

## Focus This Month *Edited by Fastener World*

# 1 Fastener Machinery & Peripherals

# 2 Lightweight Fasteners

# 3 Inspection Devices

The global fastener industry has a very long history and the demands of customers keep changing all the times with the changes in market trends. Therefore, when it comes to performance, materials or accuracy, only the companies which make continuous improvements and innovations could generate their own competitive edge in the market.

For example, the booming development of electric vehicles (EV) and aerospace industries has been a hot issue in the conversation of many industrial professionals and such a development more or less increases the demand for lightweight fasteners, particularly those made of titanium, aluminum and rubber/plastics, which are gaining more popularity among users. On the other hand, the application of new materials and the investment in manufacturing of more advanced fasteners also lead to the increasing demand

for machines with higher processing accuracy, multiple functions, higher performance and better efficiency as well as relevant peripherals such as metal mesh belts. Not to mention the final quality control procedures. If there is no device with high accuracy to do the inspection, good quality control will be absolutely impossible in this era when safety is considered a must.

This time, we are pleased to have 10 companies being respectively excellent in their business to share the uniqueness/features of their products with the industry. These companies are **Chien Tsai Machinery, Jun-En Enterprise, Cheng Fang Yuan Machinery, Cheng Ding**, which are machinery and peripherals suppliers; **Taiwan Lee Rubber, Shyang Sheng Precise Industry, Inoxidadi, HellermannTyton**, which are lightweight fasteners/components suppliers; **Vibrationmaster**, which is an inspection device supplier. Through the success story of each company, we hope more companies could dedicate themselves to the R&D of products that are useful to users.

Now let's read the featured reports of these companies...

# Chien Tsai Machinery Enterprise Co., Ltd. *by Dean Tseng, Fastener World*

## 3 Guiding Principles Leading to High-value Thread Rolling Machines



Chien Tsai has become the world's top thread rolling machines with the largest capacity since it was founded in Taipei in 1973. Its Taipei headquarters primarily provides previous models. In 2013, it established a plant managing the latest models to cope with most of its fastener clients gathering in southern Taiwan. It also set up a plant in Shanghai, and then a new plant in Zhejiang, China in 2017. Chien Tsai services the demand for thread rolling machines in South-east Asia by having the Shanghai plant provide old models and Zhejiang plant provide new ones in tandem with the government's south-bound deployment strategy.

As the succeeding generation of the founder, general manager Alex Chen has brought complete transformation to high value machine ever since he took over the business. He came up with 3 guiding principles for the development of Chien Tsai's machines.

### Shifting the Company's Market Structure

Chien Tsai is shifting its machine grade to the middle and high level. One of its developments, as Alex stressed, is the shift to self-developing electrical control for its machines that will significantly boost operational quality and manufacturing efficiency. Available materials include cast iron and ductile iron. Furthermore, Chien Tsai is en route to modularizing its machines.

### Establishing Independent R&D Unit

Another target in Alex's blueprint is to set up an R&D unit. "A few companies' R&D unit is doing research for the sake of clients' demand and requirement. Quite the contrary, my R&D unit is independent by nature and recruiting experts who do research for the purpose of upgrading our own machines. It is not subject to any external factors, but it still acquires intelligence on market demand. It only exists for the sake of rolling out our ground-breaking models. The reason behind this idea is to roll out new products that amaze our clients."

### Putting up a Video Recording Team

Alex currently has a video recording team in charge of filming critical production processes and putting the videos on a cloud database. Their aim is to build a full

plant manufacturing SOP, thereby significantly improving employee's productivity and efficiency, and reducing production time by a great deal. "Through video recording our engineering, we can pick up critical portions of the manufacturing procedure and analyze them. By doing that, we could understand material usage and loss as well as tool usage to achieve the most efficient procedure improvement. Thanks to the team, our capacity has soared from 70 to 150 units!"

The core of Alex's blueprint is to follow the above 3 guiding principles and integrate the ERP and engineering of the manufacturing procedures of Taipei, Kaohsiung, Shanghai, and Zhejiang plants. These 4 plants can therefore work together more effectively and boost sales. Chien Tsai has clearly shown its ambition to expand global sales with its attendance to fastener and machine shows in India, Brazil, USA, Turkey, Düsseldorf and other places. Its upgrade to high value will bring a whole new business heyday.

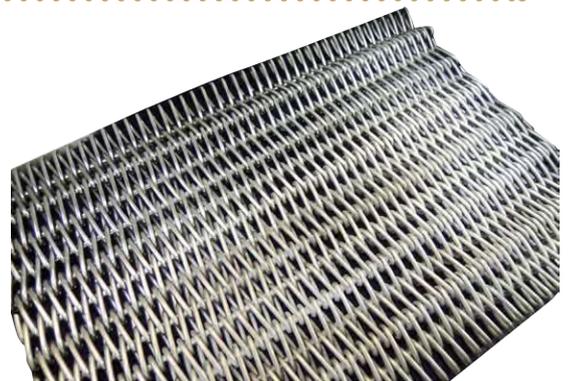
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## ISO9001 Certified

# Jun-En's Gratex Belts and Compound Balanced Belts Surprise Fastener Companies

*by Gang Hao Chang, Vice Editor-in-Chief of Fastener World*

The ISO9001 certified Jun-En Enterprise Corporation, which has introduced the SAP system into its company, is one of the leading metal mesh products and related processing machines manufacturers in the world. Its customers mainly come from Taiwan, Asia, America, EU, the Middle East and Australia. With abundant experience and the strong R&D ability, Jun-En has supplied high quality products and service to its global customers for more than 30 years and continues to satisfy every customer's demand for customized products. Its metal mesh products include balanced belts, rod reinforced belts, flat wire belts, wire ring belts, ladder belts, high temperature belts, chain driven belts, curve conveyor belts, spiral conveyor belts, plywood veneer dryer belts, gratex belts, double balanced belts, compound balanced belts, one direction belts and other special types, mainly



made of 314, 310S, 304, 316 high quality stainless steel. Gratex belts and compound balanced belts are particularly developed for the heat treatment application of fasteners and have gained very positive feedback from heat treating plants in the Middle East, Taiwan and Southeast Asia, where many Taiwanese companies have set up their own heat treating plants. Its products also take a leading market share in relevant Taiwanese industries that use metal mesh belts.

Gratex Belt- Left-round and right-round spirals are alternately arranged and jointed with straight rods. Its advantages are: (1)Surface is flat and unstable items can be carried; (2)The allowable belt tension is capable for heavy load; (3)Belt can be used at high temperature; (4)Having fine mesh, the belt can be used for transportation of small items.

Compound Balanced Belt- The left-round and right-round spirals are tightly together alternately and jointed with straight rods. Its advantages are: (1)Since the surface is flat and smooth, the belt can carry small items and unstable products; (2)The allowable tension is high, so that heavy loads can be transported; (3)The belt strength against pressure is high, so that the belts can be used for processing under pressure; (4)The belt can be used at high temperature.

Jun-En said, "Our metal mesh belts are all produced by our self-developed high-speed precision machines. We not only have a complete range of product series in stock, but also conduct quality control that is 100% compliant with int'l standards to meet customers' strict requirements for lead times and customization. In addition, as screws are usually heat treated at the temperature of 800-900, metal mesh belts manufactured by Jun-En, which can sustain the temperature of up to 1,050°C, demonstrate better even heat distribution on metal mesh belts and more durable feature. Considering the future market demand, Jun-En will also focus more on the R&D of new materials/products, making the service life of metal mesh belts longer, improving product quality and enhancing the ability to offer customers all-in-one service. We expect to become the best partner for your demand for metal mesh belts."

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## Cheng Fang Yuan Machinery's Auto Thread Tapping Machines

### Strike the Market with Excellent Performance

by Gang Hao Chang, Vice Editor-in-Chief of Fastener World

The Dadu, Taichung-headquartered Cheng Fang Yuan Machinery Industrial Co., Ltd. ("CFY") is a manufacturing expert of precision nut tapping machines in Taiwan. Its products include Auto Thread Tapping Machines, Araying/Filling Feeders, Nut Cleaning Machines, etc. It is also capable of developing relevant parts for automatic machines to satisfy the eagerness of global customers for less pollution, low noise, reduced energy consumption and increased added value of products.

### Efficiency and Quality of Thread Tapping Machines are Enhanced

Thread tapping machines currently operate with two processing phases, which play a key role in making perfect internal threads. Traditional thread tapping machines tap threads at the consistent speed and such a way may shorten the service life of taps. However, if the speed is lowered to prolong the service life of taps, the manufacturing efficiency will be reduced instead and rough thread surface may be generated. In order to solve this dilemma which has bothered the industry for long, CFY taps threads at low speed in the 1st phase and trims threads at high speed in the 2nd phase, which substantially increases the accuracy of threads and prolongs the service life of taps without sacrificing the capacity. President Lai said, "Taking the lead in technology is our goal and our technique is innovative in the industry."

### High Quality Spindles That Help Increase Machine Durability and Save Energy

Lai noted that other tapping machines are often reported to have too short service life of spindles. The spindle is the most



essential part in the machine. If not dealt with properly, the entire manufacturing process may unexpectedly stop, or the processing cost may hike due to frequent replacement of spindles. CFY's tapping machines demonstrate several advantageous features. For example, the centrifugal spindle design makes machines operate durably and not give out a lot of heat and is energy saving as well. Their service life lasts much longer than those of similar models. Some customers' machines have operated for more than 2 decades even though they are not put into regular maintenance.

### The Easy-to-use and Stable Functions Make CFY the Designated Supplier of Leading Nut Manufacturers

Many domestic and overseas leading nut manufacturers have been collaborating with CFY for years. As these companies always have piles of order books and a long list of delivery schedules, they need a type of machine to help them achieve faster processing, maintain precision, stability, and price competitiveness. Accordingly, CFY, which has all the aforesaid three features, has established long-term collaboration with these leading companies. On the other hand, some high-end nut manufacturers from USA, Japan, France and Korea as well as automotive nut manufacturers from China, India, Indonesia, Vietnam, Thailand, Turkey, Hungary, Mexico and Brazil have also turned to purchase machines from CFY due to recommendations of the big brands.

President Lai said with confidence, "Positive feedback from customers is the biggest encouragement to CFY. For years, we have been well-known for our technique and customizing capabilities for customers. Our products were once patented and have been CE certified. Considering the future market demands, we expect to offer reliable and high-performance tapping machines to customers through continuous effort in R&D."

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## Specialized in Manufacture and Development of Metal Mesh Belts Cheng Ding Co., Ltd. is Widely Admired by Fastener Companies

by Gang Hao Chang, Vice Editor-in-Chief of Fastener World

Headquartered in Dali, Taichung, Cheng Ding Co., Ltd. is a manufacturer specialized in metal mesh belts for various processing industries in Taiwan. Its products include rod mesh belts, cross/straight rod mesh belts, side-removal conveyor mesh belts, overlapping mesh belts, chain conveyor mesh belts, metal wire conveyor mesh belts. Its annual total production reaches around 360 tons. 100% made of stainless steel wire imported from Japan, mesh belts of Cheng Ding have been widely used in fasteners, hand tools, solar power, photovoltaics, electrics, food and medical industries, and the fastener industry in particular represents more than 50% of its total mesh belt deliveries, making it one of the most dedicated areas of Cheng Ding. Over the past two decades, Cheng Ding with the advantages of its durable and high temperature resistant mesh belts as well as flexible customizing capabilities has established very close collaboration with Taiwanese fastener industry.

President Chen noted, "Among the fastener companies that represent 50% of our total sales, many of them have been our loyal customers and good friends for more than 10 years. In addition to Taiwanese customers, we have also extended our business reach to other markets like Southeast Asia, Russia, and Japan through our partnered distributors and traders. Through the promotion in media, we've also received inquiries from the Arabic and Korean buyers, which fully demonstrates the fact that our quality has been recognized throughout the industries worldwide."

Chen added, "We value quality of products very much. If our products are good and durable enough, we can help our customers achieve sustainable operation and make the brand of Cheng Ding shine bright. As a result, we only use high quality stainless steel wire rod made by Nippon Seisen and could adopt different knitting ways to manufacture mesh belts according to customers' applications. Cheng Ding's mesh belts can sustain the temperature of up to 2-3,000°C. For the heat treating process of general screws, the temperature is around 900°C. If mesh belts



are used by customers properly, it won't be a problem for the mesh belts to last for 1-2 years."

Compared to the mesh belts offered by Japanese manufacturers, Cheng Ding's mesh belts are also of equivalent high quality and their comparatively lower cost could also help customers generate more profit gains, which is why several customers from more advanced industries continue to purchase from Cheng Ding. Looking forward, Cheng Ding is also planning to tap into new markets (e.g. electrics, hand tools, etc.) in addition to maintaining existing customers and create more competitive edges for customers in the global market.

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## Shyang Sheng Precise Industry Co., Ltd.

### High Quality Customized Plastic Fasteners with Short Lead Time

by Dean Tseng, Fastener World

Shyang Sheng is a plastic extrusion forming expert founded in 1977 providing anti-UV and anti-oxidation fasteners used in furniture and cars. It is specialized in producing customized plastic extrusion fasteners and provides clients with one-stop service encompassing die making, extrusion forming, and inspection for plastic products. In addition to producing its own nylon anchors and plastic washers, it provides OEM plastic extrusion products including screws, nuts, plastic parts, and plastic switches. Available materials include nylon, PP, PE, and POM. Apart from Europe, Japan and other countries where Shyang Sheng receives orders through traders, its products are mostly sold directly to the U.S. The U.S. and Europe are the top sales targets of the company.

Different from most other counterparts, Shyang Sheng's machines work 24 hours a day and therefore the company can maintain its lead time within 30 days. Besides, it strictly controls quality, stressing on corrective measures against quality anomaly, as well as preventive measures. Its plant can provide high precision and quality plastic fasteners by being equipped with a full range of inspection equipment, including high-resolution-color microscope, torsion test machines, hardness tester, 2D coordinate measuring machine (precision unit: 0.001), projector (precision unit:



0.001), and height testing machine (precision unit: 0.001). In response to high-level quality requirement by carmakers, Shyang Sheng can reach 10ppm detection rate with its fastener production. Its fasteners have long service life that can last for 3 to 5 and even 10 years without issues.

Over the past 22 years of history, Shyang Sheng started with electronic parts manufacture and then extended to the fastener business as well as electronic products for optical fiber communication. It firmly believes its high quality, stability and short lead time will raise market share for customers, eventually making itself a critical role in the global development of lightweight fasteners.

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## EPDM Bonded Washers and Cut Washers by Taiwan Lee Rubber

### Fully Satisfy Global Customers' Demand for Weather/UV/O3 Resistance

by Gang Hao Chang, Vice Editor-in-Chief of Fastener World



Established in 1986 and continuously dedicated to the R&D of metal and rubber bonded materials, Taiwan Lee Rubber has been well-known in the global market for years for its thermoset washers made of 100% EPDM. Thanks to its excellent acid, ultraviolet and ozone resistance, EPDM soon caught the attention of customers and also became the core technology for the team of Taiwan Lee Rubber to develop more metal and rubber bonded materials over the past years. Thus far, EPDM washers have been commonly seen in applications where the use of self-tapping, drilling and wood screws is necessary.

The thermoset EPDM washers Taiwan Lee Rubber could currently offer include bonded washers, cut washers, BAZ washers, double seal (DS) washers, dome washers, dichtungen washers, saddle washers, etc. Particularly, bonded washers and cut washers are the major products of the company. Every washer manufactured by Taiwan Lee Rubber is made of 100% EPDM without the addition of any other type of rubber. As the increase of the contented EPDM,

its weather/ultraviolet/O3 resistance will be better. Therefore, Taiwan Lee Rubber's washers made of 100% EPDM could always demonstrate eye-catching performance in practical applications.

Taiwan Lee Rubber president Chingyun Lee said, "Our washers made of 100% EPDM could not only function very well, but could also stand for more than 20 years! Even though knowing that the fabricability will become more difficult when the content of EPDM increases, we still insist on using 100% EPDM as the main material in order to supply the highest quality products to customers, which is also what we continued to do over the past 32 years."

Observing its technique and many examples of application, several domestic and foreign customers from the construction industry (particularly drilling screw manufacturers and traders) started to purchase EPDM bonded washers and cut washers from Taiwan Lee Rubber. Thereupon, Europe, America, Russia, Japan and Asia are all main markets for Taiwan Lee Rubber.

President Lee added, "Our continuous growth comes from the trust of customers, which is based on our 32 years of expertise, our insistence on manufacturing washers made of 100% EPDM that can stand for more than 20 years, the production capacity that grows with the increasing customers, and the mobility-raising purpose warehouse specially built for our customers."

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## Italian Inoxidadi

### Extends Its Product Range to "Titanium" and "Aluminum" Lightweight Fasteners

by Gang Hao Chang, Vice Editor-in-Chief of Fastener World

Originally supplying the commonly used stainless steel nuts, bolts, screws, washers and threaded rods, the Italy-headquartered leading fastening solutions provider Inoxidadi s.r.l ("the company") has recently broadened and extended its product portfolio to cover parts made of duplex, monel 400, hastelloy, nimonic, ergal, inconel, and particularly titanium alloy and aluminum alloy that are lighter than other materials and closer to customers' standard/non-standard needs for more lightweight application.



In addition to Hex Nuts DIN 934 / ISO 4032 in Titanium or Aluminum being the best-selling lightweight fasteners of Inoxidadi, the company could also offer other Titanium fasteners (of Grades 1-7) and aluminum fasteners in accordance to most common international standards or on customer drawing with specific features shown as below:

Titanium	Aluminum
Grade 1- is the most ductile and softest titanium alloy. It is a good solution for cold forming and corrosive environments. Grade 2- Unalloyed titanium, standard oxygen. Grade 3- Unalloyed titanium, medium oxygen. Grade 1-4 are unalloyed and considered commercially pure or "CP". Generally the tensile and yield strength go up with grade number for these "pure" grades. They are used for corrosion resistance applications where cost, ease of fabrication, and welding are important. Grade 5- (also known as Ti6Al4V, Ti-6Al-4V or Ti 6-4) It is significantly stronger than commercially pure titanium while having the same stiffness and thermal properties (excluding thermal conductivity) This grade is an excellent combination of strength, corrosion resistance, weld and fabricability. Grade 6- This alloy is used in airframes and jet engines due to its good weldability, stability and strength at elevated temperatures. Grade 7- The small quantity of palladium added gives it enhanced crevice corrosion resistance at low temperatures and high pH.	Aluminum alloys typically have an elastic modulus which is about one-third more than the elastic modulus of most kinds of steel and steel alloys. A component or unit made of an aluminum alloy will experience a greater deformation in the elastic regime even with somewhat-higher tensile strengths than the commonly used kinds of steel. Aluminum alloys series: a) 2.000 b) 5.000 c) 6.000 d) 7.000 (ergal)

"Titanium material has very high tensile strength and toughness, but it's lighter in weight than other materials such as steel, stainless steel, brass...It has an extraordinary corrosion resistance and it can withstand extreme temperatures," commented Sales Manager Andrea Togni of Inoxidadi.

"Inoxidadi's lightweight fasteners are well-engineered and best suited to be used in high-end applications such as aerospace, automotive, electronics, furniture, lightening structures, military, medical devices, premium sports equipment. We sell titanium and aluminum fasteners mainly to Europe, USA, and Russia," added Togni.

Being one of the most competent and reliable fastener suppliers and with full dedication to the R&D of new materials and manufacturing technique, Inoxidadi expects to continuously find new customers, but also new suppliers, in order to start new cooperation business.

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## German HellermannTyton

### Releasable Mounting Clip Speeds up Changes to Cabling in Aircraft Seats

At AIX 2018 in Hamburg, Germany, HellermannTyton presented a reusable Seat-to-Seat Clip for aircraft seat wiring. The innovative fastening solution is a qualified part for seats used on the Airbus A350 AWB. It addresses process efficiency needs.

Changes to the configuration of first and business class aircraft cabin sections means time-consuming changes to the seat wiring. HellermannTyton has developed a special fastening element so that fitters can remove, attach and reconnect the in-flight entertainment system cabling in each seat more quickly.

The Seat-to-Seat Clip is made from lightweight and heat-stabilised PA66 thermoplastic. It is permanently anchored by the manufacturer to the seat frame and is available in two versions – for attachment with a screw or rivet or with a push-in arrowhead for hole mounting.

Technicians on Airbus A350 XWB aircraft can open and close the seat clip by hand without the need for tools. This makes the reconfiguration process simpler and faster.

"We have integrated all our cable tie know-how into the design of this simple and reusable fastening component", says Burkhard Croener, Aerospace Market Manager at HellermannTyton.

"The engineers at Airbus and Dassault are convinced that using our seat-to-seat clip halves the time it takes to detach and re-install



the seat cabling for inflight entertainment in first and business class", he adds.

Unlike other cable fastening parts, the Seat-to-Seat Clip is reusable. As a result, there are no remnants of cut cable ties (FOD) that can block the runners in the cabin floor.

HellermannTyton's competence developing plastic parts for application in aircraft stems from over 30 years of industry expertise. The company's fastening products meet the high standards requirements of the aviation industry.

### About HellermannTyton

HellermannTyton is a leading manufacturer and supplier of products for fastening, fixing, installing, connecting, insulating, protecting and identifying electrical cables and data network infrastructure. They also develop parts for customer-specific industrial applications. Their portfolio includes more than 75,000 items. They operate 15 world-class manufacturing facilities and develop products at 11 locations. More than 5,000 employees work at HellermannTyton in 38 countries.

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## NYLON FASTENERS



washers



handles

plugs



nuts

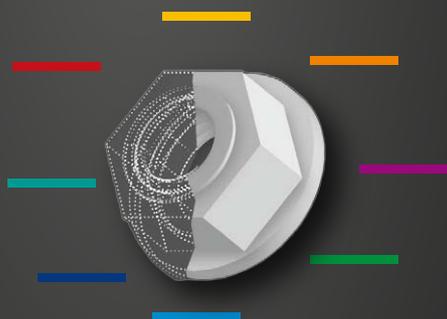


bushings



spacers

screws



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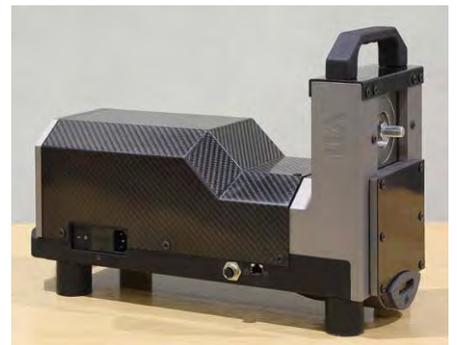
# Vibrationmaster Technology Center s. à r. l.

## Bestselling J121 Offers Top-notch Parallel Torque/Tension & Vibration Testing

by Dean Tseng, Fastener World

Vibrationmaster is engaged in commercializing a number of product lines based on their proprietary, patented technology, enabling the generation of vibration profiles with the specific advantage of continuously and independently controlling frequency and amplitude.

The portable Fastener Integrity Test Bench J121, bestseller of Vibrationmaster, is a 2-in-1 device enabling parallel torque/tension and vibration testing that allow for a thorough screening of torque/tension characteristics



of fastener connections. One of its strengths is the ability to test fastener ranges down to M1 diameter, making it particularly suitable for electronics equipment manufacturers. Clients can use the machine to apply a tightening torque and screen the resulting clamping force plus monitor the resulting resistance against rotational and/or non-rotational self-loosening given the applied operational stress, i.e. the transversal shear force in [kN] and displacement in [mm]. The machine is IoT enabled with a firmware for easy-to-use test data generation.

Vibrationmaster's Fastener Integrity Analysis and Testing machines can work with a full range of fastener vibration test regimes including the Junker protocol as specified by the standards DIN 25201, DIN 65151, ISO 16130, as well as various internal OEM protocols. They enable fastener clients to gain a thorough understanding of their products' performance and be able to continuously improve performance, cost, weight and reliability to get ahead of industry leading peers. They are suitable for all players, including manufacturers and OEMs/users of threaded or non-threaded fasteners and complimentary components.

Vibrationmaster sells their products across the world and aims to satisfy any market demands that are not yet served sufficiently. Besides the fastener range, it also serves a number of non-fastener clients who are dealing with vibration generation and/or cancellation. The next step, along with gaining broad acceptance of their product offering in the targeted sectors, Vibrationmaster prepares for an IPO to provide the means for supporting the company's growth. Vibrationmaster is tapping into the Taiwanese market, welcoming all capable industry players there to become its distributors, and the same goes for other players across the world.

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