Weblinks: Magnesium Applications

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The following are links to corporate websites that highlight the application of magnesium

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TITLE	CITATION	WEBLINK	DESCRIPTION
Magnesium Elektron- Markets and Applications	*Corporate Website*	[Launch Site]	Listing of markets and applications in automotive, aerospace, defence, power generation, space, ICT, photoengraving, cathodic protection, chemical reduction, steel desulphurization, aluminum alloying.
Magnesium Elektron- Magnesium in Automotive	*Corporate Website*	[Launch Site]	Magnesium Elektron's site states that 14kg of magnesium is used in the VW Passat, Audi A4 & A6. All of these use cast AZ91D for transmission casings. Other applications like instrument panels, intake manifolds, cylinder head covers, inner boot lid section and steering components use AM50A and AM60B. GM's Savana and Express vans use up to 26 kg or magnesium alloy. For motorsports, Elektron WE43 and Elektron WE54 are used in wrought and cast forms in motor racing engines because of the high stresses and temperatures.
Magnesium Elektron- AZ31B-O Automotive Material Data Sheet	*Corporate Website*	[Launch Site]	AZ31B-O Automotive Material Data Sheet. Provides mechanical and design information for superforming alloys. Magnesium-Elektron's AZ31B-O is specifically designed for production of door inner components.
Magnesium Elektron - Magnesium in Aerospace	*Corporate Website*	[Launch Site]	Magnesium Elektron's site states that Elektron RZ5 (ZE41) and Elektron WE43 are used in a range of helicopter transmission casings. Elektron ZRE1/ZE41 is used for intermediate casings on Tay engines, Elektron ZRE1/EZ33 is used for gearboxes of RB211 engines, Elektron ZRE1/EZ33 is used for gearboxes of Tay engines and Electron RZ5/ZE41 is used for gearboxes of BR710 engines. Military aircraft use magnesium alloy transmission casings. Elektron WE43 is used in the Pratt & Whtiney F119 gearbox on the F22 aircraft.
Magnesium Elektron - Magnesium for Defence	*Corporate Website*	[Launch Site]	Magnesium sand and investment castings are used in radar equipment, protable ground equipment and Stingray torpedoes. Magnesium extruded bars (AZ80, AZ61 and AZM) are used for anti tank ammunition rounds. Fine and atomised powders are widely used by the military industry in a range of flare and ordnance applications, notably decoy flares and illumination flares. Decoy flares made from magnesium burn white hot and the intense heat of the pyrotechnic candle consumes the flare housing. Such flares are designed to defeat a missile's infrared tracking capability thus making the use of magnesium instrumental in the protection of military helicopters and aircraft. Ground illumination flares are designed to descend by parachute and illuminate ground terrain and targets.
Magnesium Elektron - Power Generation	*Corporate Website*	[Launch Site]	Magnesium Elektron supplies extruded bar, strip and semifabricated components in alloys AL80, ZR55, MN80 and MN150 for used as canning materials in the core of gas cooled, graphite moderated reactors.

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Magnesium Elektron - Magnesium in Space	*Corporate Website*	[Launch Site]	Magnesium alloys AZ31, AZM and AZ61 are used in satellite components.
Magnesium Elektron in ICT	*Corporate Website*	[Launch Site]	Diecasting and thixomoulding alloy AZ91D is used in ICT applications like cameras, digital cameras, projectors, portable PC's , compact and mini disc cases, cellular phones and television cabinets. Sony also used press forged wrought AZ31 in two walkman models.
"Almost famous: magnesium: although there are several applications of magnesium on high-visibility and high-volume vehicles, compared to even aluminum, the applications of the material still remains low. One reason: lack of awareness- Materials"	*Gary Vasilash, Automotive Design & Production, Sept. 2003*	[Launch Site]	Use of magnesium alloys in the instrument panel beams on Cadillac models including the CTS, SRX, STS and Seville. Cam covers in the Dodge Viper and the Ford F-150 are magnesium. Other applications include steering column components, grille opening reinforcements, and audio structures. There are magnesium engine blocks in racing cars. VW Beetle and VW Super Beetle had magnesium engine blocks (AS21 and AS41, respectively since they have air-cooled engines so there are no problems with coolant reacting with magnesium. Audi's W12 engine is magnesium, and so are the cylinder covers on its V8 engine and the multitronic CVT and five-speed manual transmission housings.
Advanced Magnesium Techologies - AM-lite: Magnesium Die Casting Alloy with High Quality Surface Finish	*Corporate Website*	[Launch Site]	Car door handle made from AMT's AM-lite die casting alloy with high quality surface finish
Advanced Magnesium Techologies - AM-SC1: Sand Casting Alloy for High Temperature Powertrain	*Corporate Website*	[Launch Site]	Powertrain components made from AMT's sand casting alloy AM-SC1
Advanced Magnesium Techologies - AM-HP2: High Pressure Diecasting Alloy for High Temperature Powertrain Applications	*Corporate Website*	[Launch Site]	High temperature powertrain applications (engine blocks and transmission housings) use AMT's high pressure die casting alloy AM-HP2
Rima Industrial SA	*Corporate Website*	[Launch Site]	Die cast magnesium alloys for automotive, electronic, electromechanical, aeronautical and space applications.

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Hydro Magnesium - Company Presentation, 2006	*Corporate Website*	[Launch Site]	Web presentation by Hydro Magnesium listing automotive – powertrain applications (engine blocks, composite engine blocks, bed plates, manual transmission housings, automatic transmission housings, 4 WD transfer cases, intake manifolds, cylinder head covers, oil pans), automotive – interior parts (shift towers, knee bolsters, steering column components, steering wheels, brake & clutch pedal brackets, airbag retainers, pedal brackets, radio heat sink/frames, radioHVAC covers, mirror brackets/frames, headlight retainers, door handles, handbrake levers), and automotive – structure parts (instrument panels, engine cradles, radiator supports, A- and B-pillars, Grill reinforcements, inner door frames, front ends, seat and –components, engine hoods, roof panels, rear deck lids, fuel tank covers, full magnesium doors, wheels). Also, listing common applications (cellular phones, antenna housings, loudspeaker frames, laptop housings, multi-media housings, camera housings, projector frames), sports and leisureapplications (luggage frames, bicycle frames, chain saws, power tools) and public transport apr
Oakley Magnesium Switch Sunglasses	*Commercial Website*	[Launch Site]	Oakley magnesium sunglass frames are "the world's first optical frame to incorporate ultra-lightweight magnesium metal within a ceramic mantle. Liquefied at 1100°F, the performance alloy is injected into precision engineered molds within a timeframe of less than 30 milliseconds. Sealing the metal in a protective ceramic mantle requires a turbine that rotates at 60,000 rpm in order to disperse ceramic polymer nanoparticles. For a secure and comfortable fit, the new frame will include spring-hinge mechanisms, as well as Unobtainium® nosebombs and earsocks. Flex couplers are incorporated at strategic points in the frame geometry, tuning flexibility while retaining structural integrity. The end result is a metal frame that meets the durability requirements of sports professionals while offering all-day comfort by minimizing weight.
Magnesium Biker	*Commercial Website*	[Launch Site]	Company selling magnesium bicycle frames made by the European company, Magnesium Litech Kft., which began making light bicycle frames from a magnesium alloy in 1995. Magnesium Litech Kft. Has two manufacturing facilities: one in Kharkiv, Ukraine and the other in Moscow, Russia. Their process includes computer modeling, TIG-welding, protective anitcorrosion coating and painting.

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Rima Industrial SA - Magnesium Division - Magnesium for Desulphurization	*Corporate Website*	[Launch Site]	In a powder form and mixed with other materials, Magnesium is commonly used as a desulfurizer in many metallurgical applications and offers the best performance and cost benefit in the following cases: · Iron requiring low levels of Sulfur, below 0.010% · Limited time for desulfurization in steel making · Heats with low temperatures · Heats with high initial levels of Sulfur The most common desulfurizing mixture is pulverized lime and Magnesium powder (< 1mm in size). The Magnesium content in the mixture varies from 5%-20% depending on the type of injection equipment and the available time for desulfurization.
Rima Industrial SA - Magnesium Division - Magnesium Metal	*Corporate Website*	[Launch Site]	Magnesium is an important alloying element in the aluminum industry principally in the production of automotive parts and aluminum beverage cans. It is also used in chemical applications such as in the production of Boron, Lithium, Titanium, Pyrotechnics and cathodic protection, among others. In a nugget form, small cast pieces, Magnesium is used in ductile iron production to promote the nodularization of graphite.
MagCorp - Anode Systems	*Corporate Website*	[Launch Site]	CHEMICAL: Anode systems for propane tank protection, fuel tank protection, water tank protection, evaporative cooler protection, irrigation system protection, marine artifact conservation:
Magnesium Elektron - Magnesium Photoengraving Plate	*Corporate Website*	[Launch Site]	"A photosensitive coating applied to a special magnesium photo engraving plate allows the user to chemically etch an image into the magnesium plate after exposing a film negative and developing that image on the plate. The most popular use is in creating dies for foil stamping and embossing a variety of printed products including greeting cards, folders, brochures, book covers and packaging materials. Other applications for magnesium photo engraving plate include thermal 'kiss-cut' dies, flexography, nameplates, decorative plaques, recognition awards and fabric/leather embossing. New applications are continually being developed."
Timminco Specialty and Light Metals	*Corporate Website*	[Launch Site]	Timminco manufactures magnesium products for water heater, photo engraving, consumer product, sporting goods and container industries. Timminco also makes extruded anodes and engineered magnesium extruded shapes.