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5.4 History of Chinese Pneumatics Industry

In China, pneumatics industry did not exist at all till late 1960. Before that, pneumatic units were designed and produced by the factories that used them. Most of them were automobile and tractor makers, using just simply pneumatic parts on production and assembly lines. There were no professional producers and traders for pneumatic products and systems. (Chen 2005) In June 1967, a specialist pneumatics industry meeting was held in Beijing attended by specialists and experts from several units, focusing on supplying The 2nd Automobile Manufacturing Factory with pneumatic products to be used on production line. At that meeting, two R&D teams were established, staffed by people from Jinan Casting and Forging Machinery Institute and Shanghai Mechanical-Electrical Product Designing Institute, who later developed products including flow direction valves and air preparation units. This meeting and the two teams were viewed as the starting of Chinese pneumatics industry. Late 1960, only 16 categories, covering more than 80 products were developed and produced.

In 1975, the First National Professional Pneumatics Industry Meeting was held in Zhaoqing, Guangdong. Four united designing teams were established, staffed by specialists from academic institute and factories, focusing on R&D of flow direction valves, flow rate controllers, air cylinders, and pneumatic logic controllers, etc. At that meeting, development project of pneumatics industry was drafted, and manufacturing factories for pneumatic products were designated. Up to 1978, pneumatic product supplies were expanded to 61 categories, including 256 products.

In 1981-1985 (namely the Sixth Five Year Plan), pneumatic products were listed in the 38 Important National Scientific and Technological Projects. During that time, many technical problems were solved, and new product or component parts were developed, including aluminium air cylinder tube, 5/3 puppet type direction control valve, solenoid pilot valve, etc. In 1982, Shanghai Pneumatic Units Factory introduced 4 product categories from Herion Company in the then West Germany, incorporating air preparation units, mechanical control valves, electrical control valves, and multi-media valves, along with production technologies.

In 1986-1990 (i.e. the Seventh Five Year Plan), as part of the national projects, around 73 new pneumatic products were born in China, such as precision air filter, precision air regulator, auto drainer, non-lubricator solenoid valves, digital locating cylinder, rotary cylinder, dual rod cylinder, etc. Meanwhile, Zhaoqing Pneumatic Units General Factory, in

Guangdong, introduced from TAIYO IRON WORKS LTD, Japan (changed name to TAIYO Ltd in 2007) non-lubricator cylinders; Yantai Pneumatic Units General Factory, in Shandong, introduced from Leibfried, then West Germany, ISO standard cylinders; Wuxi Pneumatic Units General Factory, in Suzhou, introduced from CKD Corporation, Japan, multi-application solenoid valves; the pneumatic branch factory of Dalian Combined Lathe Institute, in Liaoning, introduced from Martonair Germany ISO cylinder and pneumatic valve, etc. Late 1990, Chinese pneumatic categories expanded to more than 450.

In 1991-1995 (namely the Eighth Five Year Plan), companies such as Wuxi Pneumatic Technology Institute, Shanghai Pneumatic Units Company and Fuxin Pneumatic unit Factory undertook state-designated R&D programs including non-lubricator puppet type electrical pneumatic direction control valves, refrigerating type compressed air dryer, modular air preparation units, high frequency solenoid valves, and low watt solenoid valves, etc. On the other hand, many new products like mini air cylinder, Mickey type air cylinder, safety air preparation modular units, automatic to-and-fro cylinder, vibrating cylinder, air vibrator, air gripper were developed independently by firms in Jinan Shandong, Zhaoqing Guangdong, Yantai Shangdong, Wuxi Jiangsu, and Changchu Jilin, etc. Meanwhile, Jinan Huaneng Pneumatic Company introduced designing and manufacturing technologies from Japan and Germany. Up to end of 1993, Chinese pneumatic products grew to 1080 categories.

In 1996-2000 (namely the Ninth Five Year Plan), the national centralization of pneumatic product development was reduced, with only two projects being carried out. On the other hand, Chinese pneumatic companies intensify investment in R&D, successfully developing new products such as oval tube cylinder, parallel dual-rod cylinder, multistage telescopic cylinder, new type gas liquid damping cylinder, Energy-saving Gas-liquid Pressurized Cylinder, new type air gripper, pneumatic pilot air regulator, low watt solenoid valve, and valve terminal, etc, and a great number of new products for applications for automobile exhaust cleaning system, Environmental automobile fuel system, automobile air brake system, textile, printing, rail train, petrochemical, and non-ferrous metal, etc. Even breakthrough was achieved at pneumatic applications in areas like mechatronics and automation. In late 2000, pneumatic product categories grew to around 1480.

Up to now, Chinese pneumatics industry went through the process of united R&D under national central coordination, technology introduction from developed countries, and self innovation and development. After around 40 years for development, Chinese pneumatics industry grew rapidly, with more than 1100 companies, more than 50,000 employees, sales of 1.1 billion USD in 2009, about 2000 product categories (CHPSA 2010).

In the recent two decades, in addition to just exporting products to China as they had been doing for many years, foreign companies FDI (foreign direct investment) in China pneumatics market witnessed steady growth, many foreign companies opening branches or factories such as SMC and CKD from Japan, FESTO and Bosch Rexroth from Germany, Camozzi and Metal Work from Italy, Parker Hannifin from USA. Among them,

SMC invested 300 million USD in production centre in Beijing in 1994 (SMC 2010), Airtac from Taiwan investing 50 million USD in production centre in Fenghua, Zhejiang in 2002 (Airtac 2010), Bosch Rexroth acquired major stock share of Chinese pneumatics company Easun in 2008 (AutomationWorld 2008), FESTO purchased 100% share of Jinan Huaneng Pneumatics Company in 2007 (Qilu Evening News 2007) who was one of the largest Chinese pneumatics company.

5.5 Summary

Thanks to the economic reform, through the past decades, Chinese pneumatics industry developed rapidly, with favorable factor conditions (abundant cheap labor, lands and electricity, etc), fast developing domestic market, steady growth of foreigners' interest in using Chinese pneumatic products for trial, and spill-over through imitation, learning, and hiring former foreign employees. But the situation changes very fast, with rising costs of labor, land and energy, increasing inbound FDI by foreign competitors seeking to take larger share of Chinese market and to take advantage of the cheap local labor, and increasingly demanding foreign and domestic customers. Chinese pneumatics products are still 2-3 generation behind leading western foreign competitors. As the domestic market demand grows in sophistication, if Chinese pneumatics companies fail to catch up and grasp the chance of upgrading the products and service, they would be left only with the lest profitable market segments.

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Acculine Precision Manufacturing Company is a Chinese professional supplier of mechanical component parts including aluminum die casting, zinc die casting, precision machining, sheet metal stamping, sheet metal punching, sheet metal deep drawing, plastic injection, metal sintering and plastic sintering, etc.

Besides our leading knowledge about products and production, another important power which help Acculine outperform the Chinese competitors is our strict quality management system. We have been in long term cooperation with many professional and demanding customers in Europe and North America many years. Through years of communication and emulation, Acculine developed the unique quality management based on western mentality of quality and service. The system ensures Acculine's leadership in the market and customers' needs to be met constantly. For details of the quality management, please visit

http://www.acculine-mfg.com/literature/Acculine_Product_Quality_Management_Procedure_Flowchart.pdf, and view the copy.