



**2,471 domestic visitors and 12,623 visitors from abroad came to the last Taipei Plas**

(photo: Taiwan External Trade Development Council - Taitra)

# Tour de Taiwan

**Trade Fair Preview.** The Chinese neighbor has become a major challenge for the industry in Taiwan. The manufacturers of plastic and rubber processing machines have to offer a higher added-value in order to protect their traditional export markets and to win new market shares. At the end of March, eight companies from Taiwan opened their doors to a group of international journalists. New products were presented, trends discussed and the focus was turned to the Taipei Plas 2012.

**PETRA THOMAS-HASENZAHN**

The plastics and rubber processing machine industry in Taiwan encompasses some 250 small and medium-sized enterprises with around 8,300 employees (last survey 2005) who form production networks to outsource work steps. As a result, they have been able to offer machines of good quality at attractive prices until now. In 2011, Taiwan produced all kinds of plastics and rubber processing machines with a total value of around USD 1.6 billion (Table 1). The plastics processing machinery industry thus makes an important contribution to the

Taiwanese machine exports; in 2011 the exports of plastics and rubber processing machines (in the table all the machine exports from the island in the South China Sea) again came second behind the machine tool. As a result, plastics processing machine exports reached the record value of USD 1.34 billion in 2011 after a dramatic drop in the whole of Taiwan's foreign trade in 2009. The value of the imported machines in 2011 totaled USD 405 million.

The technologically less developed countries in Asia are still stable markets for the island state's plastics and rubber processing machine industry, and headed the list of the main export countries again in 2011. Taiwan exported plastics and rubber processing machines for around USD 382 million to China and

Hong Kong, corresponding to a share of approx. 31 % of the total export volume (Fig. 1). By comparison: In 2006, machines and plants worth around USD 400 million (total export share: 42.9 %) were delivered to the P.R. China and Hong Kong. The trend towards selling plants "Made in Taiwan" also in other markets is therefore continuing. But that also allows a conclusion to be drawn: The ever-advancing technological development in China is making it possible for P.R. China to cover the large domestic demand with machines made in China. It is feared that China will increasingly start to supply these machines also to Taiwan's traditional export markets. Machines and plants for around USD 102.4 million were exported to Indonesia, followed by India (USD 95 million), Vietnam (USD 94.5

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million) and Thailand (USD 92.4 million).

Germany regained its second place (USD 83.6 million) in the list of the main import countries in 2011, pushing China and Hong Kong (USD 75.2 million) into 3rd place. The ranking is still headed, however, by Japan; Japanese exports to Taiwan have risen again after a downturn in 2008. In 2011, Japan exported machines and plants for plastics processing for around USD 177 million to Taiwan. By comparison: Exports in 2006 totaled USD 179.4 million. The USA (USD 19.9 million) and Austria (USD 13.6 million) take 4th and 5th place in the list for exports of rubber and plastics processing machines to Taiwan.

### Extrusion Lines

**Fong Kee International Machinery Co., Ltd.**, Yuen-Kang District, Tainan, generated a turnover of around USD 33 million with 185 employees in 2011. The product spectrum is large: Extrusion blow molding lines, sheet and pipe extrusion lines, laminating, coating and cast film extrusion lines are manufactured to customers' wishes. In Tainan we spoke to Susan Wei, General Sales Manager of Fong Kee (Fig. 2). The energetic lady has been in the business for over 25 years and has worked on all the world's markets for the

family-owned company. Together with her brothers, Larry T. W. Wei (General Director) and Charles T. J. Wei (Vice President), they manage the company; last year more than 92 % of the production was for export to 120 countries. "We had already learned our lessons from the Asian crisis in 1998 and diversified our markets. The Middle East and Africa have brought us growth of late; the economic crisis in the USA and Europe has not affected us.

that we win through direct contacts at trade fairs. Our largest customer comes from Russia and has 40 blow molding lines in operation for the production of packaging containers for edible oil; we have to deliver a further nine machines there by the end of June 2012."

Apart from continuous product improvements, however, service is also a firmly anchored part of the Fong Kee philosophy. "We keep spare parts in stock for

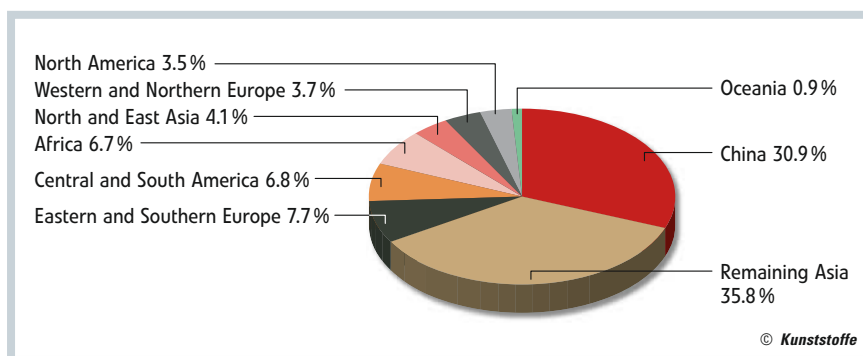


Fig. 1. Main export regions in 2011 for rubber and plastics processing machines in Taiwan

(source: Taitra)

Continuous blow molding machines with accumulator account for more than 50 % of our machine exports, with blown film lines making up 30 %. 60 % of our orders are repeat orders. 20 % of our customers are recommended by other customers, while a further 20 % are new customers

our machines for at least 10 years, and are currently helping to overhaul a 15 year old machine," says Susan Wei. When asked about the competitors from Europe who can gain ground at present on the traditional markets of the Taiwanese company with the weak euro, she answers: "The

| Year | Production    |         | Exports       |         | Imports       |        | Domestic sales |        | Export share [%] | Import share [%] | Domestic share [%] |
|------|---------------|---------|---------------|---------|---------------|--------|----------------|--------|------------------|------------------|--------------------|
|      | [million TWD] | [t]     | [million TWD] | [t]     | [million TWD] | [t]    | [million TWD]  | [t]    |                  |                  |                    |
| 1995 | 20,845        | 124,668 | 15,634        | 93,501  | 6,908         | 12,710 | 12,119         | 43,877 | 75.0             | 57.0             | 43.0               |
| 2000 | 27,000        | 160,780 | 22,003        | 136,662 | 18,751        | 22,550 | 23,748         | 46,668 | 81.5             | 79.0             | 21.0               |
| 2001 | 26,300        | 144,300 | 22,327        | 121,217 | 8,942         | 15,994 | 12,915         | 39,077 | 84.9             | 69.2             | 30.8               |
| 2002 | 29,100        | 170,500 | 24,710        | 144,952 | 7,451         | 17,705 | 11,841         | 43,253 | 84.9             | 62.9             | 37.1               |
| 2003 | 31,500        | 179,600 | 26,393        | 150,517 | 18,104        | 27,269 | 23,211         | 56,352 | 83.8             | 78.0             | 22.0               |
| 2004 | 37,600        | 209,900 | 30,834        | 172,143 | 20,015        | 42,245 | 26,781         | 80,002 | 82.0             | 74.7             | 25.3               |
| 2005 | 37,200        | 193,400 | 30,448        | 158,637 | 9,690         | 32,603 | 16,442         | 67,366 | 81.8             | 58.9             | 41.1               |
| 2006 | 37,300        | 185,800 | 30,528        | 152,039 | 11,464        | 35,916 | 18,236         | 69,677 | 81.8             | 62.9             | 37.1               |
| 2007 | 40,200        | 200,600 | 32,910        | 164,340 | 10,220        | 41,868 | 17,510         | 78,128 | 81.9             | 58.4             | 41.6               |
| 2008 | 41,500        | 182,700 | 33,950        | 149,490 | 10,161        | 39,448 | 17,711         | 72,658 | 81.8             | 57.4             | 42.6               |
| 2009 | 30,000        | 128,700 | 24,608        | 105,545 | 5,451         | 19,802 | 10,843         | 42,957 | 82.0             | 50.3             | 49.7               |
| 2010 | 45,000        | 203,597 | 36,901        | 166,950 | 9,036         | 38,212 | 17,135         | 74,859 | 82.0             | 52.7             | 27.3               |
| 2011 | 49,207        | 239,538 | 40,349        | 168,011 | 12,195        | 38,779 | 21,052         | 86,872 | 82.0             | 57.9             | 42.1               |

Exchange rate underlying: USD = 26.46 TWD (1995), USD = 31.12 TWD (2000), USD = 33.63 TWD (2001), USD = 34.486 TWD (2002), USD = 34.371 TWD (2003), USD = 33.457 TWD (2004), USD = 32.08 TWD (2005), USD = 32.50 TWD (2006), USD = 32.79 TWD (2007), USD = 31.38 TWD (2008), USD = 32.96 TWD (2009), USD = 31.50 TWD (2010)

Table 1. Production, exports, imports and domestic sales for rubber and plastics processing machinery in Taiwan

(source: Taiwan Association of Machinery Industry – Tami)

Taiwanese machines have approx. 80 % of the performance and still cost only half of the machines from Europe. That leaves a great deal of scope for us. We have observed in recent years that European plastics processors are increasingly buying machines from Asia and India. Europe remains the target market for us.” Taiwanese companies have been investing in China for a long time, Fong Kee also. “The works in China produces machines only for the Chinese market so that our customers there can save customs duties,” explains Susan Wei. At the Taipei Plas, Fong Kee

the USA, Canada and Australia, we are well positioned. We have already delivered machines to every country, and at the moment our largest market is the Middle East, or Saudi Arabia to be more precise. We supply monolayer machines there.” But Yang also named customers in Europe and South America. When asked about the ban on plastic bags, Yang replied that they are already carrying out trials with biologically degradable plastics, they have a recycling line for used plastic bags in the product range, and with the 3-layer blown film line it is possible to produce a film

on just one market – we have learned from recent history. But I can name one very potent market for us, because between 50 and 60 % of our machine exports go to Saudi Arabia at the present time.”

The company’s latest developments are a flexo printing line with servo motors which drive the winders. This permits computer-aided web tension control. The second innovation is the two-row high-speed T-shirt bag-making machine which produces bags on the roll. This type of carrier bag dispensing is very widespread



**Fig. 2.** “The markets in the Middle East and Africa have brought us growth of late; the economic crisis in the USA and Europe has not affected us,” Susan Wei, General Sales Manager of Fong Kee

(Figs., except Figs. 1 and 6: Petra Thomas-Hasenzahl)



**Fig. 3.** “We are very successful with turnkey lines for the production of plastic bags,” Younger Yang, Sales Manager of Lung Meng

will be presenting a compact blow molding line based on the HBA Series. Fundamental design modifications are currently being made.

**Lung Meng Machinery Co., Ltd.**, a medium-sized company in Tainan, was founded in 1976 and in 1982 was the first company to develop an inline production line consisting of blown film extruder, printing machine and plastic bag-making machine. “200 machines a year are produced for export at four locations in Taiwan, and turnover rose last year by 200 %,” announces Younger Yang (Fig. 3), Sales Manager of Lung Meng. Here again, the product portfolio is very broad: The blown film extrusion lines extend from 1 m wide single-layer film laboratory machines up to 6 m wide multi-layer co-extrusion lines. In addition there are printing and laminating systems, bag-making machines for every conceivable kind of plastic bag and carrier bag as well as further accessories such as winders.

“With over 37 years of experience, a strong R&D team and service facilities in

with a middle layer consisting of up to 80 % recycled material. The company equips the extrusion line with bimetallic screws for the processing of recycled material. Lung Meng has a new, fully automated bag-making line with two-color printing machine in preparation for the Taipei Plas.

**Hemingstone Machinery Co., Ltd.** from New Taipei City builds 500 to 600 fully automated turnkey solutions per year. Single-layer blown film extrusion, printing with up to 10 colors, unwinding, punching, bundling, winding for the production of plastic bags and carrier bags. Hemingstone was founded in 1979 and claims to be the largest printing machine producer in Taiwan. Today the roughly 120 employees generate a turnover of between USD 40 and 90 million per year. They are proud of the fastest T-shirt bag-making machine which produces up to 400 bags/minute. We spoke to Peter Shi, founder and General Director, and Ted Chen, Head of Marketing (Fig. 4): “For the last 3 years we have ceased to concentrate

in Europe and the USA. With the HN 1100 TR, the challenge was to ensure precise discharge of the punching waste at the extremely high speed. Simplified changing of the punching tool is now also possible. Hemingstone plans to present these and possibly two further machines at the Taipei Plas, including an 8-color flexo printing machine. The company has production facilities and 30 to 40 suppliers in Taiwan. “Hemingstone has never considered establishing production facilities in China; the lack of qualified personnel has always kept us from doing that. The labor costs in China are now rising rapidly and are being further accelerated by the dictate of the central government of ‘double salary in 5 years’. That is then almost Taiwanese level,” says Ted Chen.

In response to the question as to where the focus of the company’s development work lies at present, Ted Chen explained that lines for multi-layer films will also be offered by Hemingstone in the near future. Asked about the company’s activi-





ties for environmental protection, he answers: "We adapt our equipment to the customer's wishes – whether processing of biologically degradable recycled material or multiple line, we make it possible. We are also experimenting with water-soluble printing inks and corresponding drying facilities."

**Queen's Machinery Co., Ltd.** was founded in 1973 in Danshuei in the north of the country and has specialized in turnkey lines (blown film extruder, printing with up to eight colors) and Queen's (bag extrusion lines) for producers of plastic bags and pockets. Annie Kao (Fig. 5), Deputy Managing Director, presented a monolayer line in operation that has already been sold to a customer in Indonesia. The company builds 200 blown film lines and 100 recycling lines per year with 100 employees in 3 factories in Taiwan. A 5-layer co-extrusion line for the production of packaging films was developed as long ago as 2010. "Queen's is now thinking in terms of nine layers, that is our R&D focus at the moment," says Annie Kao. We finally asked about the relations to China. They naturally have a few customers there, too, mostly foreign investors, but the main market for Queen's is South-East Asia. They are maintaining their lead over the competition from Chi-



**Fig. 5.** "We maintain our lead over the competition from China with further developments and quality improvements," Annie Kao, Deputy Managing Director of Queen's

na with further developments and quality improvements. Their machines have to become more compact. The company is travelling to the Taipei Plas with a new high-speed blown film line for throughputs of 500 to 600 kg/h with modified screw and film die for faster product changing.

### Injection Molding Machines

**Fu Chun Shin Machinery Manufacturing Co., Ltd., (FCS)**, Tainan, is one of the largest injection molding machine man-



**Fig. 4.** "For the last 3 years we have ceased to concentrate on just one market – we have learned from recent history," says Peter Shi (left), founder and General Director, and Ted Chen (right), Marketing Manager at Hemingstone

ufacturers in Taiwan with an annual turnover of USD 107 million, and has two further production facilities in Dong Guan and Ningbo, P.R. China. In Tainan, **Kunststoffe** met John Hsieh (Fig. 6), Sales Manager of Fu Chun Shin, who told us about the company's ambitious goals: "We aim to become one of the world's 10 largest injection molding machine manufacturers in the near future. In order to achieve this, FCS is entering into a cooperation with the Japanese company Maruka Machinery in order to gain a foothold on the North American market. We have just adapted our AH Series in line with the demands of the North American market. We have been OTC-listed since 2004, in other words our shares are traded off the stock exchange. First we plan to increase our capital in order to take a place on one of the better-known share indices. Apart from the globalization and diversification of our business, we are constantly improving our products."

The "green future" is also coming ever closer in Taiwan, which is why FCS will be concentrating on topics such as energy saving and environmental protection for the Taipei Plas in September 2012. The company will be presenting an injection molding machines of the HT-SV Series with servo motors for energy saving and patented venting during the production of a smart phone stand of PMMA. As there is no power consumption during the standstill times, significant savings in energy can be achieved. The injection system developed together with Nihon Yuki Co. Ltd., Japan, ensures that the material does not have to be predried. The productivity of the turnkey A-Pack-IML line has

been increased once again. It has a multi-function label feeder (vacuum or static) and consists also of a hybrid driven injection molding machine, a two-cavity mold for the rear side of a mobile telephone and the 3-D labels. FCS has had two-platen injection molding machines with up to 17,000 kN mold clamping force in the product range since 2006. In 2010 the company developed a 8,500 kN two-platen injection molding machine for the Indian Tata Group. A similar machine equipped with servo motors and dedicated gas injection system (GU-25C) will be producing a child's seat weighing 2.5 kg at the fair. FCS has also announced

**! Taipei Plas 2012**

The 13th Taipei Plas, International Trade Fair for the Plastics and Rubber Industry, is being staged on the TWTC of the Fair Grounds Nangang in Taipei, ROC from 21 to 25 September. At this year's Taipei Plas, 450 companies on 2,500 stands will be giving the anticipated 16,000 visitors from far and near insights into the trends and technologies. The exhibition spectrum spans: Processing machines and lines, finished parts and accessories, molds, plastic and rubber raw materials, semi-finished products.

→ [www.TaipeiPlas.com.tw](http://www.TaipeiPlas.com.tw)

the development of a multi-component line with a clamping force of 20,000 kN. **Jonwai Machinery Works Co., Ltd.** employs 300 workers in Tainan, Taiwan and Kunshan, P.R. China and builds 1,400 turnkey machines per year. Robin Pan



**Fig. 6. "We aim to become one of the world's ten largest injection molding machine manufacturers in the near future," says John Hsieh, Sales Manager of Fu Chun Shin Machinery in front of the standard hydraulic machine HT-200, the FCS best-seller**

(photo: Fu Chun Shin)

**(Fig. 7).** General Director of Jonwai, quotes a turnover of around USD 60 million in 2011. The company was founded more than 40 years ago: In 1977 Jonwai was the first Taiwanese company to develop a two-color machine, and in 2006 the company was the first in Taiwan to install servo motors its injection molding machines, and in 2011 Jonwai presented a high-speed machine with 2 x 2 multi-daylight mold at the Chinaplas. "The multi-daylight mold, a European invention, is not very widespread in Asia. The cooperation with a North American mold maker forced us into this area. Now we are trying to make the multi-daylight and tandem mold technology popular also in Asia. The advantage of the multi-daylight mold technology is that a smaller machine can be used to produce the same number of parts compared with a four-

cavity mold. Also a way of saving energy," says Pan. In Tainan Martina Hsu, Sales Manager at Jonwai, presented the company's new "Better, Faster, Greener" concept that with various machines and mold technologies will be at the focus of the participation in the fairs in 2012. The structure of the high-speed machines of the Slim Series has been reinforced, so that pressures of up to 170 bar are now possible. Controllers from Keba, Austria, are installed for greater precision. The injection rate has been increased from 600 mm/s to 800 mm/s. Parts above 0.35 mm wall thickness can now be produced with significantly shorter cycle times. At the Taipei Plas, Jonwai will be presenting the production of the rear panel of a 32" TV of ABS on a two-platen machine with 8,500 kN mold clamping force. Compression injection is em-

ployed here to optimize the complicated injection and holding pressure process during the production of thick-walled parts. "A 14,000 kN injection molding machine is normally required to produce this part. Using the compression injection process, a machine with 8,500 kN mold clamping force is sufficient", says Pan.

**Kunststoffe** asked whether rising wages in China and the weak euro were not increasing the pressure of competition for Taiwanese machine engineering companies. "Our export share is 90 % – we still have our niches. We cannot compete with machines from China in the standard machine sector. But most machines "made in China" still have cycle times of 7 to 8 seconds, while cycle times of 2 s are possible with European machines. I always compare the same part. Our machine offers 2.5 to 2.8 s at a competitive price. We are increasingly noticing that the production facilities relocated to Eastern Europe are losing their fear of contact with Asian machine manufacturers," is the Taiwanese reply.

At **Lien Yu Machinery Co., Ltd.** we met Managing Director Steve Fang **(Fig. 8)** in Tainan, who spoke of changing market situation for his injection molding machine manufacturing company. He had just come back from Europe where he expects to lose the market in Spain and Portugal as the customers there are not currently investing in new machine technology. The Middle East, South and Central America and the developing countries in South-East Asia are now his key markets.

At the production facility in Taiwan, the company produces 60 machines per month. From a factory in China Lien Yu also supplies the local market with stan-







**Fig. 7. "We still have our niche, because comparable machines from European production are still twice as expensive," says Robin Pan, General Director of Jonwai**

standard injection molding machines in the mold clamping range from 800 to 6,500 kN. The Taiwanese companies have long since stopped emphasizing the alleged quality differences between Taiwanese and Chinese standard machines. Fang mentioned quite openly the pressure of competition generated by the big neighbor in this segment. Lien Yu also aims to distinguish itself from the competition with further developments in machines and service. Steve Fang will therefore be presenting a two-platen machine at the Taipei Plas, a completely new model range with mold clamping forces from 11,000 to 23,000 kN. With this machine type he aims to attract in particular the European customers for whom the machine dimensions play an important role. The SV Series is available with a wide range of options, depending on the customer's wishes, from all-electric through to hybrid machines with widely differing configurations and with servo motors from Taiwan or Japan. "Of course we will also have a modified, all-electric machine on show at the Taipei Plas, every injection molding machine manufacturer has to have this machine in his product range today," says Fang at the end of the interview.

There was hardly any room to move at **Multiplas Enginery Co., Ltd.** in the Hwa-Ya Industrial Park. David Wu (Fig. 9), General Director and manager of the Multiplas Technology Group and Chairman of the Plastics and Rubber Processing Machine Division of the Taiwan Association of Machinery Industry (Tami) told us straight away that he urgently needs to expand his factory in Taiwan due to the good order book situation. The Multiplas Tech-

nology Group was founded in 1988. The headquarters and production facilities are located in Taoyuan, Taiwan and operate under the name of Multiplas Enginery Co., Ltd. Furthermore, the company also has a production facility in Huaqiao Town, Kunshan, Jiangsu Province, P.R. China (Multiplas Enginery (Kunshan) Co., Ltd.) and a subsidiary in Chang An Town, Dongguan Province, P.R. China. Sales in 2010 totaled NTD 1.6 billion (around USD 54 million). Multiplas has 300 employees worldwide. The company produces injection molding machines in the mold clamping range from 10 to 8,500 kN and has specialized in vertical injection molding machines and fully automated special lines for insert technology, as well as multi-color and multi-component machines. Multiplas has many years of experience also when it comes to the processing of LSR and thermoset materials.

"21 % of our employees work in research & development, no other company in Taiwan has such a large R&D department; we hold over 30 patents, we are ISO-certified and our products CE-certified," says David Wu. Taiwan is one of the largest producers for the IT sector where multi-color injection molding and IMD are very much in demand. The company has a customer list that reads like the Who's who of the major fields of application: Bosch, Denso, Saint-Gobain, Panasonic, Sumitomo, Foxconn, Gilette, Johnson Johnson. All



**Fig. 8. "We are reacting to the changing market situations with further development of our machines and with service," says Steve Fang, Managing Director of Lien Yu**



**Fig. 9. "No other company in Taiwan has such a large R&D department; we hold over 30 patents, we are ISO-certified and our products CE-certified," David Wu, General Director and manager of the Multiplas Technology Group and Chairman of the Plastics and Rubber Processing Machine Division of the Taiwan Association of Machinery Industry (Tami)**

these companies have production facilities in P.R. China. "Our main field of activity is China, but the European market is also very attractive for Asian machine engineering companies. Our largest European customer is Saint-Gobain, the world's third-largest supplier of glass for the automotive industry, for whom we supply special machines for the application of the rubber seal around the windcreens. Saint-Gobain as an automotive industry supplier naturally has its production facilities worldwide and is therefore really a global customer."

The vertical, all-electric, fully automated injection molding machine with 500 kN mold clamping force was a highlight at the Taipei Plas 2010 producing LED bands. There are plans to extend the model range to even higher mold clamping forces through cooperations with Japanese and/or German servo motor manufacturers. The pressure of competition is still very high for the all-electric horizontal machines. "We are optimistic that we can double our earnings this year with the vertical machines. We have just received a direct order from Apple, USA, for 900 machines with 350 kN mold clamping force and 2 stations. The machines are used to produce earphones. Foxconn has again ordered 400 machines for the iPhone 4 this year," adds David Wu. ■

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