO electric propulsion system replacing conventional Rotax 912, which was immediately followed with Airbus E-Fan as well powered by MGM COMPRO components.

MGM COMPRO electric propulsion system made the first Airbus Group's electric aircraft fly, starting the era of manned electric flying.

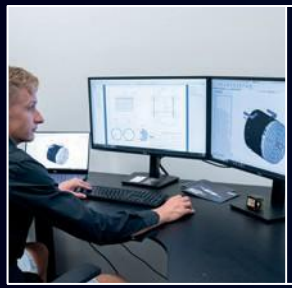
2019

MGM COMPRO works on the development of the 400kW propulsion system, which should mainly find its use in the commuter class aircraft and serve as an "e-alternative" for the lower performance classes of the most used turboprop engines.

2021

Besides standard deliveries for marine industry, MGM COMPRO newly starts to supply innovative propulsion systems for boats, covering various power ranges and bringing advanced features and parameters.

MAIN FIELDS OF ACTIVITY



HIGH POWER ELECTRIC MOTORS

We design and produce outstanding Electric Motors for various applications and power ranges of S00kW and more, also including gearbox, if required.

SPECIALTY ELECTRONICS

Experience, capabilities, test equipment, innovative and constructive way of thinking results into design, development and production of various specialty Electronics, including for example medical application, VITA, or patented solutions for photovoltaic systems.

ELECTRONIC INVERTERS MOST ADVANCED ESCs

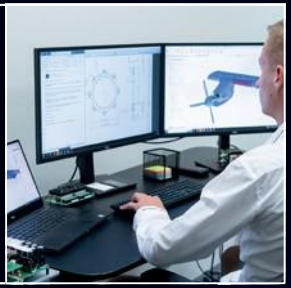
Our Electronic Speed Controllers (Inverters) represent the most advanced Intelligent electric motor control for all power ranges, featuring state of the art safety features and parameters.

COMPLEX BATTERY SYSTEMS

Our team of engineers design complete electrical and mechanical layout of the battery systems based on speciPc requirements of application, followed by the professional production. Every project starts with simulations and ends with certiPcation and mass production.

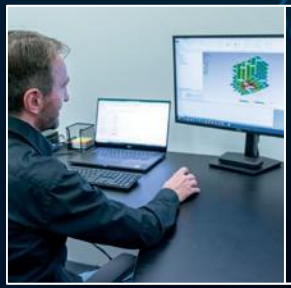
AVIATION PROPULSION SYSTEMS (HIGH POWER)

For all power requirements, for various Aviation applications, MGM COMPRO delivers special intelligent and safe Electric Drives for Airplanes, EVTOLs, UAVs and much more.



MARINE PROPULSION SYSTEMS

Based on experience and requirements of our partners from Marine industry MGM COMPRO designs and produces innovative Electric Propulsion Systems for boats and other marine application.



ANSYS SIMULATIONS & CALCULATIONS

All our products and development projects are prior to its prototyping validated by using the most advanced simulations and calculations to reach the

and fast progress.

INTERNAL TESTING EQUIPMENT

Our engineering department, simulation software, experience and competence allow us to design our own test benches and equipment, enabling our team to provide our customers with unique sets of

BMS, CONTACTORS, CHARGERS, CBS AND OTHERS

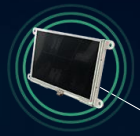
Portfolio includes intelligent BMS (Battery Management Systems), Electronic and Hybrid Contactors, Chargers and wide range of other products resulting in covering all components of propulsion systems.

PROPULSION SYSTEMS

AUXILIARY ELECTRONICS

- Connectors, Contactors, DC/DC Convertors, Fuses, Antisparks, Throttle sticks, Cabling

- wide range of settings, protections, and connectivity
- great weight to performance ratio
- featuring operation with multiwinding electric motors



DISPLAY UNIT

- graphic / text versions
- CAN / RS TTL / RS485 communication

ESC

- from 1 kW up to 400 kW
- 63V, 120V, 400V and up to 800V
- air / fluid / hybrid cooled
- wide range of customizable configurations and designs

MOTOR

- up to 400 kW
- BLDC (PMSM)
- various KVs
- advanced redudancy
- air / fluid / hybrid cooled
- maintenance free operation
- great weight to performance ratio
- multiwinding configuration possibility
- inrunner types as well as outrunner types

BMS

- management of energy storage
- protect cells and significantly extend lifespan
- wide range of settings, protections, diagnostics and communication channels

CHARGER

- various charging standarts (incl. automotive)
- suitable for all lithium based types of cells (Li-Ion, Li-Pol, LiFePO4, ...)
- suitable for any battery voltage and capacity
- compatible with various countries grid voltage

BATTERY

- unique approach to the complex mechanical and electrical design
- more than 25 years of experience and cooperation with top lithium cells manufactures
- tailor made battery configuration and shapes
- all lithium based types of cells (Li-Ion, Li-Pol, liFePO4, ...)
- advanced materials, redundancy, safety and protections
- unique active and passive fire extinguishing possibilities

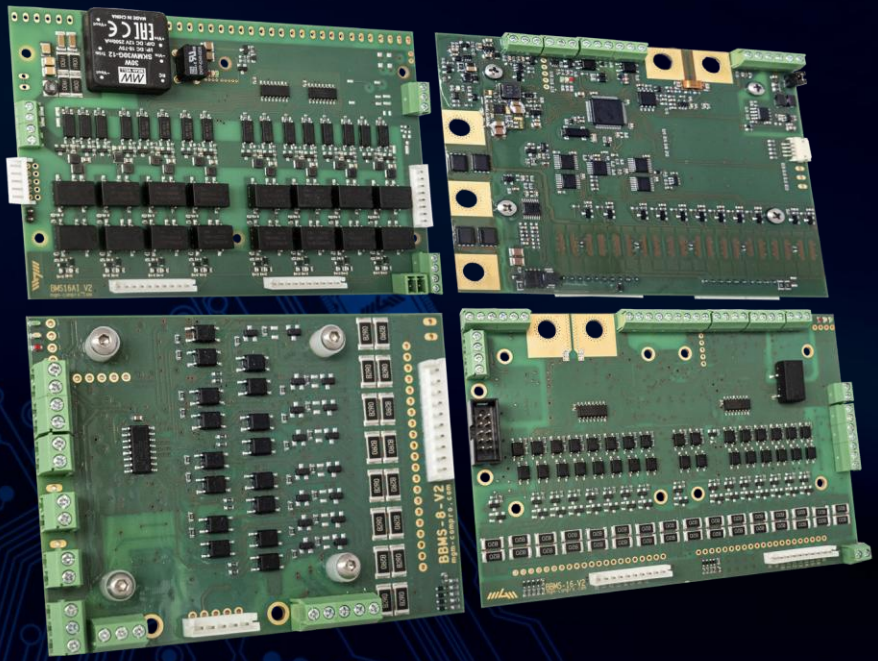
SPEED CONTROLLERS

The industrial ranges of HBCi and HSBC controllers represent state of the art technology of electromotor control. Controllers ranging from low to high power, low as well as high voltage are manufactured in many variants and designs to completely fulfill customer needs.

Together with top control management they feature numerous possibilities of settings, operation, communication, diagnostics and much more. This sets them to be an ideal solution to various industrial applications, electric vehicles and a broad spectrum of products and equipment.

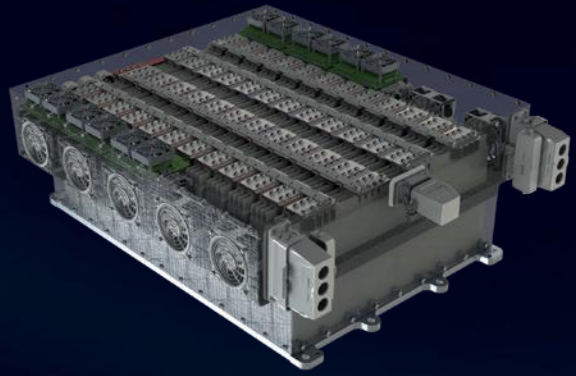
BATTERY MANAGEMENT SYSTEMS

MGM COMPRO Battery Management Systems (BMS) bring new dimension to economic effectiveness for applications using lithium based batteries. They ensure high end management of energy storage in battery systems (during charging, as well as discharging and even with very high currents) for various industrial applications, electric aircraft, electric vehicles (cars, boats, paramotors, etc.), solar and wind plants, intelligent houses and high capacity energy storages. They fully protect cells and significantly extend their lifespan. As our other signature products, they feature a broad range of settings, protections, safety features, diagnostics, various active as well as passive balancing methods and communication possibilities.



BATTERY PACKS

Lithium batteries are currently the best available energy storage technology and are exceptional for their ratio of dimensions to weight and capacity. They are also capable of delivering high current. High-quality care for these batteries ensure long battery lifespan. We offer individual cells and complete battery packs suitable for a vast majority of industrial applications, from the smallest on up to those used in electric vehicles (EV), wakeboards, specialty ones used in aircraft, UAVs, UGVs, marine application, smart houses, off-grid power systems and in other systems for storing excess electricity generated by power plants.



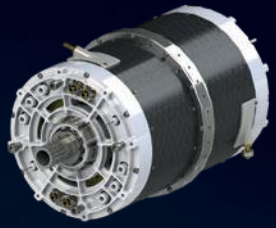
HIGH ENERGY DENSITY, CAPABILITY TO DELIVER HIGH CURRENTS

We offer the custom designed battery packs based on customers particular requirements in terms of use, currents, size, weight, etc. We deliver the complete electrical and mechanical design following with production to fulfil all expectations and needs.

400kW BLDC

Technical specifications:

- Working range: up to 800V
- Nominal voltage level: 633V
- Max power: 400kW
- Continuous power: 350kW
- Maximal angular speed: 8 000RPM
- Rated torque: 240 Nm per Core
- Rated torque constant KT: 0,722 Nm/A
- Diameter: 330mm
- Length: 457mm
- Dry weight: 129,7kg



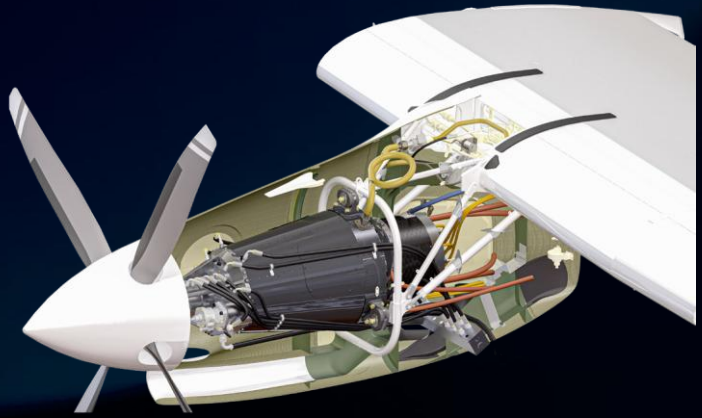
200kW BLDC

Technical specifications:

- Working range: up to 800V
- Nominal voltage level: 633V
- Max power: 180kW
- Continuous power: 200kW
- Maximal angular speed: 8 000RPM
- Rated torque: 240 Nm
- Rated torque constant KT: 0,722 Nm/A
- Diameter: 307mm
- Length: 307mm
- Dry weight: 63kg

ELECTRIC PROPULSION UNIT – 400 KW

We are bringing complex innovation to the aerospace industry with our new CS-23 general aviation propulsion system. Our drive unit is based on a complex design of an new electric motor with two core topology, supported by new generation of the electric speed controllers with IGBT technology using operation voltage up to 800V. Together with developed reduction gearbox create drive unit with power about 400kW. The revolutionary system includes modular battery packs design with integrated BMS and unique structure solution for maximalization of the air-cooling possibilities. With all integrated logic features system delivering a reliable and efficient power source for the aircraft with higher level of the safety.



CERTIFICATES

ISO 9001 CERTIFIED

ISO 27001 CERTIFIED

AS 9100 CERTIFIED

The technology and innovation
is followed with precision in production.

Trust and relationship mean also safety for
unique solutions and ways of thinking.

MGM COMPRO is ISO 9001, AS9100 and ISO 27001 certified to ensure the highest quality and information security.

DEVELOPMENT PARTNERS

ARMIES

Of numerous countries belong to our customers. Our products are utilized in countless army applications thanks to their high quality, reliability, outstanding features and technical solutions.

UNIVERSITIES

We cooperate with many national as well as foreign universities, thus our products can be found in very unique R&D projects.

RESEARCH INSTITUTES

Well-known research institutes also belong to our important partners in the field of the most technologically demanding projects.

REFERENCES / FORCEM

Marine Technologies forcem

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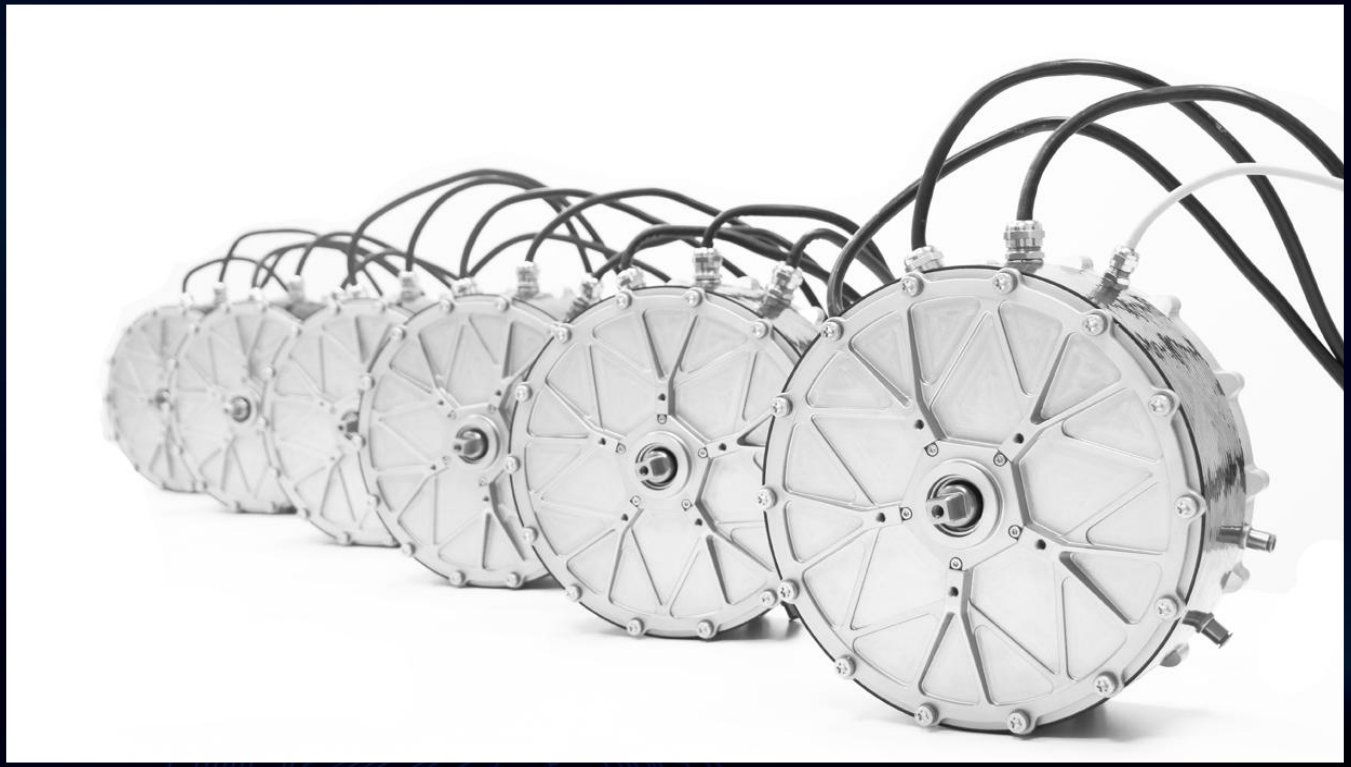


APPLICATION POTENTIAL OF REDUNDANT EPU

MGM COMPRO E-PROPULSION

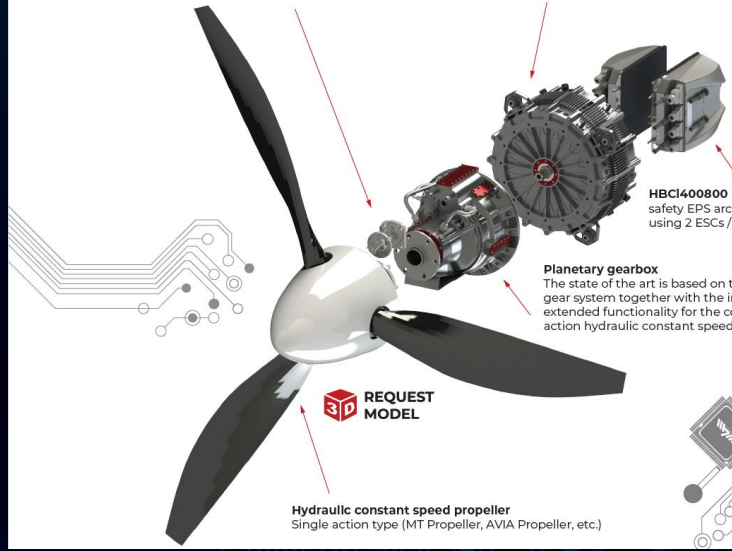
Electric Propulsion Unit

200kW EPU

POWERTRAIN SYSTEM ARCHITECTURE

Governor
integrated hydraulic system for constant speed propeller

Multi-wind BLDC motor topology
single core design with multi-winding topology for increased redundancy



HBCI400800 Inverters
safety EPS architecture based on using 2 ESCs / Inverters

Planetary gearbox
The state of the art is based on the planetary gear system together with the integrated extended functionality for the control of single action hydraulic constant speed propellers.

REQUEST MODEL

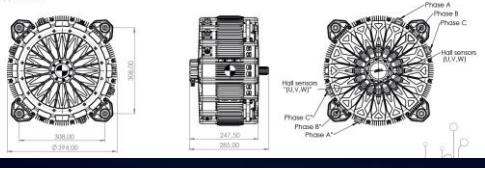
Hydraulic constant speed propeller
Single action type (MT Propeller, AVIA Propeller, etc.)

Technical specifications:

REQUEST MODEL

The all new generation of MGM COMPRO electric motors (BLDC / PMSM) brings enhanced potential to electric applications. Based on the innovative topology of the motor magnetic field and winding design, we have achieved higher power density than ever before. The structural mechanical solution includes only high-quality selected materials, together with optimised geometric aspects, providing perfect efficiency, reliability and sustainability of the motors. This progressive approach enables the use of electric drives for an even wider range of aviation applications.

- **Single-core** topology
- Primary and secondary liquid cooling system based on **dielectric coolant**
- **Hybrid Ceramic bearings**
- Sensored operating mode - commutation output U,V,W
- **Zero cogging** from initial angular speed
- Thermal behaviour controlled by multiple temperature sensors
- Unique design of the **rotor core** cooling system
- Lightweight structure provided by **carbon composite** components



Outstanding parameters | **KV customizable on demand***

800 V		
DATA	VALUE	UNIT
Maximal axial force	up to 5000	N
Peak torque	795	Nm
EPU peak efficiency	up to 92	%
Peak power	200	kW
Continuous power	150	kW
Limiting speed	2400	RPM
Operation RPM	1 800 - 2 400	RPM
Cooling system electric motor	Dielectric liquid	
Cooling system ESC	Dielectric liquid	
Cooling system Gear-box	Dielectric liquid	
Dimensions	568 x 392 x 392	mm
Gear box ration	2,5 : 1	
Weight (excl. Governor and Propeller)	85	kg
Propeller governor	Electronic control	

APPLICATION POTENTIAL OF REDUNDANT EPU

Electric Propulsion Unit

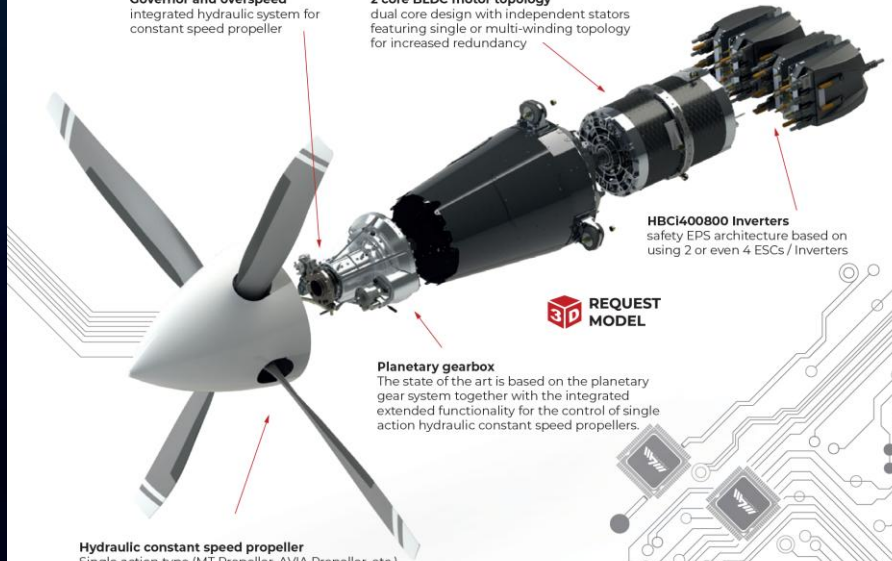
MGM COMPRO E-PROPULSION

400kW EPU

POWERTRAIN SYSTEM ARCHITECTURE

Governor and overspeed
integrated hydraulic system for constant speed propeller

2 core BLDC motor topology
dual core design with independent stators featuring single or multi-winding topology for increased redundancy

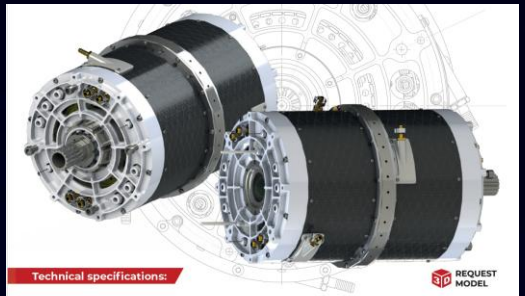


HBCi400800 Inverters
safety EPS architecture based on using 2 or even 4 ESCs / Inverters

REQUEST MODEL

Planetary gearbox
The state of the art is based on the planetary gear system together with the integrated extended functionality for the control of single action hydraulic constant speed propellers.

Hydraulic constant speed propeller
Single action type (MT Propeller, AVIA Propeller, etc.)



Technical specifications:

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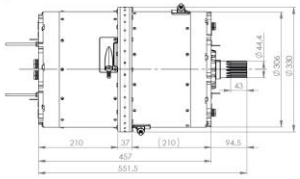
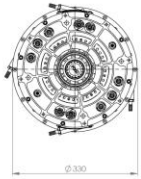
- **Dual-core** topology
- Primary and secondary liquid cooling system based on **dielectric coolant**
- **Hybrid Ceramic bearings**
- Sensored operating mode – commutation output U,V,W
- **Zero cogging** from initial angular speed
- Thermal behaviour controlled by multiple temperature sensors
- Unique design of the **rotor core** cooling system
- Lightweight structure provided by **carbon composite** components





Outstanding parameters | **KV customizable on demand***

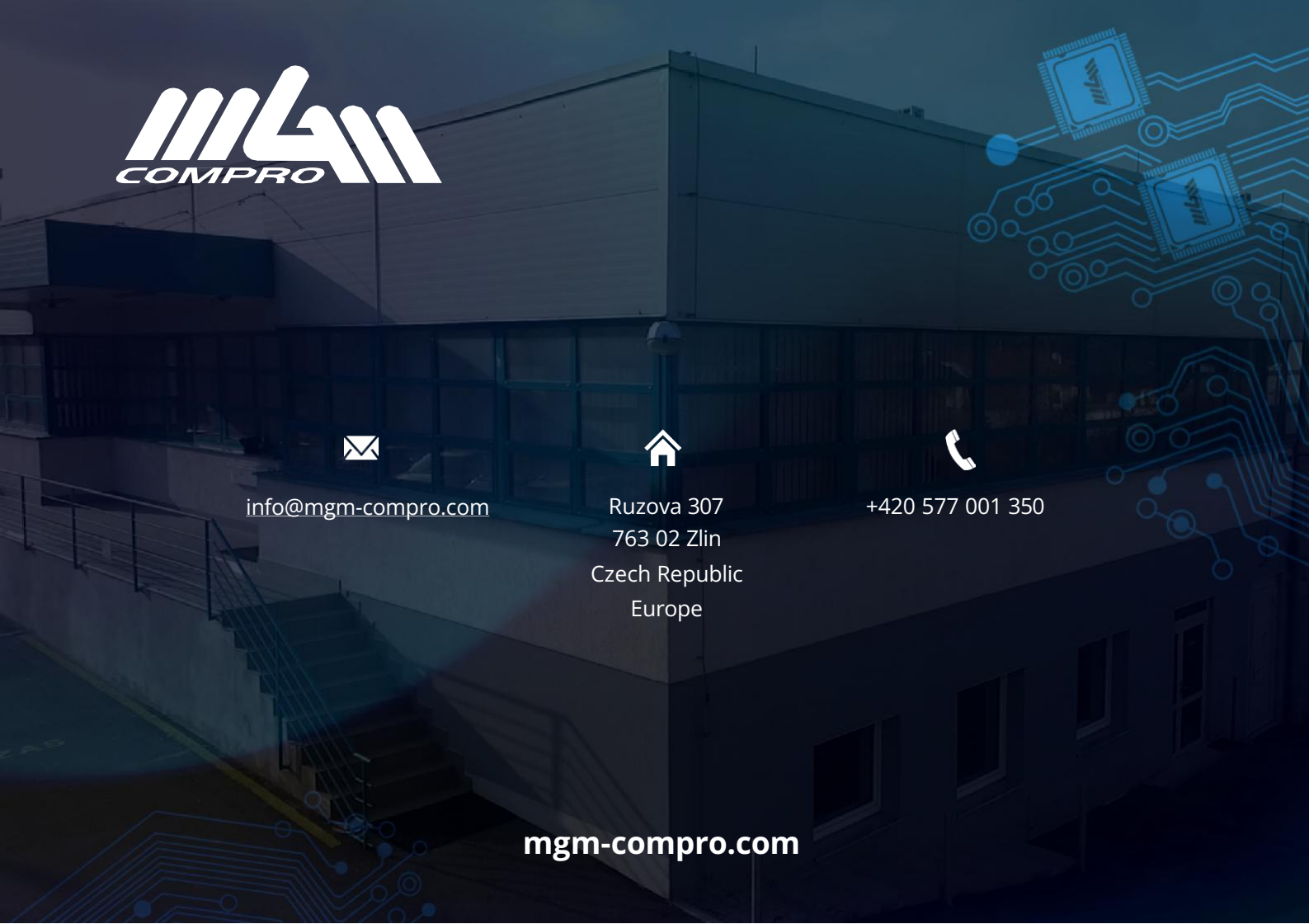
800 V		
DATA	VALUE	UNIT
Maximal axial force	2 up to 10000	N
Peak torque	1 950	Nm
EPU peak efficiency	up to 96	%
Peak power	400	kW
Continuous power	350	kW
Limiting speed	2200	RPM
Operation RPM	1 750 - 2 200	RPM
Cooling system electric motor	Dielectric liquid	
Cooling system ESC	Dielectric liquid	
Cooling system Gear-box	AEROSHELL TURBINE OIL 390	
Dimensions	1177 x 444 x 444	mm
Gear box ration	3.6363 : 1	
Weight (excl. Governor and Overspeed)	192	kg
Propeller governor	Electronic control	

APPLICATION POTENTIAL OF REDUNDANT EPU

TESTING CAMPAIN OF 400KW EPU

SPECIFIC CHARACTERISTIC OF THE REGION

- culture that pays attention to technical detail
- presentation form is very important
- documentation form is very important
- technical parameters of the product play a crucial role
- fair agreement, what is agreed upon is valid
- specific requirements for market entry
- possible risks associated with language barrier
- intermediaries and brokers



info@mgm-compro.com

Ruzova 307
763 02 Zlin
Czech Republic
Europe

+420 577 001 350

mgm-compro.com

mgm-compro.com