

R&D COLLABORATIVE PROPOSAL / COMPANY PARTNER SEARCH

The information you are about to provide in this form will be distributed among companies matching your company profile and that might be interested in the proposal of collaborative R&D project that you will be describing in this form. (Please use English language for filling in the document)

YOUR COMPANY PROFILE

Company name: Minchuen Electrical Machinery Co., Ltd.

WEB site: www.mcngear.com.tw

Number of employees: 100

Year of Establishment: Since 1977

Activity/ sector: Design and manufacture of gears and parts machining and geared motor OEM/ODM services. Also owning a brand "MCN", being marketed worldwide applied in all sorts of industries such as Vehical Industry, Automatic Parking Equipment Industry, Machine Tools Industry, Automatic Equipment Industry, Machinery Industry, Animal Husbandry Industry, Logistics Industry, etc.

Key products and/or services: Design and manufacture of vehicle gearbox, gear reducer, gear reducer motor, gear brake motor, worm gear reducer, worm gear reducer motor, worm gear brake motor, precision helical gear planetary reducer, precision helical gear planetary reducer motor, brake, drill press, etc.

Annual turnover: NT\$10.56 billion.

Balance Total: NT\$18.77 billion.

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YOUR COMPANY DESCRIPTION

(Activity description, main markets, strategic alliances, competitive position, share (%) of turnover due to exports, R&D resources and investment, partnerships with other companies or research organization, previous relationship with Taiwanese national R&D institutions, etc)

(The minimum information to show the potential of your company)

1. Introduction to MINCHUEN

MINCHUEN was founded in 1977. It started from motor repair and gradually transformed and developed into a professional manufacturer of gear reducers. In addition to the processing of gear-related parts and the OEM production of reducers and geared motors, the company also develops its own brand - **MKN**. The products have not only obtained a number of multinational patents, but are also marketed around the world and are widely used in various industries, such as: micro electric vehicle/fuel vehicle industry, automated parking equipment industry, machine tool industry, automation equipment industry, machinery industry, animal husbandry, logistics industry...etc., and continues to actively expand application industry fields and explore product markets and business opportunities.

2. R&D resources and production investment

MINCHUEN improves product quality and workmanship from all aspects:

2.1 The R&D and Quality Assurance Department

The R&D and Quality Assurance Department accounts for 20% of the total number of employees. They are composed of a team with professionalism and industrial experience. We use Solidworks and AutoCAD to design products and use the gear calculation software, KISSsoft, to analyse the strength of the gear as a reference for gear design. We have a variety of imported instruments and self-made testing equipment including for example higher-end instruments such as ZEISS (Germany) CMM CONYURA three-dimensional measuring instrument, Klingelnberg (Germany) Precision Measuring Center as gear measuring instrument, Japanese meshing testing machine, STRESSTECH (Finland) Barkhausen Noise Analysis for gear grinding burn detection, American Resonant Acoustic Method non-destructive audio resonance detector, German optical rapid shaft tester and image size measuring instrument...etc. They are used to inspect various dimensions of the product. To ensure product quality.

2.2 The production department

We have six product assembly lines. Our daily production capacity exceeds 1,400 units. The processing production line also has LIEBHERR (Germany) gear hobbing machines, LIEBHERR (Germany) gear shaper machines, LIEBHERR (Germany) gear grinders, Diskus Werke (Germany) CNC Double Face Grinding Machine, inner diameter and outside diameter grinding machines. There are more than 150 machines including grinding machines, various turning and milling machines and lathes which can process gears, shafts, housings, covers and other parts.

3. Competitiveness

3.1 MINCHUEN's product realization process is implemented in accordance with the quality management system requirements of ISO 9001 and IATF 16949.

ISO 14001 environmental management system is implemented and serve as management reference to ensure the company's long-term stable development, in terms of environment and sustainability. We pay special attention to personnel management and ensure that all personnel regulations are established in accordance with the SA 8000 social responsibility standard to ensure that workers enjoy basic labor rights. In addition, we introduce ISO 45001 occupational safety and health management system to provide regular and effective risk identification and risk prevention aiming to provide a safe and hygienic working environment for workers.

3.2 MINCHUEN has quality system and product certifications from major international organizations such as ABS, CCC, CE, CSA, EAC, BIS, SGS, UL, Dun & Bradstreet, etc. We obtained certifications such as IATF 16949 from ABS, ISO 9001 and 14001 from SGS Certification. In 2019, we took the lead in the industry and became the first company in Taiwan to obtain the IS 12615:2018 "three-phase high-efficiency motor" certification from BIS (India). We also obtained CSA's WMTC laboratory qualification to ensure that both the company and our products comply with international standards.

3.3 MINCHUEN wins the Taiwan Excellence Award for the second time with the drilling machine (PM2820EVS). It shows that MINCHUEN's competitiveness continues to improve.

4. Main markets and export turnover (%)

4.1 MINCHUEN has several main bases across the world such as Italy, Ukraine, South Korea, Japan, Vietnam, Thailand, Indonesia, China and other European and Asian countries. It not only provides sales services but also provides after-sales repair/maintenance related services. Through the setting up of cooperative bases, we can provide customers with the fastest and most appropriate reply in a timely manner.

4.2 70% of MINCHUEN's products are exported to countries including but not limited to the United States, Italy, Ukraine, Japan, South Korea, Vietnam, Thailand, Indonesia, India and China. For the non-listed countries, the sale of MINCHUEN's products also continue to grow steadily.

4.3 Currently, MINCHUEN is promoting transmissions for micro electric vehicles / fuel vehicles. It has been successfully sold for more than 6,000 sets of transmissions to Italian car manufacturers. We have also been contacting with some representative car manufacturers in Germany and France

among which our product has passed the pilot production stage of a French car manufacturer and is currently expecting customer orders.

5. Relationship with domestic R&D institutions

5.1 MINCHUEN and Feng Chia University established the "MINCHUEN Feng Chia AI Robot Competition Team" in 2021, together to encourage the students to participate in domestic or international competitions in mechanical and electrical related fields and to promote students to develop international vision and competitiveness by subsidizing related funding for education training and for domestic or international competitions.

5.2 Having the requirements and evolutions of future high-speed electric vehicle gearboxes in mind, MINCHUEN signed an industry-academia cooperative project program on "Thermal Deformation Analysis of Gearbox Housing and Inverse Calculation of Heat Sources" with the Smart Machinery Development Centre (SMDC) of Feng Chia University in 2024, in the hope that through the heat source inverse calculation method, the temperature changes and thermal deformation of the gearbox housing under high speed can be clarified in order to be used as a reference for the design of future gearboxes.

5.3 In 2019, Mr. Ta-Chuan WEI, President of MINCHUEN, donated a fund to establish the "Chengde Technology in Education Foundation". The foundation strives to actively cultivate professional talents in industrial electromechanical engineering, to assist in the promotion of electromechanical applications in industrial upgrading, and to promote research and development in the application of electromechanical expertise and to provide educational and public welfare awards and donations. Among them, the research and innovation competitions in mechanical and electrical related departments of colleges and universities held yearly by Chengde foundation to promote the trilateral connection between industry, university and students and create a win-win situation.

YOUR COMPANY PRODUCTS

(Technologies, applications, services, previous R&D projects, etc)

(The minimum information to show the potential of your company)

1. Special motors for parking garages:

MINCHUEN officially launched parking garage motors in 1991. Within a short period of time, it was purchased by Fair Greind Group (FFG) for parking equipment project KSSOGO Department Store in Taichung. Those parking garage motors have been used for more than 30 years by now, 2024. Since then, MINCHUEN opened up the parking garage motor market. By 2023, MINCHUEN's parking garage motors' global sales have exceeded three million units. The market has also expanded to overseas countries such as Japan, China, the United States, Brazil, etc. With its many years of R&D experience, MINCHUEN continue to innovate and to improve to provide better products.

2. Mini electric vehicle/fuel vehicle transmission:

Except continue in innovating and developing product in our original professional fields (reducers and gear-related parts such as precision helical gear planetary reducers), since 2018, MINCHUEN's design and development team has been cooperating with foreign major manufacturers in Italy, France, Germany, etc. to develop transmissions and other related components for micro electric vehicles and fuel vehicles. It was successfully mass-produced and sold to Europe in 2023. MINCHUEN's mainly strength is depending on our manufacturing techniques and experience over the years, and owning processing machinery for a variety of processes, with various precision quality control inspection instruments and an experienced and innovative R&D team. With the strength we have, MINCHUEN is aiming at global mid-to-low-price automobile and motorcycle market to differentiate our position in the market.

3. Woodworking drilling machine:

MINCHUEN and one of the major manufacturers in DIY industry in USA jointly designed and developed a new type of home-use DIY variable speed woodworking drilling machine with gear transmission. This drilling machine won in the U.S. WOOD Magazine competition in 2021 with the Outstanding Innovation Award, and also won the 30th Taiwan Excellence Award in 2021, which further affirming MINCHUEN's design and development team's ability to innovate and to improve drilling machines.

COLLABORATIVE R&D PROJECT PROPOSAL

(Describe as precisely as possible the technology cooperation proposal and your main motivation, describe what you have to offer and what you expect from your potential partner from a technical point of view and from a commercial point of view, describe the profile of the company that you request, describe if you have previous contact with companies, additional comments)

MINCHUEN is a company with considerable experience in electric vehicle and fuel vehicle transmissions and gears and other related parts, especially in developing, designing, processing, manufacturing, semi-finished and finished products assembly, and in quality inspection and testing and final finished product inspection before shipping the goods which shows MINCHUEN's capability of resilience and flexibility in development for searching continuous breakthroughs.

1. Technique-wise: MINCHUEN can flexibly meet the needs of potential partners in various aspects, such as transmissions, transmission systems and technical cooperation.

1.1 Transmission:

Almost all power driving systems require transmissions/reducers to output. The applicable industries of transmissions/reducers are even wider, for example electric vehicles, fuel vehicles, agricultural machinery and equipment, the automation equipment industry, etc. MINCHUEN is particularly focused on the development, design and manufacturing of small parts. MINCHUEN has have products being applied to micro electric vehicles and micro fuel vehicles, and worm gear reducers and planetary reducers applied to agricultural machineries. We are able to design and develop various types of products.

1.2 Transmission system:

A considerable proportion of the transmission systems use motor as the power source of the system such as garage parking equipment, CNC special equipment, mobility scooters, etc. MINCHUEN has related testing equipment such as noise detection rooms and load testing machines to ensure the performance of our products can be tested, verified and improved. MINCHUEN has 6 assembly lines which can all flexibly coordinate assembly with production schedules to achieve the most efficient leadtime requirements.

2. Business-wise: MINCHUEN is willing to cooperate with companies of the same type, upstream component suppliers or finished product companies.

2.1 Cooperation expectations:

MINCHUEN has a tough manufacturing and sophisticated inspection system. Cost control is our specialization. Therefore, we have the ability to communicate technically with companies of the same type. The goal is to provide the same quality but at a lower cost when in the meantime MINCHUEN also gains business benefits in order to achieve a win-win situation.

2.2 Execution method:

MINCHUEN hopes to work with end customers to develop new products and we need to develop new customers to increase business profits. We also hope to form an strategic alliance of transmission system of motor manufacturing (including controller) partners. Through joint development, and for each partner to provide the component(s) that they are expertise in, the final combined product will be compact and reliable to meet the needs of end customers.

Targeted PARTNERS in Europe

(if you know a potential company, write its name and contact details in this section. We will try to contact them to evaluate their willingness to meet with you)

MINCHUEN is devoting to the development of transmissions for micro electric vehicles and fuel vehicles. We hope to cooperate with small or new start-up car companies to develop new energy vehicle transmission products.