

Taiwanese Fastener Industry: 2014 Review & Prospect for 2015

by Kristy Chi, MIRDC Analysts



1. Reviewing Taiwanese Fastener Industry in H1 2014

As U.S. manufacturing industry, the main partner for Taiwanese fastener industry, is recovering and warming up, fastener-related industries such as automobile, aerospace, and building are showing growth as well. This resulted in good export performance of Taiwanese fastener industry in H1 2014, during which Q1 export value grew over 10% and Q2 export value grew around 12% over corresponding periods last year. In terms of fastener export, the growth of Taiwanese fastener export in H1 benefited from the largest trading partner USA, as well as the recovering demand within the EU. Taiwan's Q2 fastener export to Germany, Netherlands, UK, Italy, Poland, and France showed significant growth in value. The same holds true for the export to China due to the booming infrastructure and automotive industry (see **Table 1** for Taiwanese fastener export condition in H1 2014).

In H1 2014, Taiwan exported 782 thousand tons of fasteners. The top 10 destinations were the U.S. (36%), Germany (9%), Netherlands (6%), Japan (6%), UK (4%), China (3%), Canada (3%), Sweden (3%), Italy (2%), and Poland (2%). Regarding the second half of 2014, global major industry forecast institutes are mostly optimistic, and Taiwanese industry players are cautiously optimistic. Taiwanese companies like Sumeeko and ScrewTech are adding new plants to speed up the pace for broader product lines. Boltun indirectly acquired 85.71% shares of ESKA Automotive GmbH, by increasing investment in Boltun Europe Holdings GmbH & Co. KG, and two investment

companies called Hen Heh and Hen Deh (transliteration). Boltun stands a good chance of becoming a supplier for the top 3 car makers in Germany. Foreign companies in Taiwan are taking actions as well, which include Hewi's adding new plant and VIMI's (an Italian large-scale fastener company) procurement in Taiwan. The forecast for 2015 is optimistic and the good result in H2 2014 is expected to continue to 2015.

Table 1. Taiwanese Fastener Export Condition in H1 2014

Ranking (by value)	Main Destination for Taiwan's Fastener Export	H1 2014 Export Value (USD 0.1 bn)	H1 2014 Export Volume (10 Thousand Tons)
-	World	20.8	78
1	USA	7.5	30
2	Germany	1.9	7
3	Netherlands	1.2	4
4	Japan	1.2	4
5	UK	0.9	3
6	China	0.7	1
7	Canada	0.6	2
8	Sweden	0.5	2
9	Italy	0.5	2
10	Poland	0.4	2

Source : Customs Data from TIER/ arranged by MIRDC in Oct. 2014

2. Prospect for the Fastener Industry

© Current Issues

a. Antidumping & Countervailing Investigation on Steel Nails

It is relatively common that the U.S. investigates on products imported from Taiwan, but it is rare to see the U.S. launch countervailing investigation on official measures. In 1986, the U.S. launched the countervailing investigation on NOES imported from Taiwan. In Jun. 2014, the U.S. launched another antidumping and countervailing investigation on Taiwanese steel nails. U.S. Mid-Continent

Steel & Wire, Inc. (MO) lodged a complaint to ITC for antidumping and countervailing investigation on steel nails imported from Taiwan, India, S. Korea, Malaysia, Oman, Turkey, and Vietnam. The preliminary result of countervailing duties was released on Aug. 22, 2014 and the preliminary result of antidumping duties was announced on Nov. 5, 2014. Taiwan produced 93,757 tons

of metallic nails (most of which were iron and steel nails) and exported 75,420 tons (HS code 7317009010) in 2013. Steel nails accounted for 80% of the total export. Taiwanese steel nail industry is supervised by the Industrial Development Bureau of Taiwan. As the nail industry has grown mature with its technical development, the government does not make stipulation for this industry. However, U.S. companies accused Taiwanese government of providing income tax relief for specific automated steel nail machines, tax relief for investment in poorly developed regions, as well as tax relief for critical and strategic investment in emerging industries. The accusation from U.S. companies claimed that these subsidies are not specifically enforced on the steel nail industry. In response to the accusation, Taiwan's China Steel Corporation said that only a few thousand tons of steel nails were sold to the U.S., and thus the impact was not substantial, but it stressed that the industry should look out for global steel trade barrier and follow procedures to submit their appeals. Insiders in the steel market said that the value charged was not large but added that more Taiwanese products are prone to facing antidumping charges in the future. The government and industry should be well prepared in advance.

b. Supply Deferral Due to Clampdown on Waste Liquid Discharge

Pickling and electroplating are required during fastener production. Previously, a few companies discharged waste liquid illegally and were ordered to shut down by the government. This resulted in doubled cost for fastener production and insufficient electroplating capacity deferring the fastener delivery and severely impacting export competitiveness. The shutdown of electroplating plants caused the pickling cost to rise from NTD 2,000 to NTD 4,000 per ton, and the proportion for electroplating cost to rise from 5% to 12.5%. Taiwan's CSC and Taiwan Industrial Fasteners Institute (TIFI) are co-investing in a waste liquid processing plant. So far, CSC has finished planning and is evaluating the environment and operation afterward. The evaluation will take around two months. The plan will be later taken over by TIFI for fund raising and is estimated to come into effect before Jun. 2015. However, the Economic Development Bureau of Kaohsiung has not figured out a solution as to where to build the plant yet. Although the acid waste treatment line of Hung Li Steel Company has been approved to process electroplating waste liquid for other companies, Hung Li has not received a request from any company. Jinn Her Enterprise will expand the existing facilities to help process waste liquid, and it is currently preparing to contract out. The electroplating zone in Yongkang Technology Industrial Park that is able to help process liquid waste receives no request thus far. According to some companies, the expense for shipping and processing is too high to consider submitting a request.

Given the current industry condition, the government should give the companies enough time to improve, help them find places to build processing plants, and establish third party institutions to regulate their processing amounts.

© Industry & Product Trend



In the most recent years Taiwanese fastener industry has been trending toward the production of high value added fasteners, which requires integration

between various manufacturing technologies. In material technology, the industry is studying and developing materials for automotive and aerospace fasteners. For example, forging titanium alloy fasteners requires constant temperature and heating up materials, so a few companies have been collaborating with the academia on the research of this field. In the R&D of titanium alloy fastener forming molds, the current status is to use multi-action forging molds for forming and precision feeding to boost the utilization of material to 95% and reduce scrap metal. In addition, Taiwan's CSC has developed A-286 nickel-base super-alloy wire rods. A-286 is a high-strength alloy that can resist the temperature up to 700°C and corrosion, and it is applied in making fasteners for engines used in jets and cars. Nowadays, A-286 wire rods used in Taiwan are all imported from overseas countries but the cost is high and delivery is usually deferred. There have been automotive fastener makers doing tests for mass production. In the future, Taiwanese companies will be able to obtain this critical material at a more reasonable price to reduce cost and improve their competitiveness internationally.

In forming technology, the industry is focused on the development of forming simulation. As the second generation starts to take over fastener companies recently, they pay attention to developing data management and forming simulation technology. They started from simulating screw and nut forming molds, to simulating thread rolling molds, and they have taken a huge leap in improving machine configuration and production stability. Furthermore, the industry has started to develop sophisticated tiny fasteners, in spite of the new challenge in materials, forming technology, and production equipment. At a micro-scale, grains of

materials can affect the result of forming. Therefore, more accuracy is required for mold processing and assembly, and computerized control forming machines are required to monitor forming pressure. In Eastern Europe, most equipment makers are receiving a larger amount of orders which require more time to be processed; thus they barely have new equipment or technology released this year.

Methods for fastener heat treatment mainly include austenite tempering, case hardening, martensite tempering, nitriding, and spheroidizing. The main purpose of austenite tempering is to generate benite with properties similar to those of martensite and perlite. Benite has enough strength with elasticity; Case hardening is a heat treatment technique in which the steel surface is processed by the addition of carbon to achieve hardening after quenching; martensite tempering is to heat fasteners to 850°C and quench, and then process tempering to make the temperature down to 450°C, spheroidizing the feather-like martensite as well as achieving both the strength and elasticity; nitriding is a heat treating process that diffuses nitrogen into the surface of a metal to create a case hardened surface; spheroidizing is a heat treating process to change the carbide strips in perlite to carbide grains. Foreign companies have years of experience in computerized control of spheroidizing furnaces and can achieve remote monitoring. As for Taiwanese companies, though their spheroidizing furnaces are also equipped with remote monitoring systems, the operation, however, should be more human-based. Some Taiwanese companies have been working on the buildup of an intelligent process-control system, which can offer information of basic processes first, and then automatically calculate the level of spheroidizing and manufacturing parameters before it can execute automatically, in order to satisfy the

demands for energy saving, accuracy, and stable quality.

The application of biomedical materials can be another extension in the development of the fastener industry, especially dental implants and mini-implants used in human bodies. The key point in such new surface treatment is to create the largest contact surface on the threaded area for the widest contact area with human cells, thus accelerating cell proliferation as well as shortening the healing process. Generally speaking, methods commonly used in the industry are SLA (Sand blasted, large grit, Acid etched), MAO (Micro-arc Oxidization), plasma spraying, etc. ITRI also guided companies to introduce PDL technology and use it on the surface heat treatment of dental implants. MIRDC is the first organization to guide Taiwanese fastener companies to expand their business to dental implants and it also assisted the fastener industry located in Gangshan

and Luzhu in tapping into the industry sectors of medical materials and green energy, which could not only boost the effect of industry clustering, but also generate the added value of high GDP, creating opportunities for industries in Southern Taiwan.

Testing technology for fasteners can be categorized into dimension measurement, mechanical property measurement, chemical composition analysis, salt spray test, surface coating, metallurgy analysis, etc. The development of the first 5 testing methods has been going for long and there have been certain testing instruments for each method; however, those for metallurgy analysis are comparatively insufficient. The testing technology this year is still focused on sorting and inspection and some companies also released new screw & nut sorting machines. In addition, the locking stress and torque sensor is also a new technology released in Taiwan. In the aspect of metallurgy analysis, some companies are able to process automatic determination of the spheroidizing rate of wire and thickness of the decarburized layer, which is a new achievement on metallurgy analysis of the fastener industry.

In other countries, the Cloud service system, which can simply calculate the pressing force of dies, material volume, and required force during forming, has been developed and related data can be found on its website. In the era of Cloud, forming and design will generate a new change. In the aspect of production facilities, an Italian producer has released a new micro fastener former, available for wire with the diameter of 0.6-2.2 mm (the longest length is 22 mm; the max. diameter of head is 6.5 mm, and the quickest production speed is 660 ppm). In terms of manufacturing technology, a Japanese company has developed a specialized clamping system that works well with the former. This system is designed for warm forging. By utilizing this technology, the existing 5-die forming can be simplified to 2-die 4-blow.

The current heat treating technology is basically for the purpose of saving energy, and the way to accurately control heat treatment is the most important issue now. Other issues include the improvement of furnace design, better atmosphere control technology, and powerful numerical control technology. As for surface treatment, a U.S. company developed a new Zn/Ni alloy coating that could satisfy the requirement on friction coefficient of automotive fasteners and provide excellent corrosion resistance. The friction coefficient of the macromolecular coating is usually higher; however, this new coating can reduce the friction coefficient of the fastener. In the aspect of inspection, a U.S. company released a machine installed with a CCM camera that could inspect thread damages in 360 degrees. As the

inspection of thread damages requires a higher technical level, this new system can not only inspect threads in 360 degrees, but also inspect the straightness of fasteners. This is a new technology for automotive fasteners which require 100% detection of damaged parts.

Asian companies may not be very good at marketing; however, as the analysis of Big Data is one of the main trends, they can utilize these data to track the preference and records of customers (e.g., When will they place orders? Do they make the purchase every year or every few years?) and gradually cultivate customers' ways of purchase. This will be a useful tool for fastener suppliers, because they can ask customers if they need to order again in advance, thus increasing the chance of winning the orders.

3. Forecast for Taiwanese Fastener Market During 2014-2015

The average unit price of Taiwan's exported fasteners in 2013 was NT\$78.8 per kg and the figure in 2014 is expected to slightly grow to NT\$79.5 per kg. The total export value for 2015 is expected to be NT\$116 billion and the average unit price may be over NT\$80 per kg. The production value will be nearly 12.5 million tons, as shown in **Table 2** and **Chart 1**.

The average unit price of Taiwanese fasteners exported to its major market, USA, was NT\$74.8 per kg, up 1.4% from NT\$73.8 per kg in 2013. The heartland of global car manufacturing and aerospace market is in the U.S. Accordingly, the current economic index shows that U.S. GDP in Q2 2014 increased by 4.2% from the previous quarter, which was the best result in the world, and this trend will continue in the following 1-2 years. Based on the forecasts by IMF, UN, and WB, U.S. GDP in 2015 will drop between 3.0 and 3.2 and industries for cars, defense,

and domestic demand (e.g., building and OEM) will all go up. The growth of U.S. car manufacturing industry in 2014 is expected to be 4% and the same growth rate may continue in 2015. The sales value of the aerospace market in 2014 will reach US\$232 bn, up 5.4%, while there will be an increase of 4.1% in 2015. The expenditure on U.S. domestic construction in 2014 will grow 8-10%, the best record in history, which corresponds to the booming manufacturing industry and the increasing demand for large-size logistics. It is expected that U.S. industrial fastener industry will grow over 10% by 2015 and will have the best performance compared to other manufacturing industries. Taiwan is the largest origin of U.S. fastener import, so Taiwanese companies will be directly benefited by this situation.

In terms of the steel price, Taiwan's CSC announced price reduction for steel products on Oct. 17, 2014. However, downstream companies said that the adjusted



KWANTA ENTERPRISES CORP.
No.19, Huaxi Rd., Dafa Industrial District,
Daliao Dist., Kaohsiung City 831, Taiwan
Tel: 886-7-787 0381 Fax: 886-7-787 2069
E-mail: kwan.ta@msa.hinet.net
http://www.fastener-world.com.tw/kwanta



歡迎貿易商合作內外銷 

PRODUCTS: Automotive Wheel Lug Nuts & Bolts, Special Nuts & Bolts, Fastener for Nuts & Bolts, 6-Spline Tuner Locking Nuts-Short or Long, 4PC Wheel Nut Socket Set-M17, M19, M21, and M22 (CR-MO)

Universal Socket
Available Range
8mm~21mm (5/16"~13/16")
Applied to all kinds of shapes and positions





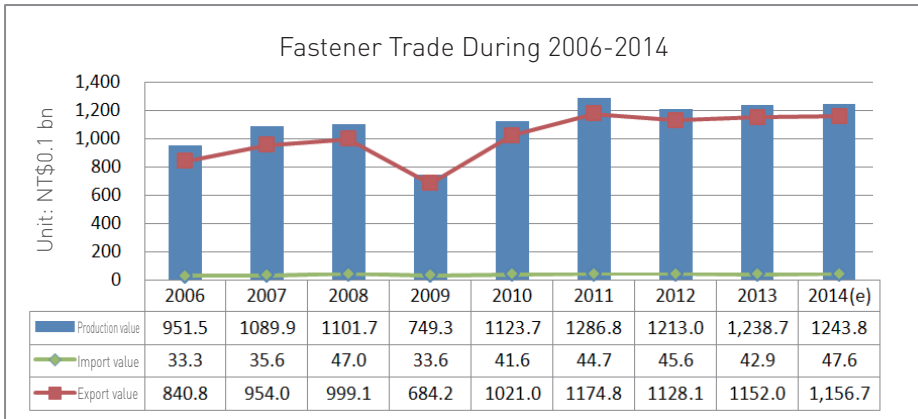
3-Jaw Nut

Table 2. Import/Export (Incl. Forecast) of Taiwanese Fastener Industry During 2006-2015

Screws & nuts , 2006-2015		Unit Value: NT0.1 bn; Unit Volume: 10 thousand tons; Unit Price: NT\$/kg									
		2006	2007	2008	2009	2010	2011	2012	2013	2014(e)	2015(f)
Import	Import value	33.3	35.6	47.0	33.6	41.6	44.7	45.6	42.9	47.6	43.8
	Import volume	2.4	3.6	6.2	2.6	2.5	2.4	2.9	2.3	2.8	2.5
	Import unit price	140.0	97.7	76.2	127.7	167.4	185.5	156.8	186.9	170.0	175
Export	Export value	840.8	954.0	999.1	684.2	1021.0	1174.8	1128.1	1152.0	1,156.7	1160
	Export volume	127.6	123.7	122.0	89.8	128.3	142.6	138.2	146.1	145.5	145
	Export unit price	65.9	77.1	81.9	76.2	79.6	82.4	81.6	78.8	79.5	80
Domestic Production Value	Production value	951.5	1089.9	1101.7	749.3	1123.7	1286.8	1213.0	1,238.7	1243.8	1247.3

Source : Customs Data from TIER/ Arranged by MIRDC in Oct. 2014

Chart 1. Import & Export of Taiwanese Fastener Industry During 2006-2015



Source : Customs Data from TIER/ Arranged by MIRDC in Oct. 2014

price (-NT\$600 per ton) for wire rods is not low enough to satisfy the expectation of the market. They complained that such decline did not make any difference from keeping the price flat at all, as foreign buyers might ask suppliers to reflect the difference on the price, and this did not do any good help to gain more overseas orders. In addition, companies suffered from the greatly increased costs for electroplating and electricity supply and the price of CSC's wire rods was only slightly reduced. As a result, it won't do too much good help to the situation.

Reference

Customs import/export data of TIER
International Trade Centre (ITC)
Taiwan's CSC