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Auto Electronics & Electric Vehicles



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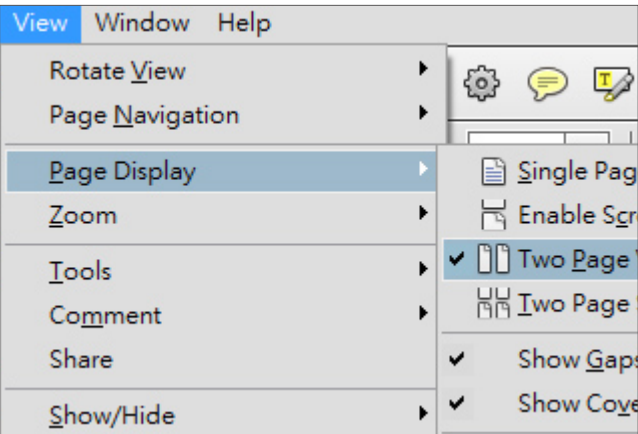


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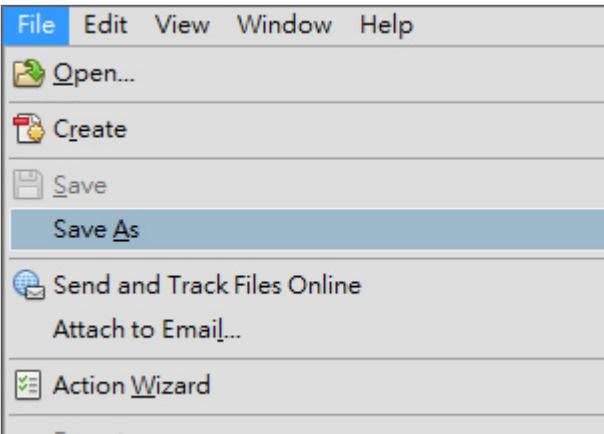
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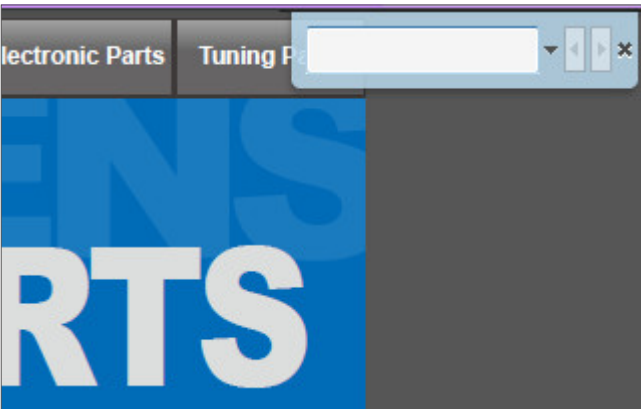
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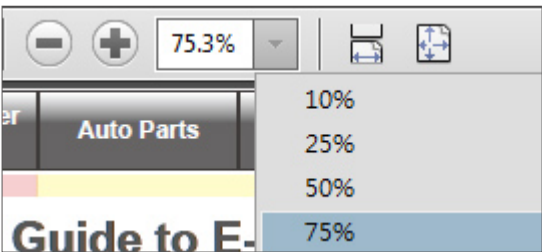
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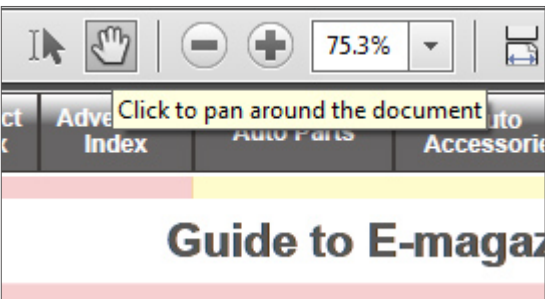


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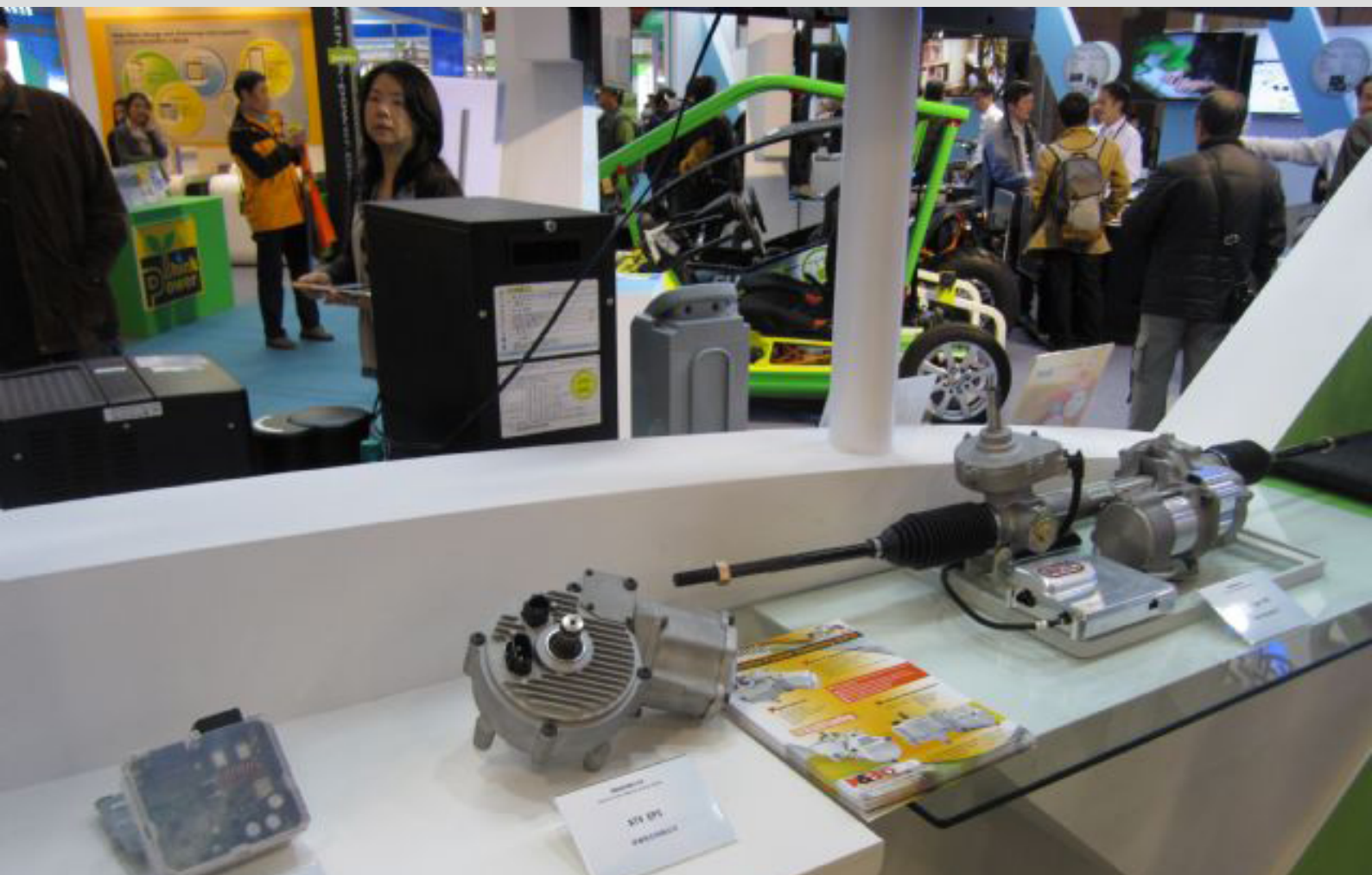
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TARC demonstrated homegrown EPS systems developed collaboratively by different parties.

TARC Showcases Latest Automotive & EV R&D Achievements in 2015 EV Taiwan

Enhancing driver safety is among focuses of these new technologies

By QUINCY LIANG

The Taiwan Automotive Research Consortium (TARC), a key automotive industry alliance formed by domestic research institutes and private makers, presented its latest R&D achievements to global visitors at this year's 5-in-1 auto and motorcycle shows in Taiwan, comprising the 2015 Taiwan Int'l Electric Vehicle Show (EV Taiwan), Taiwan International Motorcycle Industry Show (Motorcycle Taiwan), Taipei International Auto Parts & Accessories Show (Taipei AMPA), Taipei International Automobile Electronics Show (AutoTronics Taipei),

and Taiwan International Tuning & Car Care Show (Tuning & Car Care Taiwan). In addition to exhibiting the island's R&D strength in the automotive fields, the show showcased many advanced, innovative and globally competitive products

The Department of Industrial Technology (DoIT) of the Ministry of Economic Affairs (MOEA) urged four research institutes to establish the TARC in mid-2005. The six members of the consortium are the Automotive Research and Testing Center (ARTC), Mechanical and System Research Laboratories (MSL) of Industrial Technology Research Institute (ITRI), Material and Chemical Research Laboratories (MCL) of ITRI, the Chung-Shan Institute of Science and Technology (CSIST), and Hua-chuang Automobile Information Technical Center Co. Ltd. (HAITEC).

The TARC aims to establish an integrated platform for automotive technological R&D; help the domestic industry to set up concurrent engineering design platform through international cooperation and technology transfer; and work with local universities to train personnel to set up a platform for innovative research. In recent years, the TARC has been integrating major industrial research institutes and technologies to develop EVs and key

systems, as well as advanced automotive-electronic systems.

The TARC Pavilion at the 2015 EV Taiwan unveiled R&D projects and achievements that have numerous practical merits and are ready for technical transfers to the private sector.

Electric Power Steering System (EPS) Series

Among the abundant R&D achievements displayed this year, the electric power steering system (EPS) series attracted intensive attention. The series is jointly developed by several parties.

ARTC is responsible for the column type EPS, an EPS integrating the electric motor with the steering mechanism. The electronic control unit (ECU) uses the steering torque signal and vehicle speed to control the motor and produce the corresponding steering assistance. The EPS helps the driver steer the vehicle and provides variable steering feel according to the speed. Hiwin Technologies Corp.'s rack-type EPS provides assist force to the rack by the ball screw and nut, with a rack force greater than 11kN. Rotatech International Corp.'s all terrain vehicle (ATV) EPS integrates the key components (torque sensor, ECU, and motor) in one module. It can be easily applied to an ATV/UTV steering mechanism. China



ITRI showcased a 50kW EV motor controller, the first such device developed and made in Taiwan.

Motor Corp., the local assembler of Mitsubishi cars and maker of own-brand e-moving electric scooters, demonstrated its EPS ECU, which has return and damp control strategies to support convenient, safe and comfortable driving. The EPS ECU is also the first home-grown component of its type to be installed on passenger cars.

EV Motor Controller

ITRI showcased a 50kW electric vehicle (EV) EV motor controller, the first such one developed and made in Taiwan. ITRI says that the technology can be transferred to a domestic controller company for production of electric propulsion control systems. Controller companies need to develop their own EV propulsion modules to become key suppliers in the global EV supply chain.

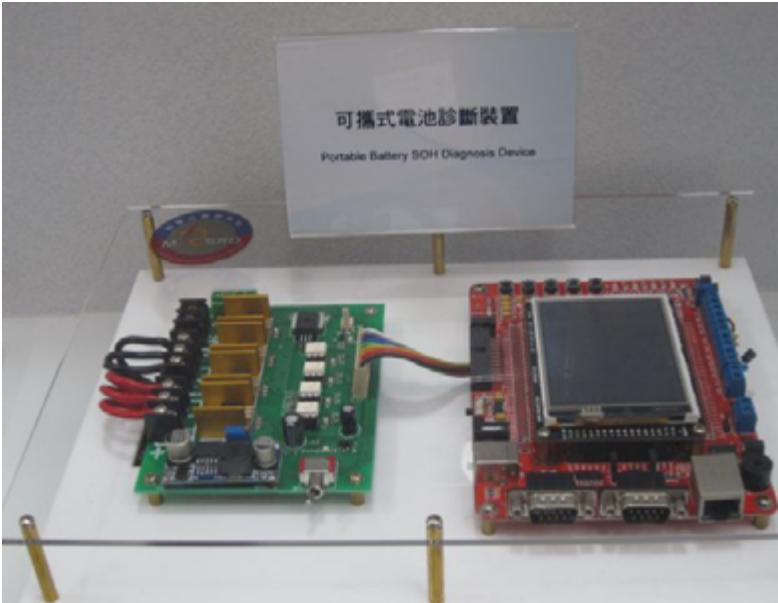
Module features:

1. World-class high-efficiency EV motor controllers in line with DOE standards; high power density, high efficiency, and a wide-range of applications.
2. Safety-protection and diagnostic technology for the EV propulsion module.
3. Standard and regulation verification (IEC 60785 / IEC 60786 / ISO 16750 / EMC 56-1).
4. The controller has a built-in three-in-one silicon carbide (SiC) high power module with advanced functions and technologies such as: micro-channel direct cooling technology and low-stress structure to increase thermal performance and reliability; heavy wire-bonding increases current density; copper metal bonding of terminal to increase reliability; and vacuum reflow to decrease bonding void rate.

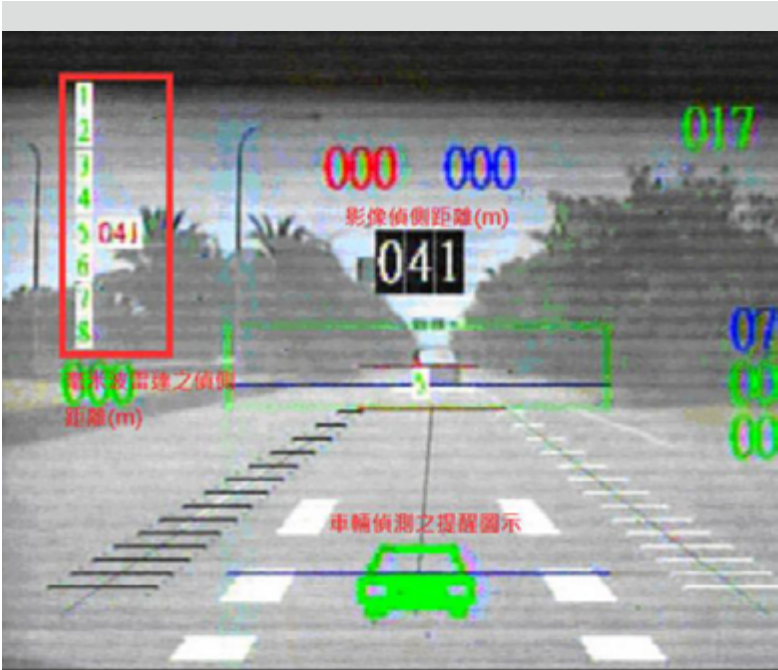
Portable Battery Diagnostic Device

This device is used to connect the battery management system (BMS) of a lithium-ion battery pack. The device uses a two-pulse load testing type diagnostic method that

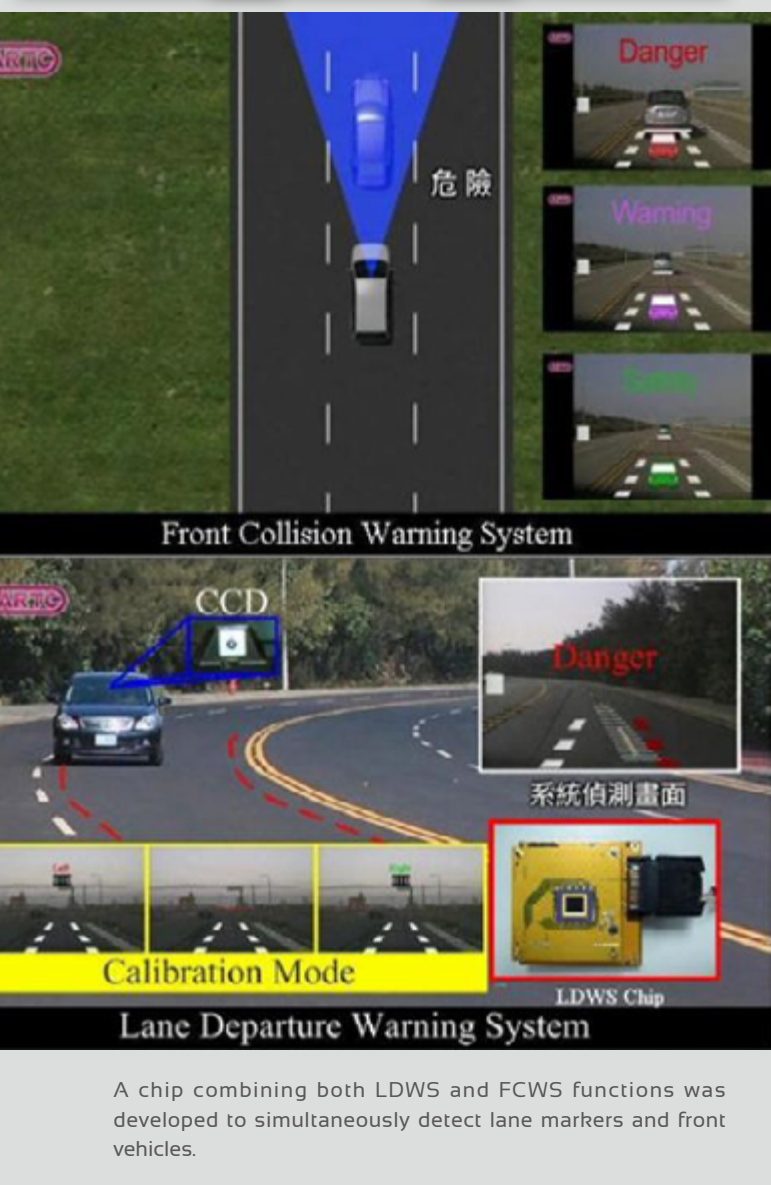
can perform diagnostics in three minutes to establish the SOC (state of charge) and SOH (state of health) during charging. The proposed technique not only provides a diagnostic device, but can also be used as an on-board system in EVs. The proposed technique can also be adopted in power cells, modules and packs.



The Portable Battery Diagnostic Device connects the battery management system (BMS) can be used on lithium-ion battery packs to diagnose the SOH of all cells in the pack.



ARTC introduced its sensor fusion system, which is less prone to failure due to environmental causes. It also has no lane-detection and high CPU computation efficiency.



Sensor Fusion System

ARTC introduced its sensor fusion system featuring greater resistance to sensing failure due to environmental causes; no lane-detection; and high CPU computation efficiency. Testing results also demonstrate the robustness of the sensor fusion system.

ARTC says that most car-detection mechanisms developed in Autonomous Emergency Braking (AEB) systems use a single sensor. This has limited the operating conditions of the AEB system due to the physical weakness of the sensor. The disadvantages of radars and image-sensing, however, are compensated in a sensor fusion manner, which stabilizes the vehicle sensing system and thus enables safe operation at all times and in all kinds of environmental conditions. The system can detect vehicle speeds between 10kph and 50kph; has a detection range 5-50 meters; has a barrier

definition plus or minus 10 degrees for front vehicles; and has a detection accuracy of up to 95%.

Forward Safety Warning System on Chip

This chip system combines both Lane Departure Warning System (LDWS) and Front Collision Warning System (FCWS) functions to simultaneously detect lane markers and front vehicles. It also issues early warning signals when there is the danger of unintentional departure or possible rear-end collision with the front cars by using a CCD/CMS camera mounted on the vehicle.

Compared to most products available on the market, the chip is a low-cost and high-reliability solution. Other specifications of the chip include a maximum vehicle detection range up to 50 meters; and ability to detect most types of lane markers and vehicles; ability to detect lane widths between 3 and 4 meters. The system can also process vehicle speeds ranging from 45 to 120 kph, a curve radius of about 250m, and image processing speed of about 25 frame/s. A Taiwanese chipmaker is scheduled to commercialize the chip technology as an integrated DVR system-on-a-chip (SOC) chip in mid-2015.

Clad Metal Electromagnetic Shielding Technology

TARC developed the high electromagnetic shielding clad metal technology to reduce electromagnetic waves, meeting the VSCC561 standard for vehicular electronic equipment. By adopting the aluminum/copper clad metal to replace aluminum counterparts, the clad metal technology can help reduce weight by 17%, while upgrading the electromagnetic shielding properties (400M-1000 MHz) by about 20%.

The advanced technology has helped local automotive-electronic maker Whetron Electronics Co., Ltd. overcoming traditional technology bottlenecks and pass the integrated battery-module testing.



Vehicle equipment housing made with the high electromagnetic shielding clad metal technology.

Driver Physiology Recognition & Monitoring System

The Driver Physiology Recognition & Monitoring System developed by ARTC provides driver monitoring functions with multi-sensors, including electrocardiogram (ECG) sensor and camera-based systems. This system utilizes ECG signals and present self-developed algorithm to distinguish driver normal/abnormal conditions. The ECG sensor also integrates with the steering wheel, identifying the driver identity by using individual differences of the waves in ECG patterns. In addition, the system also analyzes head swing with image processing technology to decide whether the driver is concentrating on driving or not. For driving safety, the fusion of multiple parameters not only yields ID and physical recognition, but also prevents distracted driving.

Driver's 3D Gesture Control

This technology enables drivers to control different electrical equipment and instruments with gestures using depth sensors. For example, the driver can switch on or off the wipers, infotainment system, and headlamps with the wave of a palm or arm. The technology can reduce the risks associated with driver distraction.

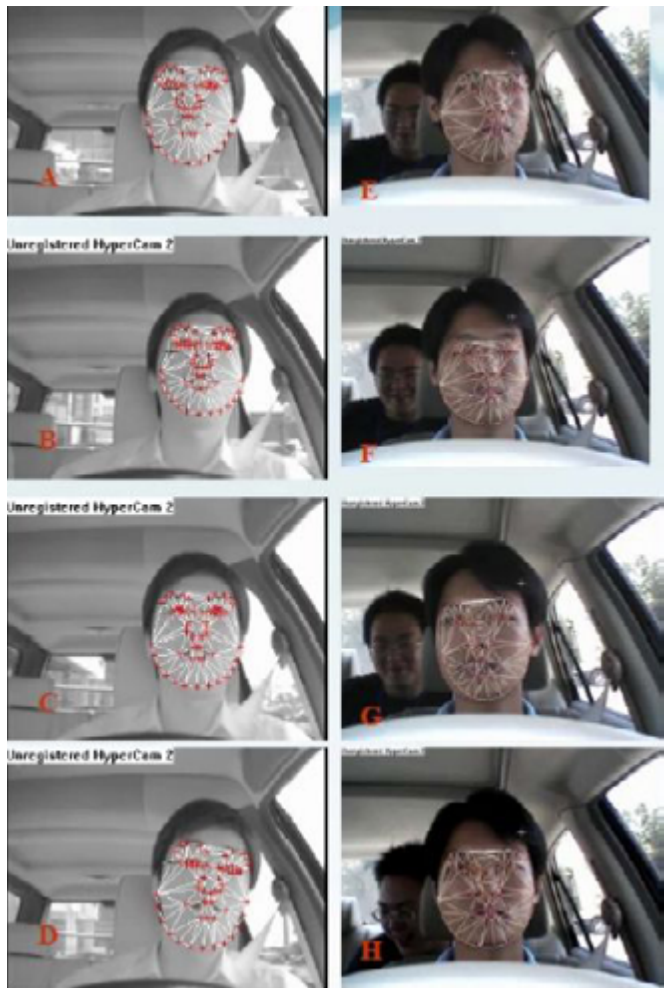
The system has 3D gesture recognition learning capability, thanks to its Virtual Reality technology, improving the recognition rate. Nice functions: when you wave your hand around, the wiper system will switch on. Tilt your arm and the music will play.

3D AVM

The 3D Around View Monitor (AVM) system can perform real-time aspheric perspective transforming, stereo image stitching, and vision conversion. It features no visual blind spots, helps drivers avoid accidents, has a simple and clear display, and enables drivers to relax while driving.

Vehicle Parking Collision Avoidance System

The vehicle parking collision avoidance system combines vehicle sensors, such as ultrasonic parking sensors, and speed



The Driver Physiology Recognition & Monitoring System provides driver monitoring functions with multiple sensors, including an ECG sensor and camera-based systems.



The vehicle parking collision avoidance system combines vehicle sensors, speed sensors and integrated electric parking brake (IEPB) technology to execute braking and assist with parking.

sensors with integrated electric parking brake (IEPB) technology to execute brake assist in park. Compared to general and typical emergency braking safety structure applying hydraulic brake and millimeter wave radar, the cost of this system is lower, while the parking safe function is still provided during low-speed situations.

Key technologies used in this system include rear-end obstacle detection, IEPB brake control design, parking collision-avoidance algorithm, vehicle tracking prediction, and system motor fault identification and analysis technology.

Autonomous Emergency Braking (AEB)

Another advanced technology showcased was the Autonomous Emergency Braking (AEB): a common active-safety system on luxury cars. ARTC says that the key to such systems is more enhanced identification of barriers.

AEB employs sensors to monitor the proximity of vehicles in front and detects situations where the relative speed and distance between the host and target vehicles suggest that a collision is imminent. In such situations, emergency braking is automatically applied to avoid a collision or at least mitigate its effects.

In its development efforts, ARTC integrated

both millimeter-wave radar and image-sensing technology into the core architecture of its AEB system. With their recognition and distance-detection capability, image-sensing systems are easily affected by weather conditions and background complexity. Millimeter-wave radar, which is currently the mainstream collision-prevention technology, addresses this problem by transmitting radio waves to the vehicle ahead and analyzes the arrival time and direction of the reflected waves to measure the distance to the vehicle and determine its speed and position. The resulting information is relayed to Pre-Crash Safety (PCS) systems, which attempt to minimize crash damage when detecting an imminent collision, and Adaptive Cruise Control (ACC) systems, which maintain a safe distance between vehicles.

Millimeter-wave radar is not vulnerable to weather conditions, but it cannot recognize the character of the objects it detects. So, ARTC claims, the integration of millimeter-wave radar and image-sensing technologies into a single AEB system creates many advantages: pedestrian recognition, background-complexity reduction, lowering of the algorithm volume of central processors, etc. For AEB system development, the center integrates digital image processors and micro controllers into one dual-core processor module as the algorithm core for real-time lane recognition, front-vehicle distance detection, multi-sensing fusion, and route prediction.



A real-vehicle demonstration of the Autonomous Emergency Braking (AEB) developed by ARTC.

MIRDC EV-No.4 EREV Chassis Platform

The MIRDC EV-No.4 EV open chassis platform features a Space Frame structure design and high-strength steel, making it both lightweight, structurally strong and compact. With key components developed and made by local companies, the platform is expected to help local EREV and EV parts makers to more smoothly tap into the international market.

Main features of the open chassis platform:

1. Space Frame utilized the main structure of the underbody to reduce mold costs by more than 30%.

2. The device uses a slip joint and slip plane design technique to fine-tune chassis structure, improve ease use across model types, and reduce assembly tolerance.

3. The Space Frame structure is suitable for small-volume production EVs with different specifications.

Other

TARC also demonstrated a home-use energy storage system, intelligent portable power source made of recycled lithium-ion battery packs, electricity storage demonstration for small communities, a wireless charging system with magnetic field shaping, and the Taiwan EV Supply Chain and EV Monitoring & Service Platform, which is an online platform established by the Department of Industrial Technology (DoIT) and TARC to promote Taiwan's EV supply chain to enhance EV industrial cooperation and development. [DENS](#)

The MIRDC No. 4 open chassis platform features Space Frame structure design and high-strength steel.





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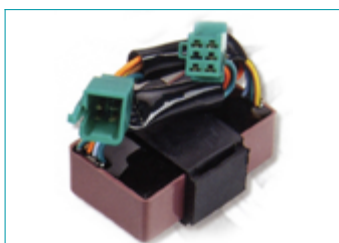
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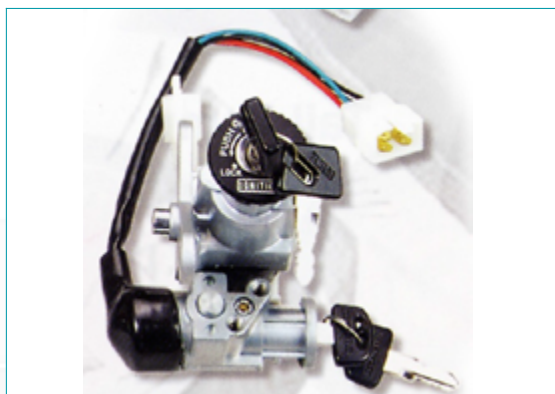
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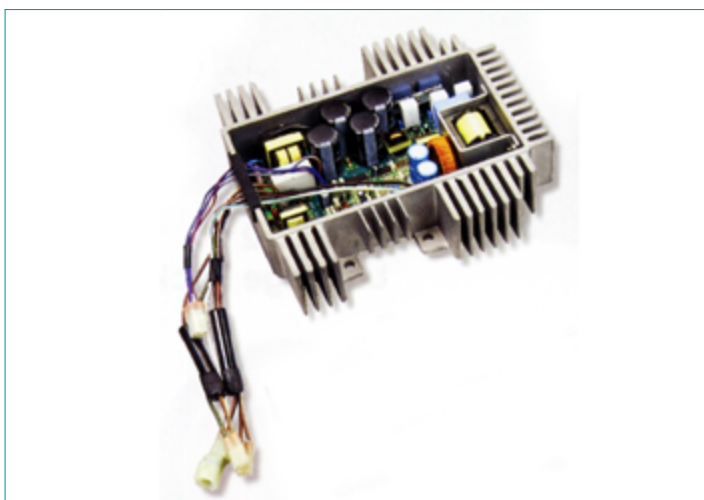
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Stannic Motor Spare Engineering Ltd is based on Auto parts manufacturing and development for more than 20 years experiences. 1994 we established a factory in Wenzhou/China to produce Water Pump/Brake Pad etc... 1999 we expanded our production ragne to ATV (All Terrain Vehicle) designing/manufacturing/assembling etc... 2004 we established second factory in Yuhuan/China for Valve Lefter/Clutch Bearing/Hub Bearing etc.... 2004/July we established a trading company for customer who need to source auto parts & accessories in China for good quality,competitive price, inspection & exporting arrangment etc... Our products are distributed to Africa , Middle East , Central/South Africa , USA & Asia. Insisting on Creation, Innovation and Development, we will continue to provide importers and exports in the industry around the world with top-quality

CAMFOLLOWER MOTOR SPARES ENGINEERING LTD.

No. 3, Alley 16, Jihhsi Lane, Chunghsing Rd., Sec. 2, Tali Dist., Taichung City, Taiwan 412

Tel:886-4-2486-2434

Fax:886-4-2486-2422

E-mail: stannic@ms13.hinet.net

Website: www.stannic.com.tw



Power Steering Pump



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Door handle



All Terrain Vehicle(ATV)

KWANG YANG MOTOR CO., LTD.

Motorscooters, Motorcycles 50cc-150cc, Electric Motorcycles, Two-stroke Motorcycle Engines 50-150cc



Engine

â€œBetter than Best With our venture slogan - "Better than Best", KYMCO is officially announcing to the world of our missions in presenting KYMCO's finest power-driven products and technical service, in activating human's vivacity, and in allowing the internationally-famed KYMCO to lead you into a convenient, safe, leisurely, and entertaining world of power and dynamism.



Motorcycles



Motorcycles



motorcycle

KWANG YANG MOTOR CO., LTD.

35 Wanhshing St., Sanmin Dist., Kaohsiung, Taiwan 800

Tel:886-7-394-3092

Fax:886-7-395-0021

E-mail: kyob1@mail.kymco.com

Website: www.kymco.com

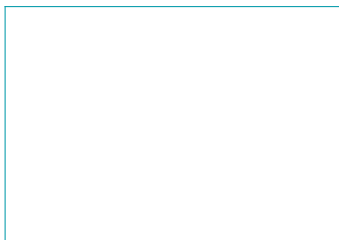
SPORTSMAN CORP.

Camping Tents

Sportsman Corp., a professional tent manufacturer was founded in Taiwan, in 1975. To date, apart from its operations in the tent manufacturing industry, it pays more attention to manage the niche market like rescue purpose. For a changing world, we still move forward and continuous innovation. Recently, the climate change turns violent more and more. Many demands from the market ask us to develop the shelter to protect their costly vehicles. In view of so many cars and motorcycles are parked outside and exposed to the sun and rain for a long term. In 2009, Sportsman revealed the revolution product: Turbo Bike Home and Turbo Motor Home. Both are quick and easy to assemble. The cover is made of durable polyester canvas with water proof



Turbo Auto Home



Turbo UTV Home



Turbo Bike Home

SPORTSMAN CORP.

35 Tzuchyang St., Tucheng Industrial Park, New Taipei City, Taiwan

Tel:886-2-2268-6363

Fax:886-2-2268-5425

E-mail: info@sportsman.com.tw

Website: www.sportsman.com.tw

STANDARD MOTOR CORPORATION

Motorcycle, Motorcycle Parts, Scooter, ATV, Manufacture/Manufacturer, Motorcycle Accessories

Founded on 1st 1993 Implemented a business strategy with focus on high quality scooters for European market in Aug.1993 As a pioneer, SMC developed Taiwan's first big tire/wheel scooter in 1994, and distributed to German market under "KREIDLER" brand name. SMC has the 2nd largest market share in the German market. Developed the first sports ATV (150cc and 175cc) in 2000, and sold to US market under "SKYHAWK" brand name. ISO9001 and 9002 certified in 2000. Introduced Taiwan's first 250cc Sports ATV in 2002 Successfully developed Taiwan's first "Three-in-One" (CVT+Differential+Reverse) engine in 2003 Acquired a new factory site, Kangtien, in Sept.2004



Engine Parts



ATV



ATV



ATV



STANDARD MOTOR CORPORATION

28 Kungye S. Rd., Kuantien Dist., Tainan City, Taiwan 720

Tel:886-6-693-5789

Fax:886-6-693-5123

E-mail: smcsm@ms27.hinet.net

Website: www.standardmoto.com

TAIWAN GOLDEN BEE CO., LTD.

Worldwide Agents Wanted, ATVs (All Terrain Vehicles), Motorcycle & ATV Engine, CVT



Motorcycles

Taiwan Golden Bee Co. Ltd. (TGB) has been set up in 1978 based on Piaggio technology for the Vespa Scooters parts production. TGB is the first CVT manufacturer in Taiwan (Ping Tung Plant), and the main customers are Piaggio, Rotax, Peugeot, Minarelli, Morini, Polaris and SYM. TGB produce the scooters, motorcycles, ATVs, and the engines (Youn An Plant) and export worldwide. TGB has ISO 9001 and QS 9000 certified operation since 1995 and all products carries EC (European) and/or EPA / DOT approved.(US)



Motorcycles



Motorcycles



Motorcycles

TAIWAN GOLDEN BEE CO., LTD.

15 Younkong 2nd Rd., Youn-an Industrial Park,
Kaohsiung City, Taiwan 828

Tel: 886-7-622-2101

Fax: 886-7-622-2110

E-mail: moto@tgb.com.tw

Website: www.tgb.com.tw

TAIWAN GOLDEN BEE CO., LTD.

Worldwide Agents Wanted, ATVs (All Terrain Vehicles), Motorcycle & ATV Engine, CVT

Taiwan Golden Bee Co. Ltd. (TGB) has been set up in 1978 based on Piaggio technology for the Vespa Scooters parts production. TGB is the first CVT manufacturer in Taiwan (Ping Tung Plant), and the main customers are Piaggio, Rotax, Peugeot, Minarelli, Morini, Polaris and SYM. TGB produce the scooters, motorcycles, ATVs, and the engines (Youn An Plant) and export worldwide. TGB has ISO 9001 and QS 9000 certified operation since 1995 and all products carries EC (European) and/or EPA / DOT approved.(US)



Motorcycles



Motorcycles



Motorcycles



Motorcycles

TAIWAN GOLDEN BEE CO., LTD.

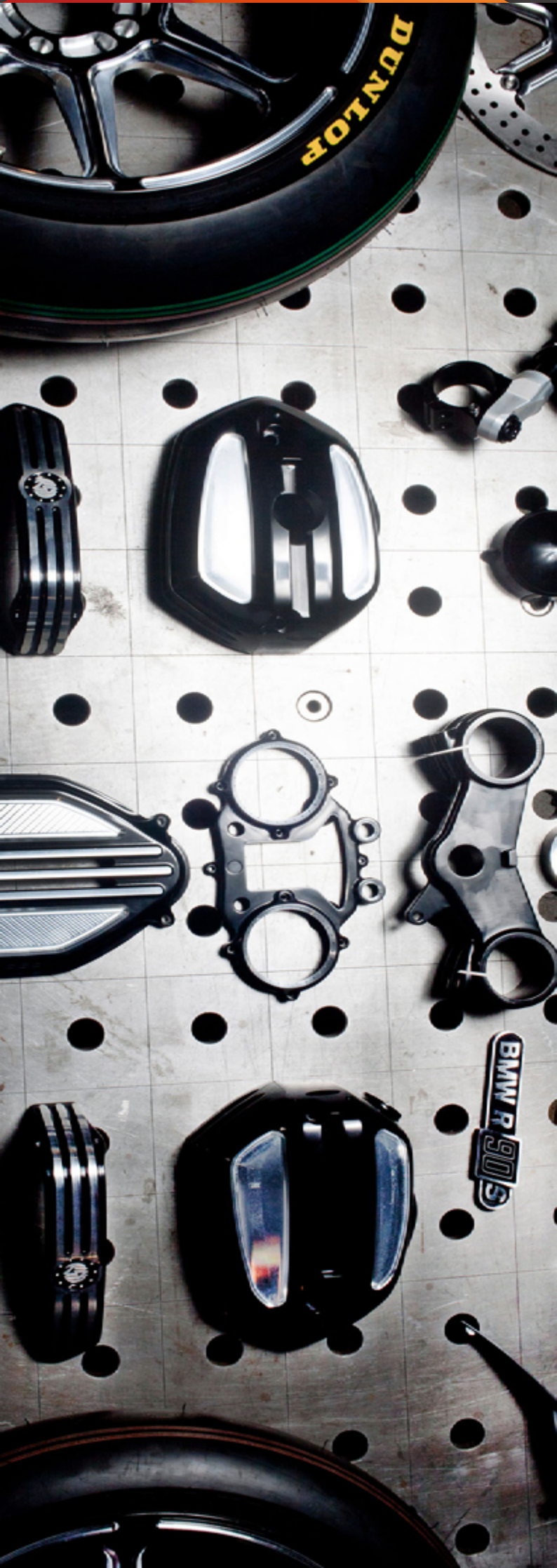
15 Younkong 2nd Rd., Youn-an Industrial Park, Kaohsiung City, Taiwan 828

Tel: 886-7-622-2101

Fax: 886-7-622-2110

E-mail: moto@tgb.com.tw

Website: www.tgb.com.tw



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- TAIDA MOTOR PART CO., LTD.

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Tel: 886-4-2275-1615

Fax: 886-4-2270-9865

E-mail: auto.state@msa.hinet.net

Website: www.auto-state.com

EULITE ENTERPRISE CO., LTD.

Motorcycle Parts, Motorcycle Accessories, Motorcycle Lamp

Eulite Enterprise Co., Ltd. is located in Taipei, Taiwan, founded in 2002. We are professional trading company specializing in motorcycle spare parts. With integrating the research, production, marketing and service of the auto/motorcycle spare parts, we provide a wild range of spare parts & variety items which gives more option to our customers. Thanks to our experienced team and excellent products serve to all our esteemed customers worldwide, we offer best quality with competitive price to satisfied clients from different area. In additional, quality monitoring & maintaining ensuring our cooperators stand on good market reputation. For more detail, please feel free to contact us.

EULITE ENTERPRISE CO., LTD.

No. 195, Jing 3rd St., Taoyuan City, Taoyuan County, Taiwan 33072

Tel:886-3-215-1815

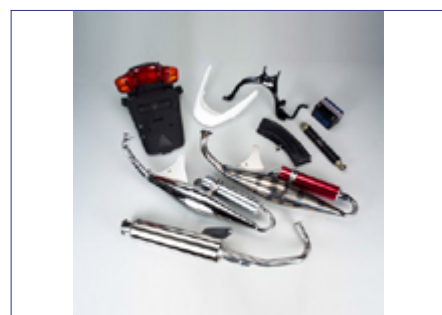
Fax:886-3-215-1990

E-mail: eu.lite@msa.hinet.net

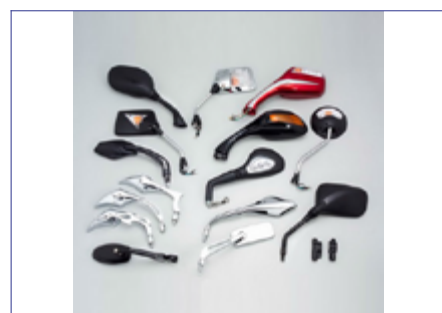
Website: www.eulite.com.tw



Metal Parts & Accessories



Muffler



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SON DAR ELECTRONIC TECHNOLOGY CO., LTD.

DC to AC Pure Sine Wave Power Inverter, DC to AC Digital Power Inverter, Solar Power Inverter

SON DAR Electronic Technology Ltd. established in the year of 1992. We are a manufacture of many years experience major in producing DC To AC Power Inverter, Digital Battery Charger, Extra long term of U.P.S (Power Inverter + Charger), ...etc. We research and develop constantly to produce high quality, high efficiency, high stably electronic production to meet customers' inquiries. We have earned very excellent reputation in this field and great honor from our customers. We have the very best and very professional R & D team group and very top marketing sales network to provide our service. Unique, thinness, smallish and stylish is our spotlight for our production. To meet existing market demands, we also set up our production line in China to provide worldwide marketing to supply our production. We present of responsibilities, high quality, fast delivery and rapid response and we are your dependable and



SUC-1200W-Solar Pure Sine Wave U.P.S



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SUC-2200W-Solar Pure Sine Wave U.P.S



SON DAR ELECTRONIC TECHNOLOGY CO., LTD.

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Tel:886-3-459-0707

Fax:886-3-459-2356

E-mail: sondar8@ms57.hinet.net

Website: www.sondar.com.tw

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Customize, Cylinder, Camshaft, Crankshaft, Piston, Carburetor Assembly, Oil Cooler Kit, Water-cooling Kit, Oil-cooling Kit

Founded in 1997, Taida Motor Part Co. specializes in making various engines as well as performance parts and accessories for motorcycles, including performance fittings, oil-cooling kits (with oil drain parts), connectors, cylinder heads, cylinder gaskets, and oil temperature gauges, which are all meticulously fabricated to ensure high compatibility and easy installation. Using American-made high-pressure oil hoses, we deliver leak-proof connectors. Taida's precision-bored performance cylinders are better than typical OE replacements. We accept custom orders for enlarged cylinders (featuring enlarged valve openings) for virtually all models. Talk to us. Taida is simply the right choice for you. Running on a TAIDA engine, our Japanese customer, MK ADVANCE, set a 3.192 second world record this year in the SS 1/32 mile race organized by MOTOR CHAMP. PayPal



TAIDA MOTOR PART CO., LTD.

No. 358, Hanxi St., E. Dist., Taichung City, Taiwan 401

Tel:886-4-2213-6599

Fax:886-4-2213-1777

E-mail: td87185162@yahoo.com.tw

Website: www.td-motor.com.tw



YAMAHA SR150 Big bore cylinder



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YAMAHA S-Max155 oversize cylinder head

CHIAN MAU CO., LTD.

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Chian Mau Co. Ltd. is an aluminum and magnesium parts manufacturer. We are most known for forging motorcycle and bicycle accessories, as well as a variety of other products. Our expertise combined with advanced technology enable us to produce high quality products. ISO 9001:2008 Certified.



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No. 128, Yuanlu Rd., Sec.1, Puyen Township, Changhua County, Taiwan 516

Tel:886-4-881-9528

Fax:886-4-882-6229

E-mail: chian.mau@msa.hinet.net

Website: www.chianmau.com



Aluminum Forgings



Aluminum Forgings



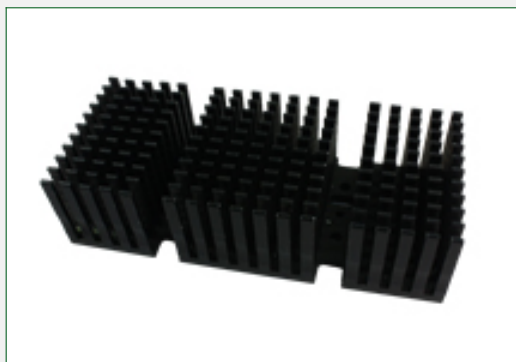
Forged Aluminum & Magnesium Parts



Forged Aluminum & Magnesium Parts

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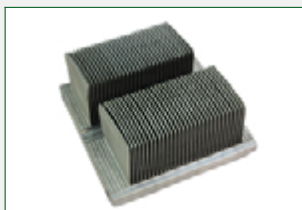
Auto Parts, Motorcycle Parts, Bicycle Parts, 3C Parts, Precision Aluminum Alloy Forging, Die-casting



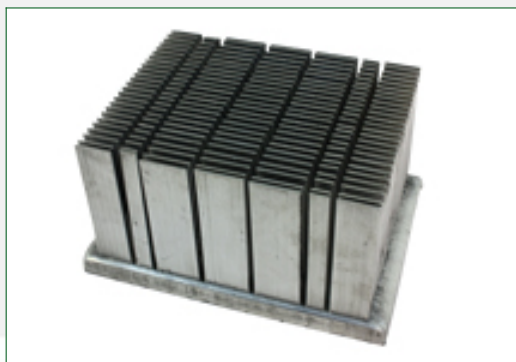
3C heat sink



3C heat sink



3C heat sink



3C heat sink

Established in 1973, Yih Feng Industrial Co., Ltd. is an ISO 9001:2008- and ISO/TS 16949: 2009-certified company specializing in aluminum-alloy forging, die-casting, and CNC machining. We've steadily invested in technique and equipment upgrading, using the most advanced software as Master/CAM 3D and top-end equipment as CNC machining centers, enabling us to become an internationally reputed specialist in designing and making high-precision parts, and a major supplier to many international vehicle makers. In conjunction with increasing investments, we've been broadening product line to include auto, motorcycle and bicycle parts, 3C parts, sporting-goods parts, among others. Continued business development has turned us into an international supplier with three factories in Taiwan (forging, die-casting, and assembly), employing about 300 workers and generating annual revenue of about US\$30 million. We are

YIH FENG INDUSTRIAL CO., LTD.

No. 159, Chungshan Rd., Sec. 1, Hwatan Township, Changhua County, Taiwan 503

Tel:886-4-786-3866

Fax:886-4-786-9356

E-mail: yf-andrew@umail.hinet.net

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