

MISUMI and the electric vehicle revolution

A key to success

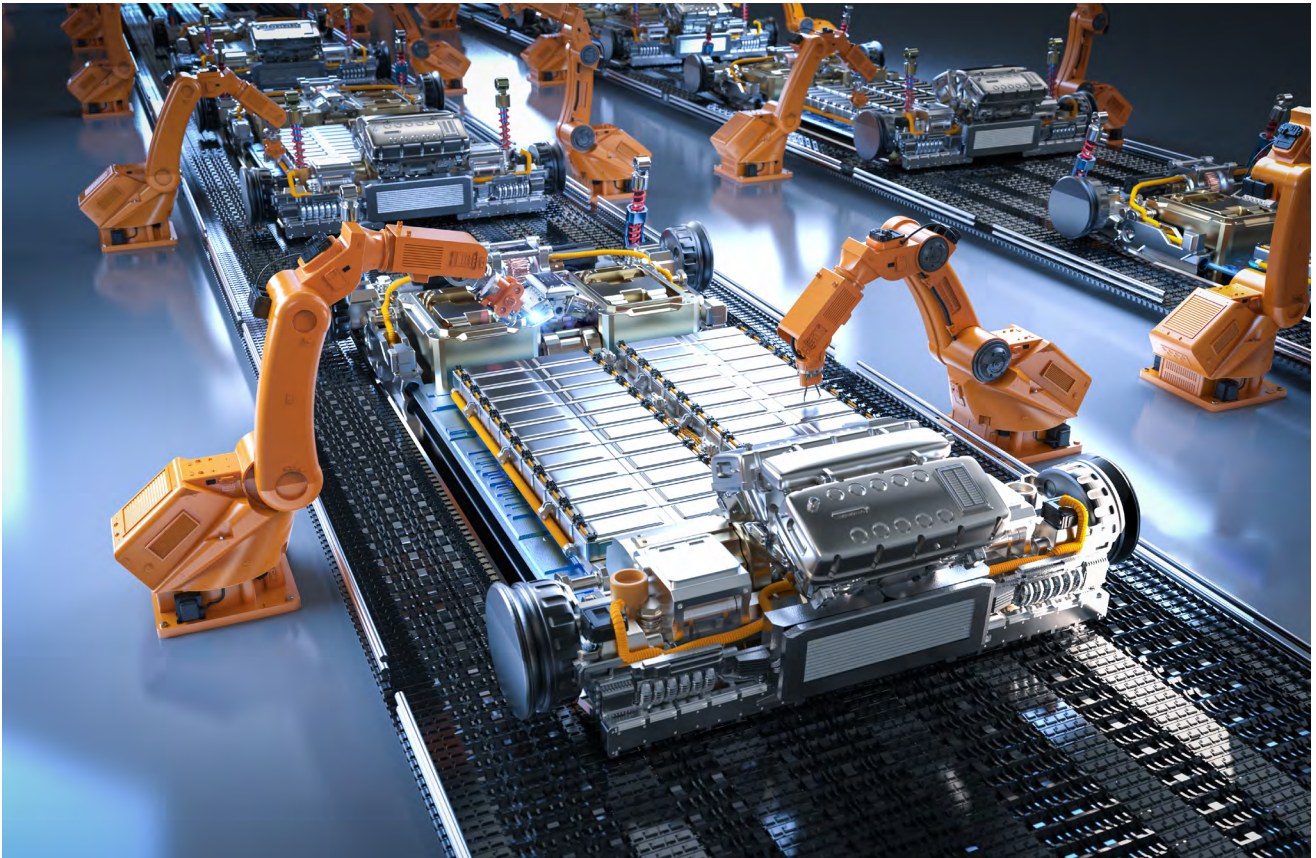


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The electric vehicle boom

In recent years, the market for electric vehicles (EVs) has developed and transformed rapidly. Once ridiculed as niche products and peculiar inventions, electric vehicles have now achieved impressive market acceptance and are increasingly dominating the headlines in the automotive industry.



AWARENESS OF SUSTAINABILITY

Driven by technological advances, stricter environmental regulations and a growing awareness of sustainability, we are experiencing a veritable boom in electromobility. Governments around the world are promoting the switch to zero-emission vehicles with generous subsidies and setting ambitious targets for phasing out the combustion engine. Car manufacturers, both established and new market players, are investing massively in the development of electric vehicles and are thus also contributing to a rapid increase in the speed of innovation.

The latest developments show a clear trend reversal towards electromobility: ranges and charging speeds are continuously improving, the variety of models is growing and production costs are falling. This is not only leading to broader acceptance among consumers, but also to fierce competition among manufacturers.

Technological advances in the field of electric vehicles

In recent years, the development of electric vehicles has taken a huge step forward and fundamentally changed the automotive industry.

With improved battery technologies, faster charging times and a greater variety of models, electric mobility has made the leap from niche to mass market. These rapid advances mark the beginning of a new era of sustainable mobility.

BETTER RANGES AND INCREASED BATTERY EFFICIENCY

One of the biggest technological breakthroughs concerns battery development. Lithium-ion batteries, which are used in most electric vehicles today, have achieved unprecedented efficiency and durability. Continuous research and development has significantly increased the range of electric cars, and many models now offer ranges of 300 to 500 kilometers or more on a single charge. This has significantly alleviated the previous main problem of “range anxiety” and made electric vehicles attractive for long-distance driving.

IMPROVED AND MODERN CHARGING INFRASTRUCTURE

Along with battery development, the charging infrastructure has made considerable progress. New fast-charging technologies make it possible to charge electric vehicles up to 80% in just 20 to 30 minutes; this makes it much easier to use these vehicles for daily commuting and long journeys. The number of publicly accessible charging stations is steadily increasing, creating a more extensive and easily accessible charging network for consumers.

ADVANCES IN VEHICLE TECHNOLOGY

In addition to batteries and charging infrastructure, there have also been significant advances in vehicle technology itself. Electric motors offer high efficiency, instant torque and a smoother ride compared to conventional combustion engines. This leads not only to an improved driving experience, but also to greater energy efficiency. In combination with advanced assistance systems and autonomous driving technologies, which are integrated in many new electric vehicles, electromobility is becoming more and more established as a forward-looking solution in the automotive industry.

MISUMI - AN INDISPENSABLE PARTNER IN THE AUTOMOTIVE INDUSTRY

In view of these technological advances, electromobility has not only become a more sustainable means of transport, but also a more comfortable and forward-looking one. This opens up opportunities for suppliers like MISUMI to provide innovative and specialised solutions for the specific challenges of electric vehicle production. The increasing demand for precision and efficiency in manufacturing creates new prospects for MISUMI to play a central role in the value chain of electric vehicle manufacturers.

Who is MISUMI?

LEADING MANUFACTURER OF INDUSTRIAL COMPONENTS

MISUMI is a leading global manufacturer and distributor of industrial components and focuses on supporting manufacturers. Specializing in custom part configurations and a wide range of products for factory automation as well as general industrial needs, the company has earned a first-class reputation and established itself as a partner for manufacturers of electric vehicles.



UNRIVALED PRODUCT RANGE FROM MISUMI

MISUMI offers an unparalleled range of over 80 sextillion configurable and standardized components, making it an unmatched and unrivalled one-stop store for customer specifications as well as high-precision design and manufacturing standards. This extensive product portfolio enables companies to implement even the most complex production requirements in a flexible and efficient manner.



PARTNER FOR LEADING MANUFACTURERS IN THE AUTOMOTIVE INDUSTRY

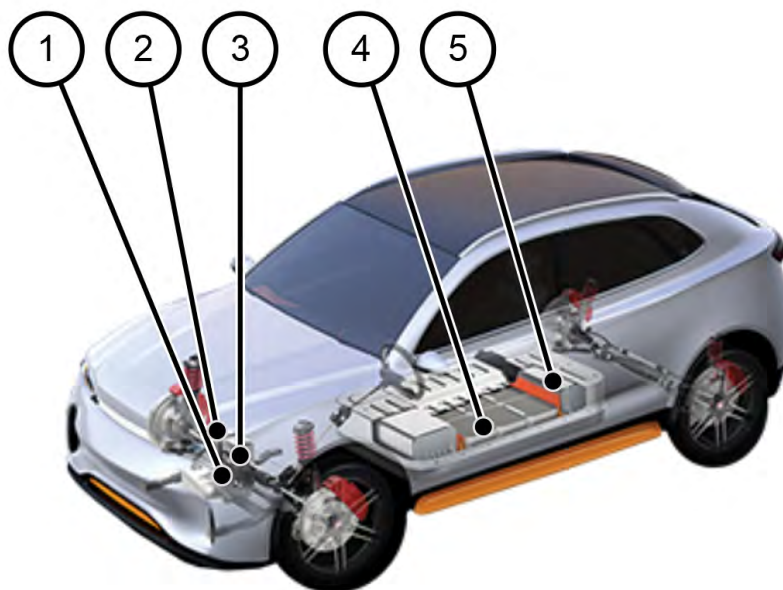
MISUMI's ability to offer both configurable and standardized components in such an impressive variety makes the company an indispensable partner for manufacturers in the automotive industry. Customers expect the highest standards of quality, precision and flexibility - requirements that MISUMI consistently meets with customized solutions. Whether it is a question of rapid delivery or the development of specific components, MISUMI remains the preferred choice for companies seeking innovative and efficient manufacturing solutions.



MISUMI and the electric vehicle (EV) market

MISUMI offers customized solutions for various stages of vehicle production. A key application area is the production of battery packs, which requires high-precision components such as linear guides and ball screws.

These components ensure precise motion control and positioning during assembly processes, optimizing production speed and battery pack quality. Find out more about the function of batteries in electric vehicles and their use in the electric vehicle industry [in our blog](#).



- 1 Electric motor
- 2 DC/DC converter
- 3 Inverter
- 4 Battery pack
- 5 Charger

QUALITY AND PRECISION

MISUMI offers specialized fasteners and bearings used in the powertrain systems of electric vehicles to ensure reliable and smooth operation.

In addition to production, MISUMI also supports the inspection and quality assurance of electric vehicles by providing measurement and testing technologies. Precise measuring instruments and calibration equipment from MISUMI make it possible to monitor compliance with strict quality standards and ensure that each component meets the high requirements of the automotive industry.

EFFICIENT MANUFACTURING SOLUTIONS

By combining innovative technology and extensive expertise, MISUMI is able to offer tailor-made solutions for the specific challenges of electromobility. This includes not only the provision of components, but also the development and optimization of manufacturing processes tailored to the specific needs of electric vehicle production. Find out more about [how MISUMI can save you time and money as an electric vehicle manufacturer](#).

The role of suppliers in electric vehicle production

Suppliers play a crucial role in the production of electric vehicles and contribute significantly to the innovative strength and efficiency of the entire industry.

Unlike conventional vehicles, electric vehicles rely on a large number of specialized components that are developed and produced by external partners. These include advanced battery cells, electric powertrains and control electronics, all of which are only provided by specialized suppliers. These components are at the heart of electromobility and determine the performance, range and efficiency of the vehicles.

Another important aspect is that suppliers can often act more flexibly due to their specialization and specific expertise. As electromobility is developing rapidly and new technological solutions are constantly needed, car manufacturers rely on partners who can react quickly to changes and new requirements. Suppliers such as MISUMI help to optimize production processes, integrate new materials and manufacturing techniques and thus increase efficiency in production.



To meet the complex requirements, suppliers must continuously adapt their production processes and product portfolios. Innovations in the field of electromobility - such as the increasing electrification of vehicle fleets and the introduction of autonomous driving systems - require components that offer both maximum precision and durability.

In addition to supplying high-quality standard products that can be produced efficiently in large quantities, the ability to develop customized solutions is of great importance. Short lead times and fast delivery also play a key role in increasing manufacturers' flexibility and minimizing downtime in production. Car manufacturers need flexibility and cooperative partnerships in order to adapt to the dynamic electromobility market.

Challenges faced by electric vehicle manufacturers

The production of electric vehicles presents manufacturers with a variety of challenges that are not only technical in nature, but also affect the entire supply chain and production processes.

The automotive industry is undergoing profound change, and the transition to electric vehicles requires innovative approaches to production, strict quality standards and continuous optimization of production processes. At the same time, manufacturers are faced with the task of integrating systems from different countries and maintaining them in the long term.

STRICT QUALITY STANDARDS

One key aspect is compliance with strict quality standards. Electric vehicles must not only impress in terms of performance and range, but also meet high safety and durability requirements. As the production processes are very complex, the components used, from batteries and motors to electronic components, must meet the highest quality criteria. This requires smooth cooperation between manufacturers and their suppliers, who are able to deliver precise and reliable components.

OPERATION AND MAINTENANCE OF PRODUCTION FACILITIES

An additional factor of uncertainty is the maintenance of production facilities and plants. These are often built by different suppliers from all over the world, which leads to a high level of complexity in maintenance. Without detailed information about the origin and specifications of the individual components installed, it becomes a costly undertaking for manufacturers to procure the necessary components for maintenance and repairs.

The international procurement channels and the related logistical challenges add to the difficulties of ensuring the availability of the required parts in good time.



STANDARDIZED AND INDIVIDUALLY CONFIGURABLE COMPONENTS FROM MISUMI

MISUMI is a renowned supplier of mechanical components and parts and offers customized solutions for precisely such challenges. With a wide range of standardized parts available in large warehouses worldwide, MISUMI ensures that the required components can be retrieved at any time and without delay.

Another key advantage of MISUMI is the ability to configure components individually and order them without a minimum order quantity. This flexibility is particularly advantageous when special and customized solutions are needed to meet the complex requirements of state-of-the-art production facilities.

MISUMI as a solution finder

MISUMI's extensive expertise and knowledge of the automotive industry enables it to support Tesla not only as a supplier of components, but also as a strategic advisor and problem solver.

Given the complex challenges Tesla faces in manufacturing electric vehicles, MISUMI provides valuable advice and support that goes far beyond simply supplying components. For over a year, MISUMI has been providing onsite support directly at Tesla's factories, which has made a significant contribution to the success of the partnership.

On site, MISUMI works with Tesla technicians and engineers to analyze problems and develop optimizations that allow MISUMI products to be used in a specific and precise manner. The direct contact and close collaboration at the plant are the key to the success of the cooperation. This on-site presence enables MISUMI not only to present its wide range of products directly, but also to provide Tesla employees with systematic training in the use and handling of these components.

This proactive approach enables Tesla to identify problems at an early stage and rectify them before they lead to major disruptions. In addition, MISUMI acts as a permanent point of contact for Tesla, providing advice on all technical questions and problems.

FLEXIBILITY AND KNOWLEDGE TRANSFER

Close partnerships with MISUMI enable manufacturers to react quickly to changes and new requirements. Continuous communication and the exchange of knowledge and experience strengthen cooperation and create trust. You, too, can benefit from the extensive training programs. In numerous training courses, [webinars](#) and roadshows, MISUMI imparts valuable knowledge and practical skills designed to bring you closer to the latest developments and best practices in the industry. Prefer to learn online? No problem. Check out our [webinar recordings](#) to learn about our innovative products and solutions.

EXPERTISE AND TRUST

By combining training, consulting and product support, MISUMI is establishing itself as an indispensable partner for electric vehicle manufacturers. In an industry characterized by high competitive pressure and constant technological advancements, MISUMI enables its customers to stay on the cutting edge and achieve the best possible results. Car manufacturers who work with MISUMI benefit not only from high-quality products, but also from a strategic partner that provides them with the knowledge and support they need to achieve their production goals and succeed in the dynamic electromobility market.



**Revolutionize Workflow:
RAPID Design CAD Import**

Liam Coote **Lars Szatmari**

MISUMI as an expert for precision, efficiency and reliability

The importance of precise components in electric vehicle manufacturing should not be underestimated, as the production of these vehicles places extremely high demands on accuracy, efficiency and reliability.

Electric vehicles differ from traditional vehicles in many technical aspects, which is specifically due to the nature of the requirements components must fulfill. Particularly in battery production, frame construction and the development of electric motors, manufacturers must adhere to the highest precision standards in order to ensure the desired performance and durability of the vehicles.

MISUMI - PREFERRED PARTNER FOR QUALITY AND EFFICIENCY

High-precision components are required in battery production in order to properly handle the sensitive materials used in modern battery cells. Even small inaccuracies can lead to a loss of performance or to safety risks. The same applies to frame construction. There, precise manufacturing is crucial to guarantee the high safety and stability standards. Precision also plays a key role in the development of electric motors, as these motors are more complex than combustion engines and require specialized components that adhere to precise tolerances and thus ensure efficient energy transmission.

FAST AVAILABILITY AND RELIABILITY

With a wide range of standard and customized parts tailored to the specific requirements of electric mobility, MISUMI supports automotive manufacturers in achieving the required accuracy and efficiency in production. MISUMI's reliability as a supplier minimizes the risk of production downtime and ensures a continuous supply of key components. This increase in efficiency and improvement in quality is ultimately reflected in the high level of satisfaction of the end customers of electric vehicles, who benefit from first-class products.



MISUMI as a specialist for positioning pins

MISUMI can constantly respond to the new challenges in the production of electric vehicles through innovative developments and customized solutions and has now established itself as a central supplier of positioning pins.

CERAMIC POSITIONING PINS

The main task of positioning pins is to securely align and fix components. Ceramic positioning pins, for example, offer the advantage that they are particularly durable due to their high hardness and are also resistant to high temperatures and corrosion. Compared to other materials, however, ceramic pins are significantly more susceptible to breakage under mechanical stress.

STEEL POSITIONING PINS

Steel positioning pins, on the other hand, feature very high strength and toughness and are therefore extremely resistant to vibrations, lateral forces and mechanical loads. The high resistance to wear ensures that steel pins have a long service life in harsh production environments, even with repeated use. By using steel pins, automotive manufacturers can reduce maintenance costs and minimize production downtime.

CHALLENGES FOR THE INDUSTRY

However, steel pins also reach their limits in certain areas of application, particularly in terms of resistance to welding spatter. Without special coatings, welding spatter can easily be deposited on the pins when welding components. Such deposits can impair the precision of positioning and subsequently reduce the quality of production.

HOW MISUMI IS REVOLUTIONIZING POSITIONING PINS

Thanks to its expertise, MISUMI was able to find an innovative solution to this problem as well: Positioning pins made entirely of steel with a so-called Weld-Spatter-Resistant (WSR) coating. The WSR positioning pins from MISUMI offer a number of advantages that make them a superior choice compared to conventional ceramic positioning pins



VORTEILE VON POSITIONIERSTIFTEN MIT WSR-BESCHICHTUNG

A key advantage of WSR positioning pins is their exceptional resistance to weld spatter and wear.

The special coating effectively prevents the adhesion of welding spatter, which in practice means that the pins remain clean and retain their functionality over long periods of time. This not only significantly reduces maintenance requirements, but also prevents production interruptions that could be caused by regularly cleaning or replacing dirty pins.

At the same time, the WSR positioning pins are extremely wear-resistant, which extends their service life and reduces the total operating costs.

PRECISION AND RELIABILITY AT THE HIGHEST LEVEL

In terms of performance, the WSR positioning pins are in no way inferior to their ceramic counterparts. They offer at least the same performance in terms of precision and reliability when positioning components. This is particularly important in automotive production, where accuracy and consistency are crucial to meet high quality standards.

The robustness and durability of WSR positioning pins ensure that they meet the requirements of modern manufacturing processes while maintaining high production quality.

HIGH-PERFORMANCE, ECONOMICALLY ATTRACTIVE SOLUTION

Despite these numerous technical and operational advantages, WSR positioning pins are priced in the same range as ceramic pins. This means that automotive manufacturers do not have to incur higher costs to take advantage of the advanced WSR coating.

The ability to obtain improved performance and durability at no additional cost makes WSR positioning pins an economically attractive choice for any production process.



SUPERIOR DESIGN FOR THE MOST DEMANDING APPLICATIONS

In addition to the innovative WSR positioning pins, MISUMI also offers positioning pins with a DLC coating. An outstanding feature of the DLC coating is its resistance to aluminum cold welding.

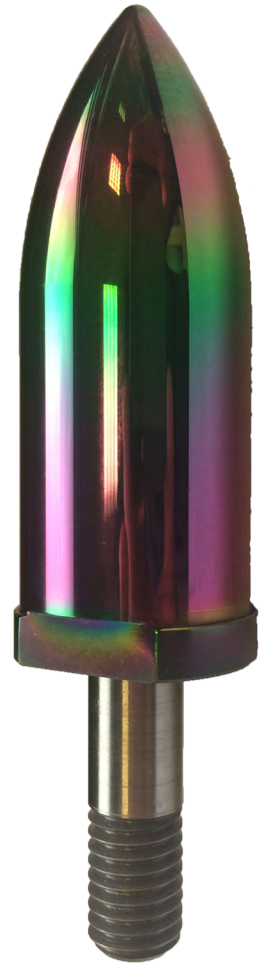
In addition, DLC positioning pins are characterized by their extreme hardness, excellent abrasion resistance and extraordinary wear resistance.

Even with intensive use and in high-stress environments, these positioning pins have an extended service life.

CHEMICAL RESISTANCE AND DURABILITY

Another advantage of DLC positioning pins is their excellent chemical resistance. They are impervious to many aggressive chemicals and corrosive substances commonly found in industrial environments. This characteristic ensures that the pins retain their functionality and integrity even under difficult conditions, which increases the reliability and ease of maintenance of the production equipment.

Would you also like to minimize wear in the manufacturing process and increase the efficiency of your electric vehicle production? Find out more about the benefits and use of positioning pins with [DLC coatings](#).



MISUMI - supplier of standard products and configurable products

MISUMI has a number of other advantages that reinforce its position as a leading supplier of positioning pins and other mechanical components.

A special feature of MISUMI is the high configurability of its components. In the MISUMI online store, customers can configure the components exactly according to their design specifications on the respective product pages.

This includes the definition of parameters such as material, surface treatment, dimensions and many other specifications. This flexibility enables customers to receive customized solutions that are perfectly tailored to their specific requirements.

UNIQUE PART NUMBER AND CAD INTEGRATION

Once a component has been configured, the configurator generates a unique, globally recognized part number. This not only makes it easier to order and track parts, but also ensures that all specifications are clearly and unambiguously documented. In addition, customers can download CAD data of the configured components directly; this makes integration into their own design and production processes much easier.

TRANSPARENT PLANNING AND COST SAVINGS

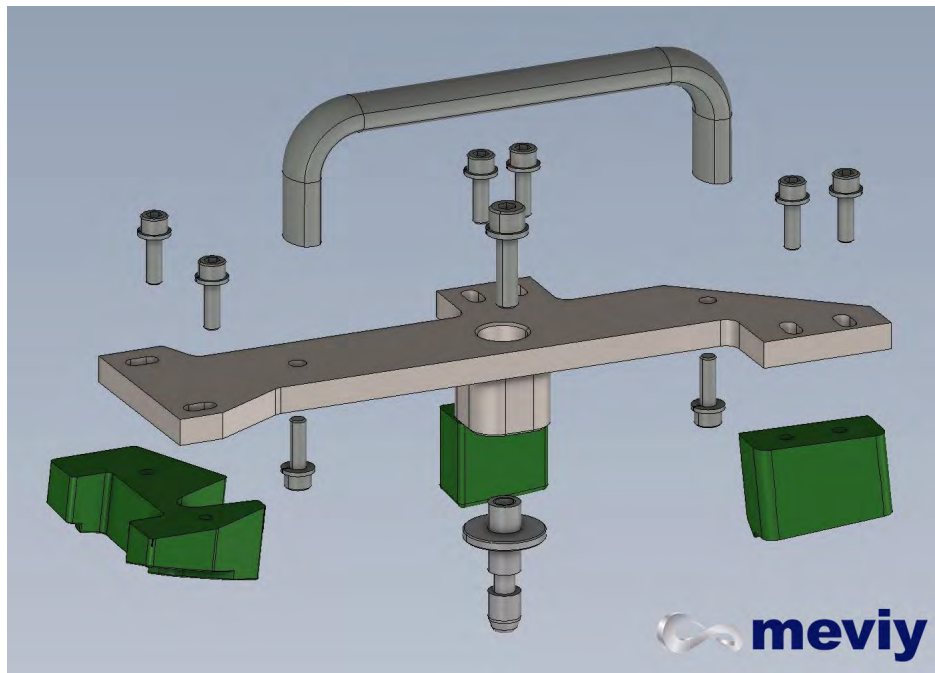
Price and delivery time information is also displayed immediately, allowing customers to plan their procurement processes transparently and efficiently. These comprehensive configuration options not only save time, but also money by optimizing the procurement process and reducing the need for costly adjustments and rework.

Through this customer-oriented approach, MISUMI demonstrates that it not only supplies high-quality products, but also offers innovative and flexible solutions that meet the requirements of the modern manufacturing industry.

Efficient design customization with MISUMI

The new on-demand procurement software *meviy* is the latest addition to MISUMI's repertoire. This innovative solution allows customers to integrate their own component designs directly into the MISUMI system by uploading 3D CAD files. Once a component has been uploaded, further adjustments can be made easily and intuitively in the 3D screen display.

This includes adding tolerances and dimensions as well as changing the bore type and other specific design features. Thanks to the user-friendly interface, *meviy* allows customers to customize their designs precisely and according to their exact requirements without having to start complex design processes from scratch.



CUSTOMIZED COMPONENTS AT COMPETITIVE PRICES

This flexibility not only saves time, but also makes it possible to react quickly to changes or special requirements.

Another key advantage is that MISUMI does not specify a minimum order quantity. This means that even small batches or individual prototypes can be ordered easily without incurring high costs due to minimum order quantities. This customer-friendly practice makes it possible for smaller companies or special projects in particular to obtain customized components at competitive conditions.

Target-oriented design of aluminum frames

Another outstanding offering from MISUMI is its specially developed FRAMES software for the design of aluminum frames.

This software revolutionizes the design and ordering process by enabling significant time savings from initial design to final order. Its intuitive operation allows customers to effortlessly design enclosures and frames, significantly simplifying and speeding up the entire design process.

The software is configured to make even complex design requirements accessible through a user-friendly interface. Customers can easily create their designs and import them directly into their own CAD system.

EFFECTIVE AND ERROR-FREE PROCUREMENT

This seamless integration into existing work processes ensures that no design steps are lost and all changes can be applied immediately. Another key benefit of this software is the automatic creation of a parts list. As soon as a design is completed, the system generates a detailed list of all required components and materials. This automatic BOM generation minimizes ordering errors and ensures that all required parts are accurately specified and ready to order. This makes the procurement process more efficient and accurate, ultimately reducing costs and delays.



INNOVATION THROUGH STANDARD-COMPLIANT SOLUTIONS

Through these and other flexible services, complemented by compliance with international standards such as NAAMS, MISUMI has positioned itself as a reliable and innovative partner to leading automobile manufacturers. The ability to offer customized solutions efficiently and cost-effectively significantly increases productivity and supports the highly precise and demanding production processes of electric vehicle manufacturing.

Fair prices and customer satisfaction - with MISUMI

MISUMI is unmatched and unrivaled as a one-stop store for customized and high-precision design and manufacturing standards. With an impressive range of products, MISUMI offers both configurable and standardized components that fully meet customers' specific requirements.

This results-oriented approach enables MISUMI to offer complete product solutions that are perfectly tailored to the individual needs of electric vehicle manufacturers.

TECHNICAL SUPPORT AROUND THE CLOCK

MISUMI's engineering service team is available around the clock to provide technical support and ensure that production processes run smoothly. In addition, the comprehensive system support network ensures that any problems can be resolved quickly and efficiently, minimizing downtime in production.

COMPETITIVE PRICES AND CUSTOMER SATISFACTION

But it's not just the manufacturers who benefit. Thanks to the use of high-quality, precision-manufactured parts and specially configurable components, end customers experience higher quality and a longer service life for their vehicles.

The reduced production costs and lower maintenance costs enable more competitive prices, while more efficient production processes accelerate the market launch of new models.



Put simply, MISUMI makes things work, contributing significantly to efficiency and productivity in manufacturing.

In addition, improved process reliability and compliance with high quality standards ensure more reliable and safer vehicles. The rapid adaptation and integration of new technologies and designs results in more modern and attractive vehicles that increase customer satisfaction and strengthen the market position of customers.

The electric vehicle revolution - challenges and opportunities

The electric vehicle revolution has fundamentally changed the automotive industry and paved the way for a more sustainable future. But these changes come along with significant challenges.

One of the biggest difficulties is the further development of battery technology. Range, charging speed and durability are key issues that need to be resolved in order to further increase the broad acceptance of electric vehicles.

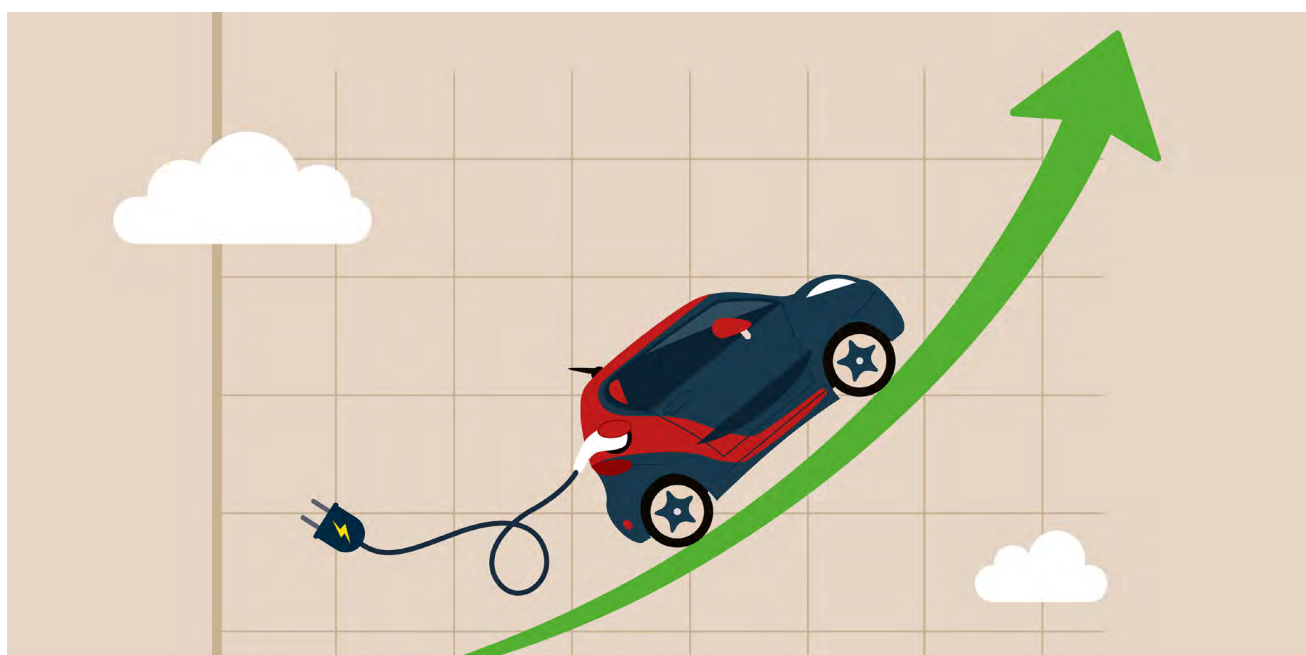
SUSTAINABILITY AND INNOVATION - SETTING NEW STANDARDS IN ELECTROMOBILITY

Sustainability is at the heart of the electric vehicle revolution and is driving innovations that are changing the entire automotive industry.

Manufacturers are working hard to optimize production processes in order to use energy and resources more efficiently. This includes increasing the use of recycled materials, minimizing waste and integrating renewable energy into production facilities. Optimizing supply chains, particularly through local procurement and shorter transport routes, also makes a significant contribution to sustainability.

Technological innovations are also crucial to the success of electromobility. They affect both the vehicle components and the production processes. Advances in battery development not only enable longer ranges, but also a more sustainable and safer energy supply. In addition, new automation and robotics technologies promote efficiency in production, while at the same time quality assurance is improved by modern testing systems and sensor technology.

The challenges are enormous, but at the same time offer the opportunity to shape a more sustainable and technologically advanced future. MISUMI supports manufacturers in overcoming the challenges of electromobility and successfully exploiting the opportunities that arise. Visit [our website](#) to learn more about our customized solutions and see how we are helping to shape the future of electric mobility.





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