



SMW Engineering



COMPANY INFORMATION

RELIABILITY. QUALITY. INNOVATION.

SMW Engineering (SMW) holds top expertise in the field of magnesium and aluminum wrought products manufacture, and their manufacturing technologies for use in lightweight applications. Company implements practical improvements to existing magnesium production facilities, has established R&D partnerships with scientific institutions as well as with leading laboratories and production facilities globally, produces forgings and pressed profile material from aluminum and magnesium alloys. SMW develops advanced state-of-the-art technologies and offers the best in class engineering services.



Development of new alloys



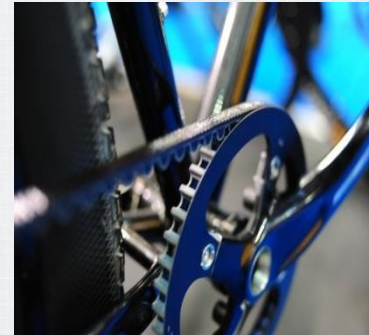
New hybrid and reinforced material



Product manufacture and shipment



Ultralight metal parts





R&D and DEVELOPMENT

SMW Engineering was founded in Russia in 1996, as the general contractor for the coordination and development of projects and new technologies in the field of metallurgy. Until 2003, SMW was affiliated with OJSC "Solikamsk Magnesium Works", the oldest Russian enterprise and research center, a well as with the Russian Institute of Titanium and Magnesium (RITM), founded in 1952.

Today SMW is characterized by proprietary alloys, advanced technological processes and industry-leading innovative products.

Manufacturer of components
from light alloys, serving:



Automotive
sector



Aerospace
sector



Technological and
engineering solutions

The company specializes in the design, manufacture and supply of lightweight products taking advantage of proprietary and generic magnesium alloys, alloys of aluminum-magnesium-scandium and other special alloys, hybrid and hardened materials, including powder metallurgy and additive technology.

SMW is a global leader in large-size forged magnesium components, supplying products manufactured from ingots, extruded rods, plates and sheets. With a powerful R&D department, regularly participates in various international research projects funded by the European Commission.



SMW ENGINEERING PROJECTS

MagForming and AEROMAG projects:

As participant in AEROMAG and MagForming projects in collaboration with Airbus, Chemetall and other companies, SMW developed and produced Magnesium window frame for Airbus A340 aircraft. Evaluation of the two projects demonstrates viability of using magnesium parts for secondary structures elements of prospective civil aircraft.



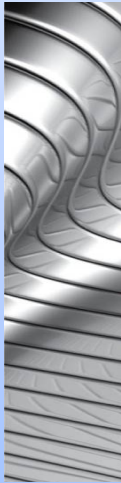
PowderBond project:

Supported by the European Commission (FP7-SME), Powderbond aims to develop a joining technology that allows bonding of dissimilar materials for use within the automotive and A.C.E. sectors.

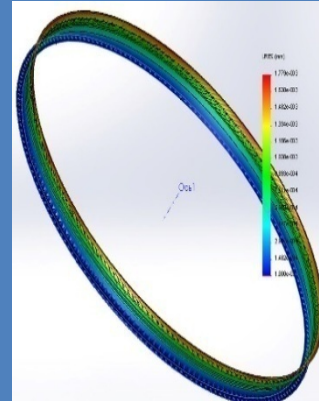
The project looks into joining steel, aluminum, magnesium, plastics and composites, enhancing the efficiency of small European auto parts manufacturers and suppliers. PowderBond is to develop adhesive joining of light structural elements for manufacture of automobile bodyshell/frame while helping to reduce the overall carbon footprint of car bodyshell/frame production and manufacturing costs.

SMW – together with Jaguar Land Rover and JCB – as well as other participants, is in a consortium of enterprises developing this innovative technology together and preparing it for commercialisation. Each participant brings its own capabilities and expert knowledge to the group.

More information available at the official website: <http://www.powderbond.eu/>



“ALMASCAN” PROJECT

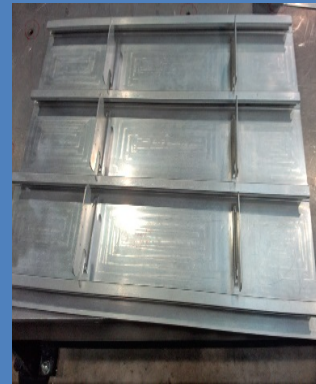


SMW Engineering supported by the Russian Fund for Technological Development is developing a technology for the production of high-strength material based on a system of aluminum-magnesium-scandium, the method of ultrafast hardening.

The purpose of the project - manufacturing of aluminum alloys with high corrosion resistance, improved mechanical properties at lower densities. The resulting materials do not require further thermal treatment, are useful for all types of pressing and welding. In demand in the aviation and aerospace industries, as well as in the sphere of sports.

Main characteristics :

Tensile strength 650-675 MPa, a yield strength of 600-625 MPa, elongation 10.9%, density - 2.65 g / cm³.



The technology uses a method of spinning - ultrafast solidification of liquid metal in which the metal is being poured in a thin stream to the rapidly rotating copper wheel, cooled by water inside. The cooling rates achieved 1.000.000 ° K / s.

During subsequent compaction and extrusion processes occurs precipitation of finely dispersed solid solution of 2-3 nm particle size, which leads to considerable strengthening of the alloy. The resulting extruded materials (profiles, tubes, rods and bars) get enhanced service characteristics.

In the aviation industry can be applied as a stringer welded bottoms in aircraft to replace the used alloys of 6xxx series, and other structural elements of aircraft and helicopters, including unmanned aircraft. Can be applied in the space industry as structural elements of the stages of rockets, satellites design. Can significantly reduce the weight of the product, thereby increasing payload.





KEY TO SUCCESS

R&D projects approaching commercialisation:

- Components for the Russian aviation industry (UAC, Irkut, Sukhoi Civil Aircraft etc.)
- Various components for the European aviation and space (Selex ES, Thales Alenia Space, Airbus, Avio etc) from magnesium and aluminum-magnesium-scandium alloys
- Speed-skating blades by highly advanced technology bringing successful results to pro sportsmen
- Lightweight parts for LG Electronics
- Magnesium alloy components for passenger aircraft seats
- Three most important bicycle components for the world's top-rated racers
- Most advanced chemical bonding technology for corrosion-free bonding of magnesium and aluminum components (technology deployed by Jaguar Land Rover)
- Most effective magnesium sheet manufacturing technology for use in car manufacture (together with FATA Hunter and Chemetall)

SMW – WIDE RECOGNITION FOR THE WORLD CLASS WHEELS

First choice of Formula 1®, MotoGP and SuperBike champions

SMW wheels:

- Special 3D forging technology
- Unsurpassed grain structure
- Optimized configuration of metal fibers
- Modification of alloys to improve properties
- Weight reduction and best parameters

Все магниевые колеса Ducati изготовлены CMB – включая Superleggera и другие модели



HEAVY WHEELS ARE LIFE-THREATENING

- Forged wheels, particularly magnesium, are much lighter (up to 30%);
- By making the braking distances shorter they occasionally save lives and limbs of careless pedestrians;
- Fuel use and carbon dioxide emissions are reduced – as well as the load on the tires and shock absorption system;
- Magnesium wheel is stronger at impact (less susceptible to fractures and cracks than aluminum or steel);
- Possesses low residual deformation, better preserves tire integrity, reduces its wear and blow-out probability;
- Reduced costs due to enhanced manufacturability;

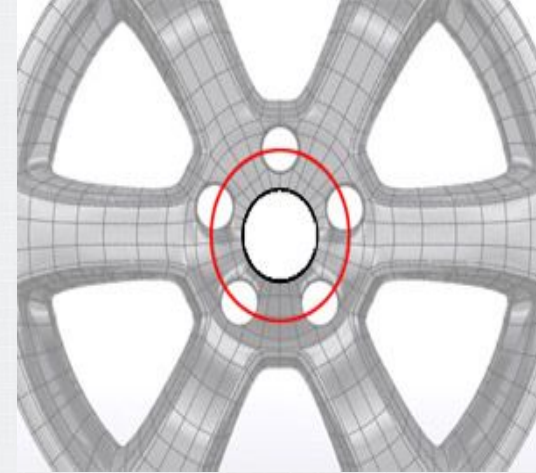




20" BECOMES MOST POPULAR SIZE

20" diameter of the wheel is suitable for almost all sports cars of later models, and is very much in demand.

Cast 20" wheel is substantially heavier than forged, it increases the load on the vehicle, exceeding the certified level and creating danger.



SMW has a portfolio of orders from 8 major distribution and manufacturing companies in different designs of 20" wheels with width in the range from 8.5" to 13".

BBS, Dymag, Cinel, CMS, Rimstock, MKW, Solomon Alsberg, Jaguar, Land Rover, a well as a number of individual mechanical tuners.





INNOVATIVE ADVANCES IN MANUFACTURING

- Specialised preparation method of metal (including alloying) with low-grain crystalline lattice
- Optimised 20" x 10" mold set developed and launched
- Introduced forging on powerful hydraulic 15000 tons press
- Ensured directed flow of metal to spokes via set fibres geometry
- Combination of methods to ensure denser grain structure and better strength and stiffness parameters
- Selection of special heat treatment schedules, as well as pre-forging billet conditioning regimes



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SMW PRODUCTS - THE CHOICE OF THREE BEST RACERS IN THE WORLD

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All of them use SMW's forged wheels



Pol Espargaró

Jorge Lorenzo

Valentino Rossi





SMW WHEELS FOR FORMULA 1 – HIGH ACHIEVEMENTS



SOME OF SMW CUSTOMERS...





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