

MTA *journal*

Business & News from Automotive World

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MTA WORLD

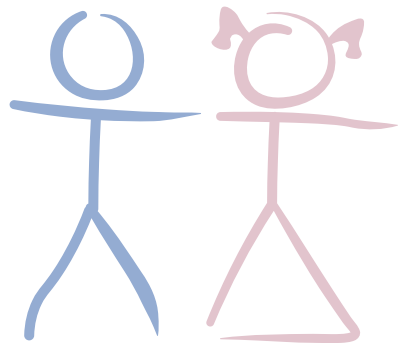
Growth through acquisitions

TECH INSIDER

An intelligent power distribution unit with STi²Fuse



ASILO NIDO PRIMI PASSI



The kindergarten of MTA MTA 幼儿园

To improve the work-life balance of many new parents, MTA has opened a kindergarten for the children of its employees as well as for non-employees. Managed and conducted by two experienced educators and pedagogues, already founders in 2001 of the kindergarten in Codogno, MTA's kindergarten is housed in a modern structure with very large and bright spaces to ensure its little guests the well-being and security they need.

为了改善许多新父母的工作与生活平衡，MTA 为其员工和其他人的子女开设了一所幼儿园。MTA 幼儿园由两位经验丰富的教育工作者和教师管理，他们早在 2001 年就已在科多尼奥创立了这所幼儿园。MTA 幼儿园坐落在一座现代化的建筑内，空间宽敞明亮，可确保小客人获得所需的健康和安

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Editorial 主编



This new issue of the Journal highlights our group's growth strategy, driven by site expansions and strategic acquisitions.

In order to tackle the ever-evolving challenges of the automotive industry, particularly in recent years, we have acquired several companies that enhance our ability to offer cutting-edge technological solutions in line with vehicle advancements and mobility needs.

In 2023, we completed the acquisition of EDN S.r.l., having initially acquired an 80% stake in 2021. EDN specializes in on-board battery chargers and power converters for electric and hybrid vehicles. In 2024, we took over a business unit of Calearo S.p.A., a company operating in the field of antennas and wireless connectivity solutions. And lastly, earlier this year we also acquired a 60% stake in EFI Technology, a company renowned for designing engine control units (ECUs) for combustion vehicles, as well as traction inverters and Battery Management Systems for electric vehicles.

Our company also continues to expand by developing and enhancing its own facilities, including our laboratories, R&D offices, and production departments, while at the same time investing in technology. This issue will specifically cover the relocation of MTA India and MTA Brasil to new premises.

We will also naturally showcase our latest products, the true protagonists of many exciting developments. In fact, designed to meet increasingly stringent manufacturer requirements, these innovations address the growing challenges of high-voltage applications, which require fresh approaches, from development through to production.

新一期的《Journal》重点介绍了集团通过扩建厂房和收购新公司实施的发展战略。为了应对近年来汽车领域不断变化的各种挑战，我们收购了多家公司，使我们能够跟随交通工具和出行需求的发展步伐，加强自身提供的技术解决方案。2023 年，我们完成了对 EDN S.r.l. 公司的收购（我们在 2021 年收购了该公司 80% 的股份）。这家公司专门为电动汽车和混合动力汽车提供车载电池充电器和电源转换器；2024 年，我们又接管了活跃在天线和无线连接解决方案领域的 Calearo S.p.A. 公司的一个业务部门。最后，在今年年初，我们收购了 EFI Technology 公司 60% 的股份。这家公司专门从事发动机控制单元、内燃机汽车电子控制单元以及电动汽车牵引逆变器以及电池管理系统的设计。此外，公司还通过发展并扩建实验室、研发办公室、生产部门等设施以及对技术的持续投资，不断发展壮大。我们将详细介绍 MTA India 和 MTA Brasil 迁往新址的消息。当然也不能少了我们的产品，它们可是许多有趣故事中无可争议的主角。我们根据制造商的要求开发产品，如今制造商的要求越来越严格，尤其是涉及到高电压方面，从产品的开发到生产都需要找到新的方法。

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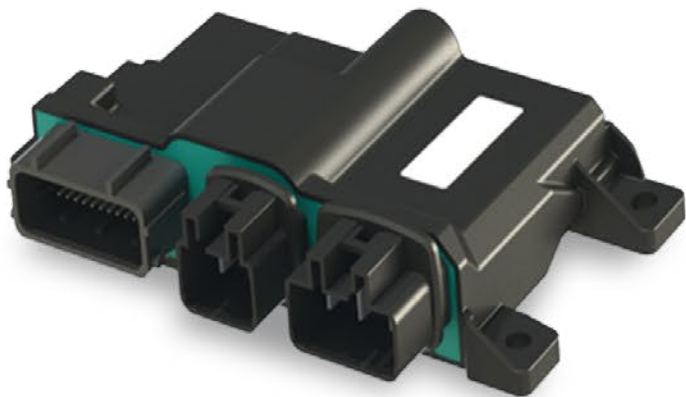
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MTA acquires a majority stake in EFI Technology, strengthening its expertise in the field of actuator and motor control electronics

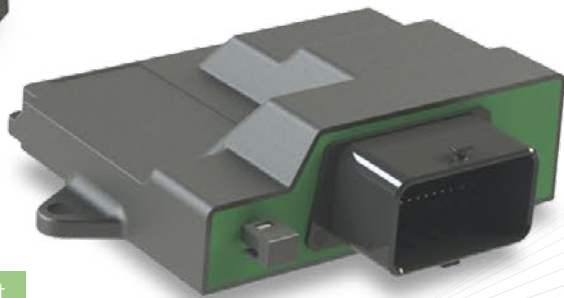
MTA 收购了 EFI Technology 公司的大部分股份，并获得了执行器控制和电机控制方面的专长电子技术



Battery Management System



Inverters for motorcycles



Engine Control Unit



EFI Technology is a prominent Italian company and a global leader in the development and production of engine control units for combustion vehicles, as well as traction inverters and Battery Management Systems (BMS) for electric vehicles. Its control units enable precise injector control for diesel and gasoline engines with up to 12 cylinders, ensuring compliance with the latest emission standards (Euro 6, Stage V, and EPA Tier 4). Inverters and BMS play a crucial role in electrification, and EFI develops these components for architectures supporting voltages of up to 1,000 V.

With a rich history in motorsport at the highest level, EFI Technology has been at the forefront of innovation for decades. As early as 1985, Piero Campi – who co-founded the company in 1991 alongside Angelo Cumoli – designed and supplied electronic control units for Ford-Cosworth Formula 1 engines. Advanced iterations of these control units would later be used in the Ford engines that helped Michael Schumacher secure his first F1

world championship with Benetton in 1994, as well as in those used in the Lola cars that led Nigel Mansell to victory in the 1993 American IndyCar Championship.

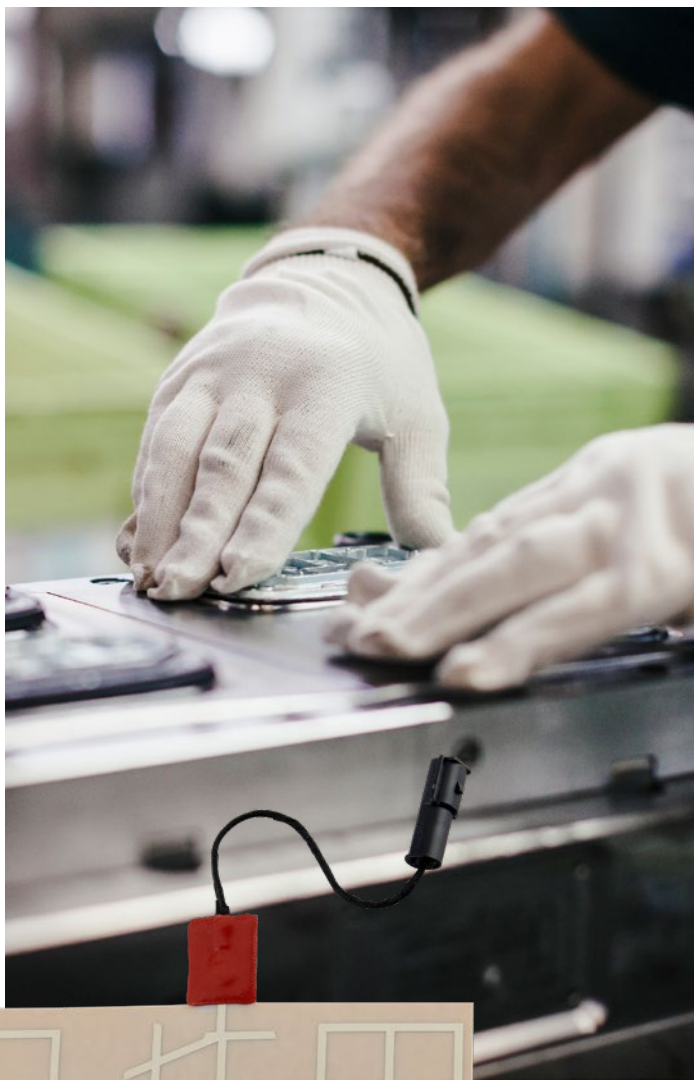
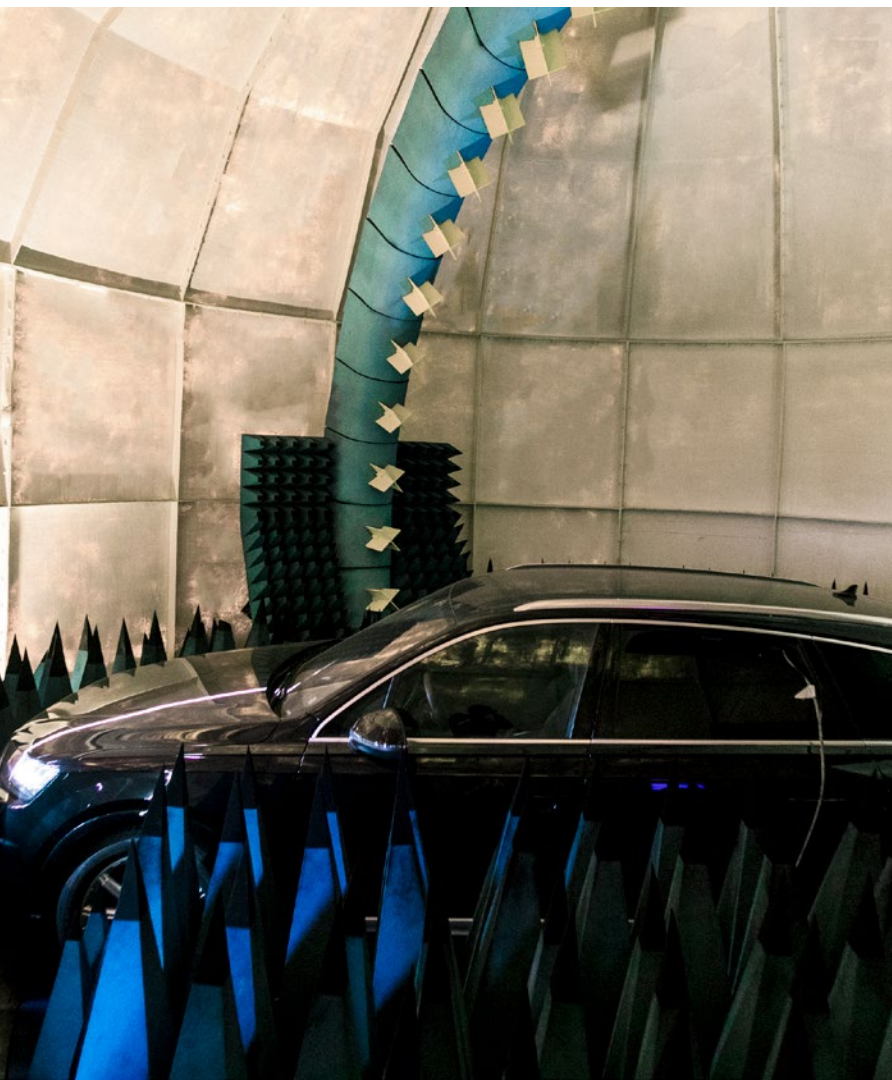
Over the years, EFI Technology has collaborated with leading manufacturers of high-performance road cars, scooters, and motorcycles while maintaining a strong presence in top-tier motorsports. The company has also expanded its portfolio of engine control systems and VCUs to other industries, including marine and military applications.

EFI's entry into the electric mobility sector has been significant for years, supplying OEMs with BMSs and inverters, including models with integrated DC-DC converters, even tailored for motorsport applications.

As part of its international expansion, EFI Technology established new offices in China in 2007 and formed a joint venture in India in 2011 to produce high-volume Engine Control Units for scooters and three-wheelers.

EFI Technology 是一家大型意大利企业，在内燃机汽车发动机控制单元以及电动汽车牵引逆变器和电池管理系统的开发和生产方面处于全球领先地位。这家企业所生产的控制单元最多可以控制 12 缸的柴油或汽油发动机的喷油器，并且符合最新的排放标准（欧六、Stage V、EPA Tier 4）。逆变器和 BMS 是电气化的关键组件，EFI 公司可以为高达 1,000 V 的架构开发这些组件。EFI Technology 公司历史悠久，其产品在最高级别的赛车运动领域得到了广泛应用。早在 1985 年，Piero Campi，并在 1991 年和 Angelo Cumoli 携手建立了 EFI 公司，就为一级方程式 Ford-Cosworth 发动机设计并提供了电子控制单元。这些装置的改进版本后来被用于福特发动机，使 Michael Schumacher 在 1994 年为贝纳通赢得他的第一个 F1 世界冠军头衔。被用在罗拉发动机的这些装置还帮助 Nigel Mansell 获得了 1993 年美国印地赛车锦标赛冠军。

在随后的几年中，公司获得了与超高性能公路汽车、踏板车和摩托车的主要制造商合作的机会，同时保持了在赛车领域的最高水平，并将发动机控制系统和 VCU 的供应范围扩大到其他领域，比如船舶和军事领域。多年前，公司成功地进入电动汽车领域，为原始设备制造商提供内置 DC-DC 的 BMS 和逆变器，这些产品也用于赛车应用。随着在国际市场上的扩张，2007 年 EFI Technology 在中国设立了新的办事处，2011 年在印度成立了合资公司，以便为踏板车和三轮车量供应发动机控制单元。



MTA Antenne: the business expands with new technologies for vehicle connectivity

凭借车辆连接新技术实现了业务增长

The acquisition of a business branch of Calero Antenne SpA, a company that has been developing advanced communication solutions and supplying major global manufacturers of cars, motorcycles, and heavy vehicles since 1957, reflects a strategic move to strengthen our presence in a technological sector that is set to play an increasingly vital role in the automotive industry, keeping pace with the evolution of vehicles and mobility needs.

At our site in Isola Vicentina (VI), we oversee every stage of antenna development: from mechanical, electronic, and electromagnetic design to validation - which takes place both in our state-of-the-art R&D in-house laboratory and directly on-board the vehicles - culminating in industrialization and the determination of most appropriate production tools. Our product offerings include both "off-the-shelf" solutions, readily available for series production and customizable to meet customer requirements, as well as tailor-made designs developed to address specific application needs.

Calero Antenne SpA 公司自 1957 年以来一直生产先进的通信解决方案，为全球主要的汽车、摩托车和重型车辆制造商供货。随着交通工具和出行需求的不断发展，这一领域在汽车行业的重要性将与日俱增。MTA 公司希望抢占这一技术领域，因此收购了该公司的一个业务部门。

我们在意大利东北有现代化的研发实验室，拥有 20 名研究人员，负责从机械、电子和电磁设计到验证（在内部实验室和车辆上进行），直至工业化和确定生产“工具”的天线开发的各个阶段。我们既提供“off the shelf”产品（即已经可以批量生产得产品），必要时也可根据客户要求要求进行定制，为满足特定的应用需求而专门设计解决方案。



A WIDE RANGE OF PRODUCTS

Our portfolio encompasses a wide range of antennas, including 5G, WiFi, WB, AM/FM, DAB, SDARS, GNSS, and V2X, categorized into 2 primary lines. The broadcasting line, which consists of products designed for receiving analog and digital radio signals, and the telematics line, which focuses on communication and remote control functions, incorporating data exchange technologies up to 4G and 5G, as well as High Precision GNSS (Global Navigation Satellite System) positioning systems.

The broadcasting line features a variety of high-performance antennas, manufactured using premium materials and cutting-edge production techniques. These include Flexi, Foil, and Shark, the latter distinguished by its signature fin-shaped design.

The Shark is also available in the telematics line, with select models capable of supporting the latest telecommunications systems for remote control and positioning. The range also includes products like the Lunex Evolution, NAVI, and NAVI SMALL, which are designed for in-vehicle installation and serve vehicle localization and data transmission purposes with no need for radio signal reception.

丰富的产品种类

我们的产品范围包括各种类型的天线（5G、WiFi、WB、Am/Fm、DAB、SDARS、GNSS、V2X 等），可分为两种基本类型：广播产品线包括用于接收模拟或数字无线电信号的产品，而远程信息处理产品线则专门用于通信和远程控制功能，采用了 4G 和 5G 的数据交换技术，以及 High Precision（高精度）形式的 GNSS（全球导航卫星系统）卫星定位系统。

广播产品线提供各种采用了高标准材料和最先进生产工艺的天线。在这个系列中包括 Flexi、Foil 和 Shark，最后一种天线采用了其极具辨识度的鳍状设计。

Shark 还推出了远程信息处理产品线的一些型号，能够支持最先进的电信系统，用于远程定位和控制。这一系列还包括 Lunex Evolution、Navi 和 Navi Small 等产品。这些产品可以安装在车内，无需接收无线电信号即可进行车辆跟踪和数据传输。

MTA India relocates to its new headquarters, which will include a plastic molding department and laboratory

MTA India 公司迁入新址，并将设立模塑部门和实验室



Founded in 2009 with the goal of expanding its target markets and establishing a stronger presence in emerging nations, MTA India is strategically located in Pune, a key hub for both local and international original equipment manufacturers (OEMs). Over the past 16 years, the site has grown in step with the market, necessitating the construction of new production facilities to meet rising demand from its customers, which include manufacturers of cars, trucks, earthmoving machinery, and motorcycles.

In fact, India is one of the world's four major automotive markets, and is on track to become the third largest by 2030. The commercial vehicle sector has seen significant growth in recent years, driven in part by infrastructure development, government regulations, and the transport of consumer goods. Meanwhile, the agricultural sector accounts for 36% of the market in numerical terms. When it comes to two-wheelers, India is undeniably one of the top two global players, boasting a vast domestic market and a sharp increase in exports to Europe and America.

MTA India 公司成立于 2009 年，旨在拓展目标市场，增加在世界新兴国家的影响力。公司位于印度浦那，是众多当地和国外主要原始装备制造商的战略要地。该公司自成立以来的 16 年间，与市场同步发展壮大，因此需要建造新的生产空间，以满足客户（汽车、卡车、推土机和摩托车制造商）的需求。

事实上，印度是四大汽车市场之一，有望在 2030 年成为世界第三大汽车市场。得益于基础设施建设、政府法规和消费品运输等因素，商用车市场近年来也增长强劲。农用车市场在数量上占整个市场的 36%。在两轮车领域，印度无疑是全球最大的两个参与者之一：国内市场巨大，对欧洲和美国的出口量也大幅增加。

MTA India 公司的新厂也建在普纳，占地 10,000 平方米，其中生产部门占地 3,000 平方米、仓库占地 1,000 平方米，办公室和其他服务设施占地 1,000 平方米。随着模塑区和实验室的建立以及研发部门的加强，产品质量上有了真正的突破。与我们目前位于意大利、巴西、斯洛伐克和摩洛哥的其他模塑部门一样，印度的模塑部门也按照最现代的工业组织逻辑设

MTA India's new headquarters, also in Pune, spans approximately 10,000 m², and includes a 3,000 m² production department, a 1,000 m² warehouse, and 1,000 m² dedicated to offices and other services. A true qualitative leap comes with the opening of the molding area and laboratory, along with the expansion of the R&D department. Like our other molding departments in Italy, Brazil, Slovakia, and Morocco, the Indian facility has been designed according to the most modern logic of industrial organization and incorporates the complete know-how of the entire production process. In fact, plastic molding is the key to our production process and to the high quality and precision that are fundamental characteristics of all our products.

The ability to conduct qualification tests - already a standard practice in different locations of the Group - represents a key added value, allowing us to offer customers complete expertise from design to validation, while also significantly improving time to market.

Our relentless pursuit of innovation and our commitment to providing customers with dedicated technical support throughout the product development process continue to be highly valued, and the need for this major expansion of MTA India is a direct testament to that.

计，拥有整个生产流程的完整技术诀窍。事实上，模塑是生产周期的基础，而高品质的模塑是让我们所有产品具有高质量、高精度的重要保障。

集团多个生产厂都已经可以自主进行资质测试，而进行这一测试的能力也是一项明确的附加值，使我们能够为客户提供从设计到验证的全套专业知识，并明显缩短产品上市时间。

我们不断追求创新，与每一位客户保持联系以确保他们在整个产品开发过程中获得充分技术支持，因此越来越受到客户的赞赏，而 MTA India 公司此次的大规模扩建需求也直接证明了这一点。

The new site hosts a 3,000 m² production department and a 1,000 m² warehouse

新工厂拥有 3,000 平方米的生产部门和 1,000 平方米的仓库



Brazil, our first foreign site, celebrates 30 years

巴西，我们的第一个海外生产基地成立 30 周年

In 1995, MTA embarked on its international expansion with the opening of its first overseas office in Brazil. This move was driven by the presence of major European automakers, which had begun local production in the late 1980s and required their suppliers to be nearby.

MTA Brasil initially focused on the "simple" assembly of radiator caps and power distribution units for customers who were already purchasing these products in Europe. Over time, the facility established a strong reputation in the market.

Just 12 years after its inception, following a significant capital increase, MTA Brasil expanded both its warehouse and production capabilities. A few years later, it dedicated a new 1,500 m² area to laboratory and R&D activities, marking a crucial turning point in the facility's future growth.

In fact, with a dedicated R&D department, MTA Brasil became a key partner for major local vehicle manufacturers, who appreciated its ability to develop innovative and customized solutions.

Fully equipped with all necessary instruments, the laboratory also enhances the R&D department's ability to independently test all the products designed in Brazil, ensuring both design and product validation.

In 2018, MTA Brasil opened its plastic molding department, which was the first for MTA outside of Italy. This department now operates 11 presses, all integrated with a centralized plastic granulate distribution system for automated feeding and robotic unloading.

In order to meet the growing demand from manufacturers of power units with printed circuit boards, MTA Brasil also introduced assembly lines for press-fit terminals, ensuring highly reliable connections.

1995 年，MTA 在巴西开设了第一个海外生产基地，开始了其国际化进程。早在 20 世纪 80 年代末，欧洲的大型汽车制造商就开始在巴西生产汽车，因此他们需要就近找到供应商。

MTA Brasil 的业务始于为客户“单纯”组装他们在欧洲购买的散热器盖和配电单元。在这个过程中，公司开始在市场上为人所知。

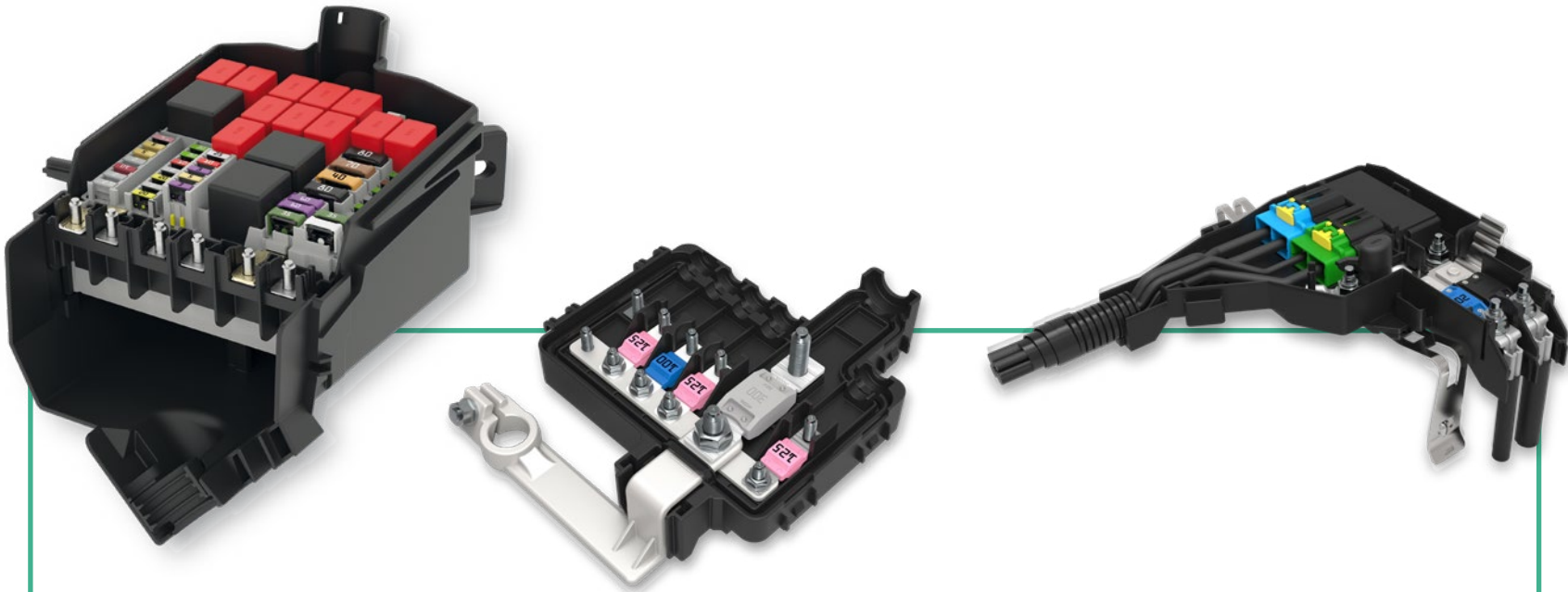
MTA Brasil 在开设仅 12 年后就进行了大规模增资。在此之后，公司对仓库和生产设施进行了扩建，并在几年后又新建了一个面积达 1500 平方米的实验室和研发中心。这一切成为了该基地未来发展的转折点。

得益于在研发方面的投入，MTA Brasil 现已成为当地主要汽车制造商的标杆式供应商。这些汽车制造商非常欣赏 MTA 在研发创新定制解决方案方面的高度专业水平。

这里的实验室配备了所有必需的设备，因此可以独立进行研发，对在巴西设计的所有产品进行设计验证和产品验证测试。

2018 年，模塑部门投入使用，这是意大利境外的第一个模塑部门。该部门目前由 11 台压机组成，所有压机都配备了中央塑料颗粒分配系统，可以通过机器人自动上料和卸料。

由于印刷电路板电源组件制造商的需求不断增加，MTA Brasil 还配备了端子装配线，以确保可靠的连接。



Several key projects developed for the local market include:

- a wired or PCB power distribution unit for FCA Latam. Known as the HMPDC, this unit earned MTA Brasil an innovation award from Stellantis in 2020. Designed and industrialized in Brazil, the HMPDC will also be "replicated" at MTA HQ for supply to Stellantis plants in Europe.
- a control unit developed for VW Truck&Bus for its new "Delivery" truck family, equipped with MegaVal® and MidiVal® fuses in five different configurations.
- the BFT HJD control unit, initially supplied in Europe for the Renault Captur and Dacia Duster, has now been introduced to the Brazilian market. MTA Brasil has equipped itself with dedicated assembly and clinching lines.

为当地市场实施的各种项目中包括：

- FCA Latam 的有线或采用 PCB 的配电单元。凭借这款名为 HMPDC 的配电单元，2020 年，MTA Brasil 公司获得了 Stellantis 集团颁发的创新类奖项。在巴西设计和工业化的 HMPDC 也将在 MTA 总部投入生产，供应给 Stellantis 集团在欧洲的各个工厂。
- 为 VW Truck&Bus 公司的全新运货车系列制造的配电单元提供了 5 种不同配置的 MegaVal® 和 MidiVal® 保险丝。
- 已在欧洲的 Renault Captur 和 Dacia Duster 两款车上安装的 BFT HJD 配电单元也被推广到巴西。MTA Brasil 配备了装配线和机械压力连接线。

R&D AMERICAS

Today more than ever, the importance of R&D is emphasized. For this reason, a structure called "R&D Americas" is created, dedicated to the development of LATAM and NAFTA projects, as well as to the production processes necessary to industrialize them, made up of a Technical Manager, Project Leaders, Project Engineers, DFMEA specialists, Program managers and Prototype technicians. The team is independent with regard to the functions mentioned and enjoys the direct support of the R&D of the HQ with regard to the checks on electrical sizing and FEM/CFD simulations for complex products.

美洲研发中心

今天，我们比以往任何时候都更加关注研发的重要性。为此，创建了一个名为“美洲研发”的结构，专门负责拉丁美洲和北美自由贸易区项目的开发，以及将其工业化所需的生产流程，由技术经理、项目负责人、项目工程师、DFMEA 专家、项目经理和原型技术人员组成。该团队在上述职能方面是独立的，并在复杂产品的电气尺寸检查和 FEM/CFD 模拟方面得到总部研发部门的直接支持。



New headquarters for MTA Brasil

MTA Brasil 新厂址

Now, as MTA Brasil celebrates its 30th anniversary, it looks to the future with ambitious plans.

In 2026, the new site will open a 10,000 m² facility on a 30,000 m² property, providing ample space for any future expansions we may require. Designed in alignment with all our group's plants, the new site will enable a more efficient production layout and a significant expansion of the plastic molding department, which will feature 20 presses. Most notably, for the first time in a foreign site, the metal stamping department will be introduced, equipped with 4 stamping presses, which will further enhance both quality and time-to-market. In 2027, an EPA area will be established to initiate electronic production, equipped with both THT and SMT assembly lines. The capacity of the in-house laboratory will also be increased, with a dedicated 300 m² area outfitted with the latest testing equipment.

The new facility will also be equipped with a solar power system, reinforcing our commitment to the values of sustainability and environmental responsibility, which have always guided our operations. Plans are also in place to strengthen the workforce, with a continued emphasis on talent development and skill enhancement through specialized professional development programs.

Above all, MTA Brasil is also focused on growing its client base and introducing new products. One major project already underway involves producing an HVPDU for Brazil's first fully electric truck, developed by one of the world's largest industrial vehicle manufacturers.

MTA Brasil aims to double its sales within a span of approximately 5 years.

在公司成立 30 周年之际，MTA Brasil 展望未来，制定了雄心勃勃的计划。

事实上，我们将于 2026 年启用新总部。新厂址自有面积为 30,000 平方米，厂房面积 10,000 平方米，使我们能够在未来进行一切必要的扩建。新厂项目与我们集团的所有工厂同步进行，将使集团的生产布局更加合理。模塑部门也将大幅扩建，届时将有 20 台压力机。最重要的是，将首次在国外落成金属冲压部门。新部门将拥有 4 台冲压机，从而进一步提高产品质量，缩短产品上市时间。2027 年，我们将建立一个 EPA 区域，利用 THT 和 SMT 组装线开始电子化生产。此外，我们还将增加内部实验室的实验能力。届时，实验室将拥有约 300 平方米的专用区域，配备最新的测试设备。

新工厂将配备光伏系统，这证明了我们在可持续发展方面做出的努力和对环境保护的高度重视，这也是我们一贯的经营理念。公司非常重视人才并通过专业的专业发展计划大力培养和提高员工的技能，从而使整个员工队伍实力都将得到加强。

MTA Brasil 的首要目标还包括提高客户数量和开发新产品。一项重要的 HVPDU 生产项目目前已启动，为一家世界最大的工业车辆生产商在巴西生产的第一批 100% 纯电卡车提供该设备。

MTA Brasil 的目标是在 5 年左右之内将营业额翻一番。

The new site will be built by Costa Feitosa, a construction company with over twenty-five years of experience in the civil construction sector, known for carrying out construction projects using advanced technologies. Boasting a team of experienced, highly qualified and motivated professionals, Costa Feitosa consistently delivers innovative architectural and economically efficient solutions.

Yellow Real Estate, a highly regarded service agency in the real estate sector and a long-standing partner, provides expert assistance with all construction-related processes, leveraging its professionalism and expertise as a regional benchmark.

新厂址将由 Costa Feitosa 建筑公司负责项目的开发并采用先进技术进行建造，这家公司在土木建筑领域已有超过二十五年的经营历史。这家建筑公司由经验丰富、高素质和积极进取的工作人员组成，一直为公司提供创新的建筑和经济解决方案。

Yellow Real Estate 是一家房地产领域的服务机构，也是一个重要的长期合作伙伴，其专业性和技能在该地区堪称典范，为我们提供所有与建筑相关的协助。



Antonio Falchetti, CEO of the MTA Group, at the moment of signing for the start of the works.

MTA 集团首席执行官 Antonio Falchetti 签署开工协议。



BMW Motorrad

BMW Motorrad



R 12 nine T



R 1300 GS
Adventure



CE 02

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The partnership with BMW Motorrad, which began a decade ago and has led to several projects over the years, has recently been renewed with the introduction of new electronic products for its iconic motorcycles. Today, this includes a suspension setup control unit for the R 1300 GS and R 1300 GS Adventure, along with a digital dashboard featuring an ultramodern design for the CE 02 and R 12 nineT. Analog clusters have also been developed for select models in the Heritage line.

Products for BMW Motorrad are manufactured at our Rolo electronics facility on dedicated, high-performance lines, with production processes compliant with the latest Safety and Security regulations. In particular, the unit production line has been designed for maximum efficiency, boasting remarkably fast cycle times to accommodate high production volumes.

与 BMW Motorrad 公司的合作始于十年前，期间开展了多个项目，而最近又为其标志性摩托车推出了多款全新电子产品。因此，我们现在可以看到 R 1300 GS 和 R 1300 GS Adventure 上安装的用于调节摩托车设置的控制单元，CE 02 和 R 12 nineT 上安装的超现代化设计的数字仪表盘，以及这个巴伐利亚品牌 Heritage 系列部分车型上的模拟集群。

为 BMW Motorrad 提供的产品是在我们位于意大利 Rolo 的电子设备工厂的专用高性能生产线上生产的，符合最新的安全与保障规定。特别是控制单元生产线，这条生产线的效率极高，由于产量大，因此生产周期极短。

DASHBOARDS

The distinctive dashboard features a 3.98-inch TFT display recently developed for BMW Motorrad's latest electric model for urban mobility: the CE 02. Given the bike's innovative design and striking visual presence, the dashboard was crafted with a highly compact, elongated and minimalist form, reminiscent of the latest smartphones. Like these modern devices, it features eye-catching graphics and animations, developed in-house, based on BMW Motorrad's design specs. It displays key information such as speed, engine RPM, engaged gear, and indicator lights, alongside e-mobility-specific data, including battery charge status, energy consumption, and range. Beyond its original design and compact size, which were immediately well received by riders, the dashboard ensures excellent visibility while riding, and boasts an IP6K9K rating, offering maximum protection against dust and high-pressure water jets. To ensure maximum compact size, we also developed a special 90° rear connector.

This new digital dashboard, featuring dedicated graphics, is available as an option on the R 12 nineT from BMW Motorrad's Heritage line, offering an alternative to the standard analog clusters, also produced in-house. Available as either standard or optional, these analog clusters can also be found on the R nineT Scrambler and R nineT Urban G/S.

仪表盘

这是一款独特的仪表盘，配备 3.98 英寸 TFT 显示屏，是我们最近为 BMW Motorrad 公司及其新的城市交通标志性电动产品 CE 02 而开发的。对于这样一款具有强烈视觉冲击力的创新车型，仪表盘的设计采用了极简主义风格，与传统的显示屏相比非常紧凑又修长，让人联想到最现代的智能手机。与最现代的智能手机一样，这款仪表盘也拥有引人注目的图形和动画，均是根据 BMW Motorrad 公司的设计在我们公司内开发出来的。这些图形和动画用来显示速度、发动机转速、挂入的挡位、指示灯等信息，以及一系列电动汽车的典型信息：电池充电状态、耗电量和续航里程。仪表盘的设计新颖，结构紧凑，一经推出就受到了车手们的青睐。此外，仪表盘还确保了驾驶时良好的可视性，防护等级为 IP6K9K，可以最大程度地防止灰尘和水柱的侵入。为了最大程度实现紧凑性，我们专门设计了 90° 的后侧连接器。

这款全新的数字仪表盘可以作为特殊装备安装到 BMW Motorrad 的 Heritage 系列的 R 12 nineT 上，替代标配的模拟集群（也是由我们生产）。R nineT Scrambler 和 R nineT Urban G/S 上作为标配或特殊装备也采用了模拟仪表盘。



CONTROL UNIT

Designed for the R 1300 GS, R 1300 GS Adventure, and other models equipped with twin-cylinder Boxer engines, the control unit serves to regulate the motorcycle's setup by controlling the electric valves and motors on the semi-active suspension system. Developed by our R&D department, it functions as a slave unit, converting the commands received from the suspension system's master unit into power. In addition to adjusting the bike's setup for an exceptionally comfortable riding experience on any terrain, the unit also performs diagnostics operations on the control valves and electric motors, detects potential malfunctions in the power semiconductors, and continuously monitors both its own health status and that of the suspension system.

Developing this unit for BMW Motorrad required significant R&D efforts to design the valve control system to achieve precise dynamic adjustments and set-point accuracy. Despite the use of compact components, it is able to deliver the high power density necessary to meet the motorcycles' demanding performance requirements.

The unit is also exceptionally robust, boasting an IP69 rating for protection against water jets and dust, and demonstrates outstanding resistance to vibrations, ensuring full functionality under all operating conditions, even when subjected to the challenging types of terrain these motorcycles frequently encounter.

控制单元

R 1300 GS 和 R 1300 GS Adventure 以及其他配备了双缸 Boxer 发动机的车型均配备了该控制单元，可以通过控制半主动悬挂系统的电动马达和阀门来调整摩托车的设置。这是一个从属装置，由我们的研发部门开发，设计用于将悬挂系统主装置的指令转换为动力。除了调整摩托车的设置，使车手在各种路面上都能获得极为舒适的骑行体验外，控制单元还能对控制阀和电动马达进行诊断，同时检测功率半导体中可能存在的故障并持续监控半导体和悬挂系统的健康状况。

这款专为 BMW Motorrad 公司开发的产品需要我们公司进行大量的研发工作来开发阀门控制系统，以便准确调节其动态和设定点。此外，控制单元的设计还采用了紧凑型的组件，尽管体积小，却能保证高功率密度，满足摩托车的高性能要求。

这款控制单元还非常坚固耐用，具有 IP69 的防水和防尘等级，并具有极高的抗震性，因此能够经受这些摩托车偶尔需要面临的地形挑战，并在一切使用条件下保持完整的功能。



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A “tunnel” to the future
一条面向未来的“通道”

The tunnel engineered and industrialized by MTA for a premium electric car is a highly complex component designed to distribute and regulate power from the battery pack to the two electric motors, while also supplying energy to other electrical and electronic systems on board the vehicle. Positioned atop the battery pack, it extends approximately 1.5 meters in length (with a width of 500 mm and a mass of around 20 kg), fitting within the underbody area between the front armrest and the rear seats.

This unique and complex component is responsible for managing a high volume of energy, and houses essential protective elements, including fuses, disconnecting devices such as contactors, current measurement tools like shunt or Hall effect sensors, transduction components like bus bars, and control and management devices, including the BMS. All these units are mounted on a support base made from aerospace-grade blanked aluminum sheet metal, which is covered with a thermal bulkhead to prevent heat transfer to the systems above.

The assembly of this sizable product, made up of nearly 400 components (some highly delicate and others requiring careful handling), is entrusted to skilled and specially trained operators. The production line at the Codogno plant spans 15 meters, and features 5 sequential assembly stations, including a cleaning unit equipped with a cyclonic vacuum system to remove any impurities. There is also an external island that assists with the installation of the screws in the metal components.

Once the tunnel has been thoroughly tested and validated, a label is applied to ensure full traceability of all its components and their individual parts.

Due to the tunnel's considerable size, weight, and the delicate nature of its integrated systems, a Kawasaki anthropomorphic robot is installed at the end of the production line to lift the unit by the designated gripping points and place it securely into an antistatic package.

MTA 为高级电动汽车设计并实现工业化生产的通道是一个高度复杂的组件，负责将电池的电能分配并定量输送给两个电动马达，并为汽车中的其他电气和电子设备供电。通道位于电池组上，在车身底部前扶手和后排座椅之间的空间内，长约 1.5 米（宽 500 毫米，重约 20 公斤）。

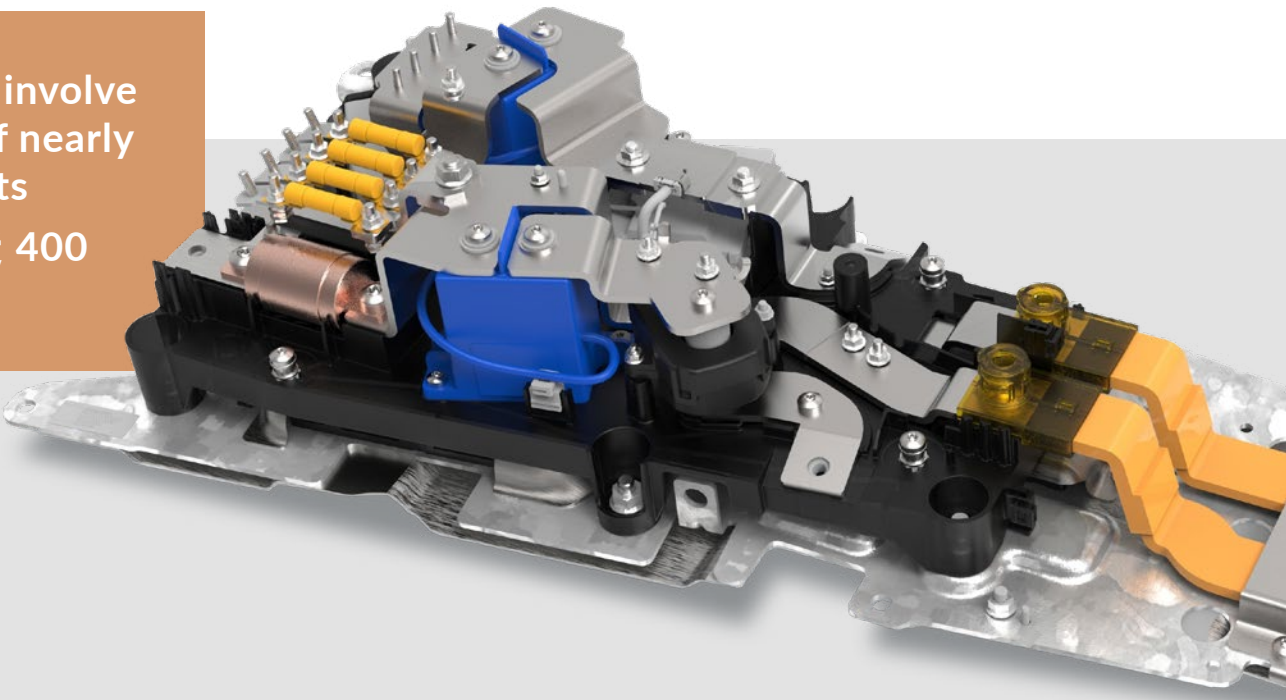
它是一个单一而复杂的组件，必须能够承载大量的能量。通道包含保护装置（如保险丝）、断开装置、接触器、电流测量装置，并联或霍尔效应传感器、转换装置、母线、控制装置以及管理装置（如 BMS）。这些设备安装在由航空级冲压铝板制成的支撑底座上，底座上有隔热板，防止热量传递到上面的系统。

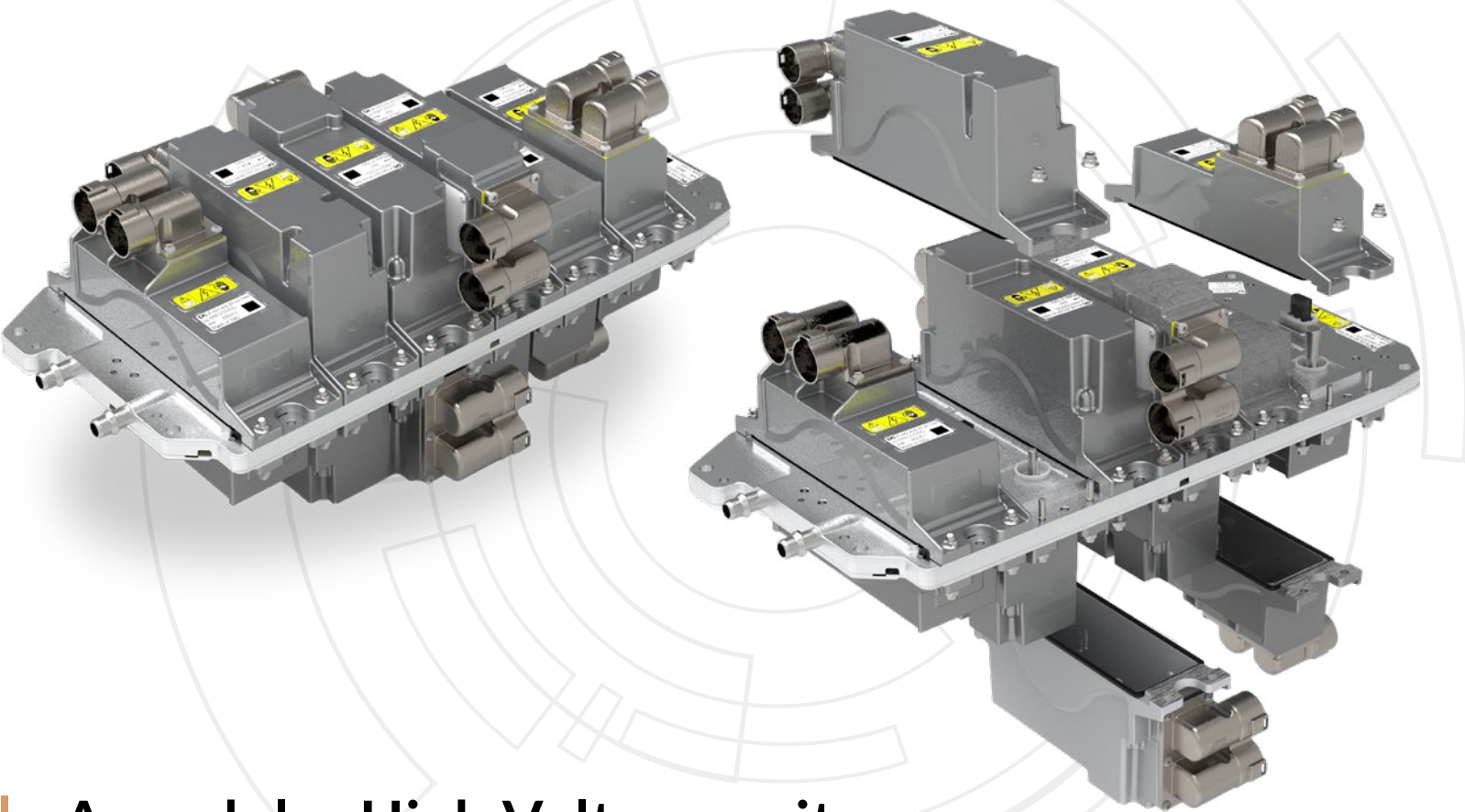
如此大型的产品由近 400 个部件组成，其中不乏一些特别精细的部件，还有些部件则需要小心处理，因此组装工作必须由接受过专业培训的经验丰富的专业操作人员完成。意大利 Codogno 的工厂生产线长 15 米，有 5 个连续的装配工位，其中包括一个清洁单元，通过旋风式真空系统清除杂质。还有一个外部加工岛，可以配合在金属部件上安装螺钉。

经过测试和验证后，通道上就会贴上标签，确保通道及其所有部件可追溯，以及每个已安装部件都可追溯。

由于所涉及的系统体积大、重量重、结构复杂，因此在生产线的末端安装了一个人形的川崎机器人，负责将通道从抓取点吊起，并放入防静电包装中。

The tunnel will involve
the assembly of nearly
400 components
该隧道将涉及近 400
个部件的组装





A modular High Voltage unit for heavy duty applications 用于重型应用的模块化高压控制单元

A unit with highly innovative features has recently been developed by our company for a heavy-duty fully electric vehicle. Like with most MTA products, this unit stands out for its modularity. In fact, by adjusting the configuration of its Plug&Play modules, customers can create multiple variants tailored to different vehicle setups.

In addition to these modules, the control unit also features a base plate that houses a liquid cooling system, operates at a maximum voltage of 800 VDC, and receives 900 kW of input power from the batteries, while its output power varies depending on the specific vehicle architecture.

Positioned externally beneath the cab, it is responsible for distributing high-voltage power from the batteries while ensuring the protection and operation of various electrical utilities, such as the ePTO, the cooling fan, and the inverter.

Meticulous attention is paid to the manufacturing of this control unit in order to guarantee both high performance and, most importantly, maximum safety, with IP67 and IP6K69 protection ratings. It is manufactured at our Codogno plant on a dedicated state-of-the-art production line, designed to meet the highest standards of electrical reliability.

The high-voltage connectors integrated into the unit serve a protective function and incorporate HVIL (High Voltage Interlock Loop) technology, which prevents accidents and damage by automatically interrupting high-voltage power flow in hazardous situations.

This modular HV unit exemplifies the advanced expertise our company has developed in high-voltage management, reinforcing our role as a full-solution provider for power unit manufacturing. It aligns with the most stringent OEM requirements, and is designed for combustion engine vehicles as well as hybrid and fully electric architectures.

最近，我们公司为一款重型的全电动汽车开发了一款具有创新功能的控制单元。与 MTA 的大多数产品一样，这款产品具有突出的模块化特点：通过调整即插即用的模块，客户可以创造出多种变体，适应车辆所配备的不同配置。

除模块外，这款控制单元还包含了一个容纳水冷系统的底板，最大工作电压为 800 伏直流，电池输入功率为 900 千瓦，输出功率则根据不同的车辆结构而有所不同。

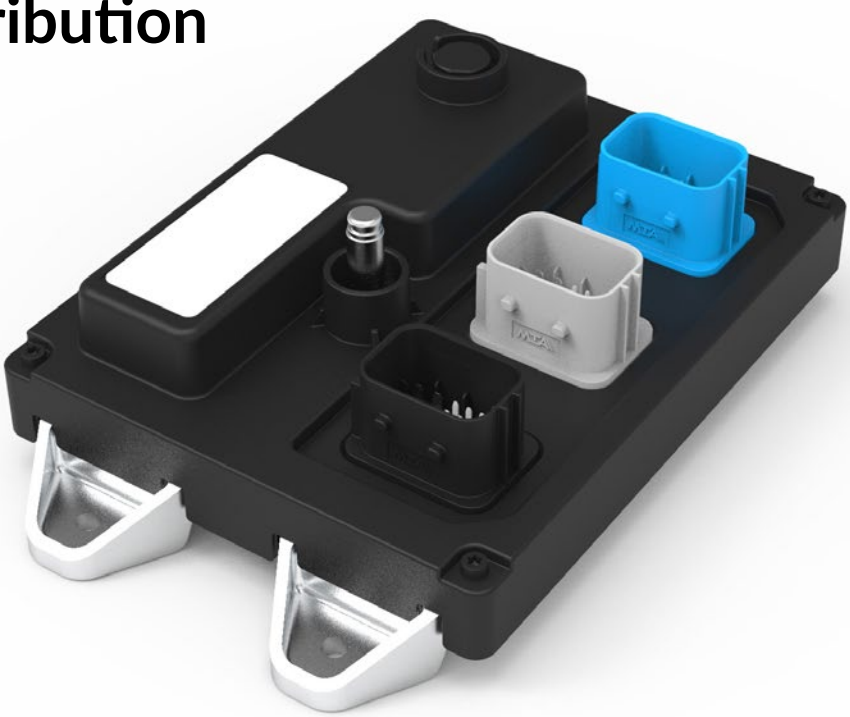
控制单元位于驾驶室外部下方，负责分配来自高压蓄电池的电力，为各种用电气设备（如 ePTO、冷却风扇和逆变器）供电并提供保护。

我们高度重视这款控制单元的生产：为确保高性能，尤其是最大程度确保安全，控制单元的防护等级达到 IP67 和 IP6K69。这款控制单元是在我们位于意大利 Codogno 工厂的一条最先进的专用生产线上生产的，符合极高的电气可靠性标准。

所使用的高压连接器具有防护和 HVIL（高压联锁回路）功能。这些连接器可以在危险情况下中断高压电流，以此来防止事故和损害。

这款模块化的高压控制单元展示了我们公司在高压管理方面的强大技术实力，证明了我们是电气控制单元制造领域有能力满足最严格原始设备制造商要求的全面解决方案供应商。我们生产的控制单元不仅适用于内燃机汽车，还适用于混合动力汽车和电动汽车。

An intelligent power distribution unit with STi²Fuse STi²Fuse 的先进控制单元



Our company has recently entered into a partnership with STMicroelectronics with the aim of supporting the evolution of the electrical and electronic architecture of vehicles, introducing intelligent components for power management and distribution.

The first result of this collaboration is Smart Fuse Box, an innovative power distribution unit that uses STi²Fuse, ST electronic fuses. Smart Fuse Box can be used to drive, protect and monitor up to 30 electric or electronic loads (such as ECUs, ADAS systems, equipments, lights, heating, air conditioning), through the STi²Fuse, and to interface analog/digital signals and loads via the vehicle's CAN network.

Smart Fuse Box combines in a single unit both the fuse and relay functions, thus leading to a reduction in its size. Furthermore, it does not require maintenance, even in the event of a load fault, since it can be managed remotely and is resettable via software. Through the electronics, in the presence of current peaks, it is possible to manage the on-board loads more accurately; the system diagnostics also allows to set health monitoring and predictive maintenance algorithms which minimize down-time of the vehicle.

Finally, it should be emphasized that the hardware and software architecture of the Smart Fuse Box is designed to satisfy the most stringent functional safety and cybersecurity requirements, increasingly prescribed to electronic control units. However, it remains possible for the OEM to develop its own application and its own customizable diagnostic policies based on a low-level software layer supplied by our company and certifiable according to the above requirements.

STi²FUSE, THE INTELLIGENT FUSE

The STi²Fuse is the new family of intelligent ST electronic fuses which present, compared to traditional fuses, a series of advantages that make them essential for the architecture of the future. They are in fact resettable, safer and more reliable over time, have intervention times 100 times faster and are able to diagnose the "health" of the load they drive.

One of the characteristics of the STi²Fuse is that the nominal current, as well as the tripping curve, are programmable and furthermore the nominal current is optimized according to the load and not the size of the fuse, an aspect which leads to a consequent optimization of the dimensions of the wiring.

我们公司最近与意法半导体公司建立了合作伙伴关系，希望通过引入用于电源管理和分配的智能组件，为拖拉机和农用机械电气和电子结构的发展提供支持。

双方合作的第一个成果是 Smart Fuse Box（智能保险丝盒），这是一种采用 STi²Fuse（ST 电子保险丝）的创新型智能控制单元。Smart Fuse Box 专为非公路领域开发，可通过 STi²Fuse 驱动、保护、诊断并监控多达 30 个电气和电子负载，例如电子控制单元、Adas 系统、设备、照明和空调系统。这一控制单元还可以通过汽车的 CAN 网络连接模拟和数字信号。

Smart Fuse Box 将保险丝和继电器功能集于一身，但体积大大减小；由于可以通过软件进行远程管理和复位，因此即使在负载出现故障时也无需维护。在出现电流峰值时，可以通过电子装置更精确地管理车载负载；系统诊断还可以设置 "health monitoring"（健康监测）和 "predictive maintenance"（预防性维护）等算法，最大限度地减少车辆停机时间。

最后，需要强调的是，智能保险丝盒的硬件和软件架构可以满足电子控制单元日益严格的功能安全和网络安全要求。原始设备制造商仍可选择在我们公司提供的底层软件层基础上进行定制开发自己的应用和诊断策略，并根据上述要求进行认证。

STi²FUSE, 智能保险丝

STi²Fuse 是 ST 智能电子保险丝的新系列，与传统保险丝相比具有极大的优势，是未来架构的关键。事实上，它们可以复位，更安全、更可靠，干预时间比之前快 100 倍，并能诊断所控制的负载的“健康”状态。

STi²Fuse 的一个特点是可以对额定电流和跳闸曲线进行编程；此外，额定电流是根据负载而不是保险丝的尺寸进行优化的，从而优化了线束的尺寸。





➤ New SPOT dashboard with TFT 采用 TFT 屏的新款 SPOT 显示屏

Our electronics division is developing a new version of the SPOT round dashboard, featuring a 3.5-inch color TFT and the construction industry-standard inner dashboard diameter of 100 mm, making it ideal for small to medium vehicle applications. The SPOT display with TFT is designed with the same pin outputs as the LCD version, ensuring seamless upgrades for existing customers.

In addition to the front-facing TFT, which is optically bonded to transparent glass, the SPOT dashboard also includes 2 rubber buttons with software-programmable functions, 8 LED indicator lights with customizable screen printing for colors and symbols, and a daylight sensor. The customizable indicators allow manufacturers to accommodate different configurations using a single hardware architecture, requiring only the screen printing to be changed. The materials and design solutions used for the SPOT dashboard guarantee an IP69K protection rating for the front and IP65 for the rear, along with high resistance to vibration and extreme temperatures.

The key strength of the SPOT dashboard with TFT lies in its advanced software, based on the Linux operating system and the Qt cross-platform development framework. This allows OEMs to reuse existing applications on the MTA hardware without having to recode from scratch, ensuring continuous development in line with the evolving technology.

我们的电子部门正在开发一种新版本的 SPOT 圆形显示屏，采用 3.5 英寸彩色 TFT 屏，仪表盘内直径为 100 毫米，符合建造行业标准，非常适合应用于中小型车辆。使用 TFT 屏的 SPOT 在设计上采用了与 LCD 版本相同的引脚输出，方便现有客户制造商进行升级。

除了正面位置的 TFT 屏（通过光学胶合技术粘贴到一块透明玻璃上）之外，SPOT 还配有两个橡胶按键（可以通过软件对这两个按键的功能进行编程）、8 个 LED 指示灯（可以通过丝网印刷技术自定义指示灯的颜色和符号）以及一个日光传感器。通过这些可以定制的指示灯，制造商只需更换丝网，既可通过单一硬件结构满足多种配置要求。SPOT 所采用的材料和设计解决方案可确保正面达到 IP69k 的防护等级，背面达到 IP65 的防护等级，并具有很强的抗震性和耐极端温度的能力。

采用 TFT 屏的 SPOT 优势在于其基于 Linux 操作系统和 Qt 跨平台开发环境的全新软件。这款软件可以使原始设备制造商在 MTA 硬件上继续使用现有应用程序，无需从头开始重新编码，即可让开发工作能够跟上技术发展的步伐。