

# **The ICT hardware sector in China and Corporate Social Responsibility Issues**

With case studies on the supply chain of  
Fujitsu-Siemens Computers and Acer Inc.

**A research project of Labour Action China  
in cooperation with SOMO**

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# Contents

- Contents ..... 2**
- Introduction of the Research ..... 3**
- 1. Overview of the IT and Computer Industry in China..... 5**
  - 1.1. China’s Computer Industry 1990-2000 ..... 5
  - 1.2. Forms of Capital Investment in the IT Industry in China ..... 6
- 2. China's Domestic Market for Computers ..... 7**
  - 2.1. The market of personal computers (PC) ..... 7
  - 2.2. The market of semiconductor ..... 7
- 3. New- and Hi-Tech Industries in Pearl River Delta ..... 9**
  - 3.1. Bibliography ..... 11
- 4. Report case study on Acer ..... 12**
- 5. Report case study on Fujitsu-Siemens ..... 17**
- Summary of the Working Conditions in the supplier factories researched. .... 21
- Additional research on Foxconn (Shenzhen) ..... 25

## Introduction of the Research

The Information and Communication Technology (ICT) sector is a relatively young and complex sector, fast growing and dynamic. From the perspective of sustainable development there has been less attention for this industry than for some of the other manufacturing industries.

Research however points out that there are major problems in the production of ICT hardware. Many abuses related to human rights, labour, environment and health issues are taking place in the global supply chain of ICT hardware.

In response to this, SOMO (Center for Research on Multinational Corporations – The Netherlands) decided to include the ICT sector in its four-year research program on Corporate Social Responsibility (CSR). This program is co-financed by the Ministry of Foreign Affairs in the Netherlands. The objectives of this CSR Research program is to increase knowledge among Northern and Southern civil society organisations about the effects of activities of corporations in developing countries.

Part of the SOMO research is a case study on the ICT industry in China and case studies on China-based suppliers of Acer Inc. and Fujitsu-Siemens Computers. These companies have large market shares in Europe, and also in the Netherlands. SOMO engaged the services of Labour Action China under the responsibility of Researcher Monina Wong.

### The aims of the research in China are the following:

- ❑ To understand the role of Chinese computer manufacturers in the global supply chain and to develop strategies and the capacity to campaign on them.
- ❑ To understand the organization of the supply chains of Fujitsu-Siemens Computers and Acer Inc.
- ❑ To increase the information and knowledge base on CSR issues in the ICT sector in China.
- ❑ To widen the campaign base on the ICT hardware sector in Europe and provide information for campaigns directed on improving conditions in the ICT supply chain.

### Methodology

The results of this report are based on literature study, database research and interviews with workers working at factories supplying the Taiwanese ICT company Acer and the electronics companies Fujitsu (Japan) and Siemens (Germany), both 50% parent companies of Fujitsu-Siemens Computers, and involved in the supply chain of Fujitsu-Siemens Computers.

In total seven supplier factories are researched. Four factories supplying Acer: Aopen, Wistron, Lian Yi Precision and Foxconn. Aopen is a subsidiary of Wistron, Wistron on its turn is owned for 32,2%<sup>1</sup> by Acer. Two factories supplying Siemens (Hua Tong and Delta) and one company supplying Fujitsu. Besides Aopen which supplies solely to Acer, the supplier factories are not exclusively supplying Acer and Fujitsu Siemens Computers: other buyers are Dell, Microsoft, Apple, HP, Sony, Philips, Lenovo, Nokia, Foxconn and IBM.

Per facility twenty workers were interviewed. All interviews were done off site, individually or with 2 à 3 workers at the same time (discussions), with each interview taking one hour or more

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<sup>1</sup> Wistron is a former 100% subsidiary of Acer, spun off in 2001. In August 2005 there is still a 32,2% ownership stake, but Acer intends to decline its stake further on.



time. The workers are all selected from various departments from the production line. 90% of the interviewed workers were female, 10% were male.

**Information about SOMO**

The report is published by SOMO, an independent non-profit research institute that advises non-governmental organizations and trade unions in the Netherlands and worldwide. SOMO researches multinational corporations and their international context. By exposing unfair practices and systems SOMO wants to contribute to the struggle against exploitation, poverty and disparity, and provide means to achieve sustainable economic and social development, and a globalization based on justice.

# 1. Overview of the IT and Computer Industry in China

## 1.1. China's Computer Industry 1990-2000

China's electronics industry capabilities were extremely weak in the early 1990s as the country's primary strength lied in low-cost manufacturing. However China has been quite successful in attracting advanced technologies such as ICs, LEDs, and PCB technologies which supported the development of an electronics supplier base.

The size of China's computer and related industries has been growing explosively between 1990-2000. Imports of parts and components were worth \$372 million in 1990, while exports of computers were worth only \$200 million. By 1995, exports of computer products reached \$3.78 billion (PRC MPT 2000). Software sales revenues were only \$22 million in 1990 (due in part to software piracy) and by 1995, software revenues reached \$1.3 billion. In terms of hardware manufacturing, the Chinese computer industry had 191 hardware manufacturers, a few software and service firms, and a total workforce of 100,000 people in 1990. Yet by the end of 1995, a total of over 300,000 people worked for 1,000 hardware manufacturers, 1,000 software houses, and 13,000 companies specializing in marketing and services are recorded. There was an additional of 1,500 workers in 50 R&D institutes. The output value of China's computer industry grew in from \$921 million in 1990 to \$6.37 billion in 1995. The revenue from export of computers and input/output devices for computers grew from \$150 million in 1989 to \$3.6 billion in 1995 (PRC MPT statistics 2000).

According to the release of the National Bureau of Statistics in China, the hi-tech industry, particularly the computer industry has been growing at a faster rate than compared to that of other industry in terms of export volume and value. This trend is particularly strong after year 2000. The bureau's statistics shows that the export value of hi-tech products reached \$110.32 billion in 2003, accounting for 25.2 percent of the national total. Export of hi-tech product witnesses 62.6 percent year-on-year increase which is 28 percentage points higher than that of the national total export. In 2003, hi-tech product exports constituted 38 percent of the country's total. In the last three years, the average annual rate of growth has been 45 percent which is higher than that of total exports for the corresponding years. Export of the hi-tech products is done mainly through processing trade which is valued as \$99 billion in 2003, accounting for 89.8% of the total (Beijing Review 2004).

Of the export of hi-tech products, computers, communication products and electronic products are major categories which constitute more than 80% of the total export of hi-tech products in China. The figure rose from 50.6% in 2002 to 68.6% in 2003. Electronic products alone made up 10 percent of the total export value of hi-tech products and their export value grew, 42.3% and 44.3% in 2002 and 2003 respectively.

The major market for these hi-tech products are the United States and the European Union (EU) which already account for 44.5% of the total. 46.5% of the hi-tech product export goes to mainly East Asian countries such as Hong Kong, Taiwan, Japan, Korea as well as the ASEAN countries.

In 2003, hi-tech products exported to the United States and EU climbed 70 percent and 100 percent respectively. Exports to the two markets accounted for 44.5 percent of the total. The

other 46.5 percent went to Hong Kong, Taiwan, Japan, the Republic of Korea and ASEAN (Association of South East Asian Nations) countries. Exports to these countries increased 46.4 percent last year.

## 1.2. Forms of Capital Investment in the IT Industry in China

IT industry is a strategically important industry in China. The government, since the 1960s, has been developing national capacity for self-sustained high technological production. Government bodies, and recently to fully utilised market-driven force, government funded companies have been taking the major lead in this aspect. The Ministry of Electronics Industry (MEI) is the main government body on IT development. Directly reporting to the State Council, the MEI oversees the computer and electronics industry, and it is increasingly involved in telecommunications. Under the MEI are state funded research institute such as the Electronic Technology Information Research Institute, the Chengdu Electronics Research Institute, and China Computer & Microelectronics Information Research Institute, as well as state sponsored companies that directly invest in the IT business. They include the China National Electronics Import Export Corporation and the Great Wall Computing Corporation. The other government body, the State Science and Technology Commission (SSTC) also directly reports to the State Council. The SSTC is one of 10 state commissions formed to oversee the nation's R&D policy for high technology. The SSTC has a number of affiliated research and development institutions, including the Chengdu Electronics Research Institute and the Chongqing Science & Technology Association. The Institute of Scientific and Technology Information of China (ISTIC) is a department within SSTC. In 1995, China invested \$2 billion for R&D, of which 7% was for basic research.

Foreign-funded enterprises are the main players in the export of hi-tech products as they exported \$94.3 billion worth hi-tech products in 2003, increasing 69.3 percent and making up 85.5% of the total export value. The state-owned enterprises are the second driving capital force to the export of the hi-tech industry contributing to \$11.5 billion export in 2003, accounting for 10.4% of the total export value. Private enterprises also grew rapidly but is a less strong force, reaching \$2.5 billion in terms of export value in 2003 (Beijing Review 2004).

Joint venture enterprises as one of the major form of foreign investment in the high-tech sector play a particularly important role in technology transfer. This is done through either direct sourcing of computer parts and components in China or establishing collaborated R&D and manufacturing projects with state affiliated (or owned) corporations or government bodies. Computer and related companies such as Hewlett-Packard (HP), AST, IBM, Unisys, Digital, Dell and Compaq have started sourcing from China for more than 10 years by now. The Japanese company, Sharp has joint venture investment with Wuxi Municipal Electronic Instruments Company have invested worthy of \$29.9 million in a black-and-white STN LCD factory. Intel has invested \$30 million to build a factory to produce flash memory chips, microcontrollers and microprocessors, which is expected to go into production in 1997. IBM has moved its China headquarters from Hong Kong to Beijing and invested \$10 million in a second joint venture PC assembly factory with Great Wall to supply domestic and overseas markets.

## 2. China's Domestic Market for Computers

### 2.1. The market of personal computers (PC)

In 1994 alone, 2.04 million PCs, 4.09 million monitors, 500,000 hard disk drives, 2.5 million floppy disk drives, and 6.05 million motherboards were made in China, most of which were exported (PRC MPT statistics 2000). However, China has been a rapidly expanding market for computers in this decade, since there were few systems already in place, and servers have been needed to establish LANs for the growing number of new businesses. PC shipments in China grew from 100,000 units/yr. in 1990 to 1.08 million units in 1995, valued at \$1.93 billion (PRC MPT statistics 2000). The Chinese PC market was estimated to be 1.4 million units in 1996. The Ministry of Electronics Industry in China estimates that by 2000 the Chinese output of PCs will reach 8 million units annually, with the majority sold domestically.

Lenovo is the best-selling domestic PC brand in mainland China. In 1995, Lenovo was in seventh place overall, with 8% of the market (by 1996, its share had reached 15%). Besides selling its own brands, Lenovo is also China's largest distributor for AST. It has over 200 outlets throughout China in which it sells brands like AST, IBM, and HP. As for the sales of foreign branded computers in 1995, AST was first with 16%, Compaq was second with 14%, and IBM was third with 9% of the market. The fourth, fifth, and sixth place players, respectively, were DEC in an alliance with the Founder Group, Hewlett-Packard, and Acer. The Chinese company Great Wall was number eight. The PC brand vendors were expected to get 80% of the home market. Acer was introducing a basic no-frills machine for around \$500 for sales in developing markets.

#### ***The market of central processing unit (CPU)***

Intel commanded a 83.8% market share in China's CPU market, followed by AMD with 11.5%, and Cyrix at 3.2%. Pentium machines represented only 4% of the market in 1994 but over 45% in 1995. It was predicted that by the end of 1996, Pentium processors were to increase from 20% to 74% of the market.

### 2.2. The market of semiconductor

China is an important market for semiconductors both for internal consumption and manufacturing for exports. The semiconductor market in China is expected to grow dramatically at 40% per year, and over the next 15 years from \$4 billion in 1995 to \$500 billion by 2010 (PRC MPT statistics 2000). While the semiconductor is a strategic sector in the electronics industry, the Chinese government has been focussing on developing self-reliant national capacity in terms of R&D and manufacturing. However technology transfer from foreign investment is still a key factor at this stage. Key ventures in mid 1990s are mostly the ones with Japanese and US companies.

#### **Japanese Companies – Mitsubishi, Hitachi and NEC**

Mitsubishi Electric and Mitsui & Company from Japan announced a joint venture plan with China's Stone Group in 1996 to assemble integrated circuits in Beijing. Mitsubishi-Stone IC Company was to begin producing 5 million chips per month in June 1997, with an ultimate capacity of 120 million microchips and a value of \$250 million. By 1998 the investment reached \$1.5 billion. Another Japanese company, Hitachi announced its third operation to package and

market memory chips in the China-Singapore joint ventured Suzhou Industrial Park in 1996. The investment cost \$40 million by the mid-1997 start up. Singapore's Economic Development Board will cover 30% of the cost, Hitachi 70%. NEC invested \$104 million for a 40% stake in a semiconductor joint venture with the Shoudu Steel Works in Beijing. The plant produces 8,000 six-inch wafers per month and continues to expand its fabrication site near the capital.

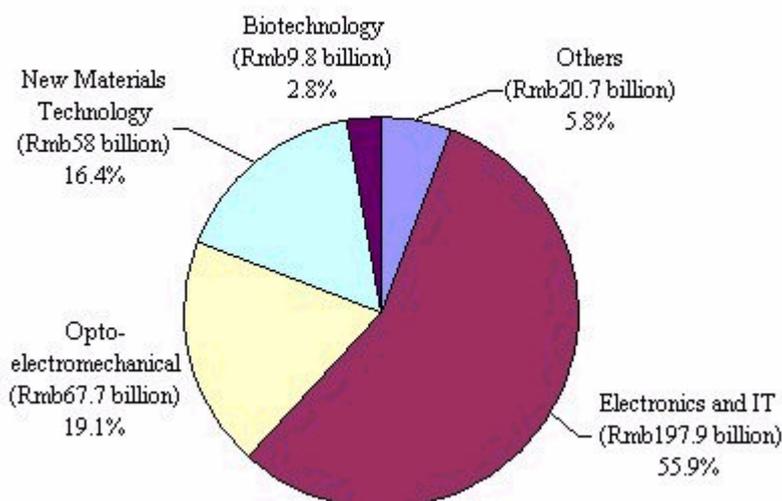
#### US Companies – Motorola and Intel

The US company, Motorola on the other hand planned a \$720 million semiconductor and telecommunication product plant in Tianjin. The semiconductor wafer plant would produce 3,000 submicron eight-inch wafers per week by 1998. The chips will be used in automotive, communication, PC, and consumer products. The Intel Corp. reached an agreement with the Ministry of Electronics Industry for technology cooperation in multimedia, telecommunications, enterprise computing, and training. Intel also agreed to sell the license of Intel's latest Pentium motherboard designs to the Beijing-based Great Wall Computer Group. The US company will continue its testing and packaging license for Pentium or Pentium Pro processors.

### 3. New- and Hi-Tech Industries in Pearl River Delta

Since its establishment in 1991, the new- and hi-tech industrial belt in the Pearl River Delta (PRD) region has posted an average annual growth of over 40%. In 2002, its total output value and exports stood at Rmb400 billion (US\$47.7 billion) and US\$30 billion respectively, leading other regions in the country. More than 4,000 types of new- and hi-tech products are currently produced in the PRD, most of which fall under four major categories, namely electronics and information technology (IT), biotechnology, new materials, and opto-electromechanical products. Among these, the output value of electronics and communications equipment accounts for more than 30% of the national total.

#### Four Major New- and Hi-Tech Industries in Guangdong



Source: HKTDC 2003

Private, mainland owned enterprises are expanding by leaps and bounds in the hi-tech industry in China compared with the state owned and the foreign invested enterprises. Since the 1990s, private new- and hi-tech enterprises in Guangdong have grown at the rate of 30-60%. As at the end of 2001, 3,952 private technology enterprises were operating in Guangdong, of which 537 were recognised by the provincial authorities as new- and hi-tech, accounting for 35% of the provincial total. In 2001, the value-added of private enterprises' new- and hi-tech products increased by more than 30% to top Rmb112.6 billion, making up 32% of the provincial total. In terms of R&D investment, private enterprises spent Rmb5.89 billion during 2001, representing a 55% share of the provincial total. About 60% of the new products developed by private enterprises during that year were recognised as new- and hi-tech, of which 70% had proprietary intellectual property right (IPR). Meanwhile, a batch of private new- and hi-tech enterprises well-known across the mainland has emerged, including Huawei, Zhongxing, Jinshan, Jindie, Yuanfang and Zhongwang.

Nevertheless foreign invested enterprises, especially the direct investment from internationally renown hi-tech and companies are increasing their presence in China not only targeting the

country's vast supply of labour but its huge market potential. The Pearl River Delta area has attracted 340 out of the world's top 500 multinational companies (MNCs), such as IBM, Compaq, Motorola and Dupont of the US, Sony, Hitachi, TDK and Honda of Japan, and Philips and Nokia from Europe, to source and produce in the region. Their strong presence has turned the region into one of the world's largest production bases for new- and hi-tech products. In 2001, eight types of products in Guangdong had an output value exceeding Rmb5 billion. They were digital mobile phones, upmarket automobiles, digital colour TVs, programme-controlled switchboards, microprocessors, hard disks, notebook computers and telecoms transmission equipment. A significant portion of the output is attributable to foreign investment (HKTDC 2003). Strategically positioning itself as the world's manufacturing base for the IT industry, the PRD is both a production as well as a consumption market. The PRD is currently the largest market for chips in China. About 80% of integrated circuit (IC) imports into China are channelled through Shenzhen, of which 75% are consumed locally in the special economic zone. Apart from processing and assembly activities, foreign investors have also been increasing their investment in technology and product development to capitalise on the strength of the PRD in R&D. As at the end of 2002, seven MNCs have established R&D facilities in Shenzhen and Guangzhou to support their production activities in China and other parts of Asia.

**Table 1: Multinational Companies with R&D Facilities in PRD**

R&D Facility	Industry	Country/Region	Location
Guangdong Nortel R&D Centre	IT	Canada	Guangzhou
Guangzhou Honda Technology Centre	Automobile	Japan	Guangzhou
Shenzhen Oracle China Development Centre	IT	US	Shenzhen
Compaq Shenzhen R&D Centre	IT	US	Shenzhen
Compaq Shenzhen R&D Centre	IT	US	Shenzhen
Fujitsu Shenzhen Co	IT	Japan	Shenzhen
Vtech Holdings	IT	Hong Kong	Shenzhen

Source: Ministry of Science and Technology, China

Centred around Shenzhen, Dongguan and Huizhou, the cluster to the east of the Pearl River consists of leading players in the electronic information sector. More than 2,800 computer-related enterprises from different countries and regions currently operate in Dongguan. These enterprises are capable of undertaking 95% of the processes involved in the production of complete computers. The cost of producing a motherboard in Dongguan is US\$1 lower than in other localities. In the short term, no other city can overtake Dongguan's long-standing advantage in IT.

#### Sharp Increase in Export

In 2002, the output value of new- and hi-tech products in Guangdong totalled US\$51.9 billion, of which US\$30.9 billion were exported to foreign markets.

After more than 20 years of development, new- and hi-tech export products of the PRD have won a good reputation in the international market. In 2002, exports of new- and hi-tech products in Guangdong amounted to US\$30.9 billion, accounting for 60% of all such products produced in the province. Computers and communications technology products are the two major categories, making up over 80% of all new- and hi-tech exports. Today, Dongguan commands a key position in the global computer market. It is the world's largest producer of computer heads, motherboards, micro drives and scanners.

High-tech industry is the priority industry of the Guangdong government. A regional division of labour has emerged which has the provincial capital, Guangzhou city developing into a regional

information and sourcing hub. Shenzhen city focusses on R&D especially for private and foreign investment for the country. Whereas Dongguan and Huizhou city establish themselves as the world's manufacturing base for electronic information products. On the policy level, the Guangdong government provides various preferential tax policies such as priority in export VAT rebate, expedited customs clearance, favourable taxation policies to promote industrial upgrade, collaborated R&D with universities and establishment of new and hi-tech industrial zones. These include six state-level and four provincial-level new- and hi-tech development zones, two state-level software parks, and 12 state-level hi-tech R&D conversion bases in Guangdong province.

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## 4. Report case study on Acer

Acer was founded in 1976 by Stanley Shih in Taiwan. The company started under the name Multitech which was an OEM (Original Equipment Manufacturing) company for computer makers such as the U.S.-based Unisys and Texas Instruments. The company moved on to develop core technology such as DRAM (dynamic random access memory) in joint venture with Texas Instruments and other core components such as integrated circuit and LCD display. Components were both sourced from as well as supplied by subsidiary companies such as Acer Peripherals Inc, founded in 1984, in Taiwan. The Acer brand was finally established in 1987 manufacturing personal and notebook computers under its own brand. The company ranked the 8<sup>th</sup> largest PC brand in the world by 1987. Starting off as the first PC brand company in Taiwan that successfully ventured into the international market, ACER has gone through a number of stages. In the first decade since 1976, components and assembly was done locally through a supplier network as well as ACER's subsidiary companies in Taiwan. In 1999, ACER built its own factory in Zhongshan (Guangdong province) of China. The company started to relocate the low-end production to China and organise a supplier network under its DMS unit Winstrom. Being both a brand company as well as contract manufacturer for other brands, ACER underwent a phase of re-engineering which was driven by pressure and competition from its western and Japanese customers as well as competitors. The DMS business suffered as other brand companies regarded it as direct competition to place orders with ACER which sold its own brand computers. The ACER brand ceased to be a manufacturer but focuses on brand building, marketing, service provision under the ABO, ACER Brand Operation. Manufacturing was spinned-off to former subsidiary company, the Winstrom Group, as well as other suppliers, both in Taiwan and mainland China. The Winstrom Group, was finally separated from ACER in 2000 to become a contract manufacturing company. According to Stanley Shih, "Acer Brand Operation will no longer manufacture anything. Instead, it will contract out work to the lowest bidder, which won't necessarily be an Acer company. And, for DMS, Acer will just be another ordinary customer. So, unlike in the past, DMS won't have to make every product that ABO demands, allowing it to focus its resources on a narrower range of products and do a better job on each" (Burns, 2001). ACER also created a new brand BenQ which includes a variety of consumer products such as mobile phones, notebook computers, cameras and palms etc. The structure of ACER is organised as follow.

1. The Pan Acer Group – that includes the core brand ACER Inc and subsidiary service provision companies such as Weblink, HiTRUST, Lottery Technology, TWP, Sertek, Apacer.
2. BenQ Group – including BenQ Corp, AU Optronics, Darfon, Daxon, Darly BenQ Mobile System and Copax.

The former subsidiary, the Wistron Group, has become independent and focuses on contract manufacturing. The subsidiary companies under the Winstrom Group includes Wistron Corp, Aopen, Wistron Software, Wistron NeWeb, Wistron Nexus, Mirrors, AnexTEK and Playcoo.

The second strategic step taken by ACER was to re-organise its supply chain and core market. Unable to win over the American market where the ACER brand reported to have lost USD60 billion in 1999, the company re-organised its market focus to Asia and Europe. China is both the sourcing country for low end products as well as a local market while Eastern Europe is the manufacturing base for sales in western Europe. The company also ventured into developing markets such as Africa, South America.

**Table 2: Performance of ACER in the Third-Quarter 2003**

	Western Europe	Eastern Europe	Middle East and Africa
Notebook Computers	First in Italy, Austria, Spain, Holland, Germany, Belgium, Switzerland. Second in France, Greece	First in Czech Republic. Second in Poland	Third in the region (5.4%)
PC	First in Italy, Austria. Second in Spain, Belgium	Second in Czech Republic	Third in the region (11.6%)
LCD Display	Rank first, 420,200 units, 13.1% market share (4Q)		

Source: ACER company website

### **Winstron Group**

Formed in 1981 as the DMS unit of ACER Inc. Winstron was incorporated in 2001 as an independent OEM/DMS contract manufacturing and service company. The products of Winstron range from Information and Communication Technology (ICT) products, including Notebook and Desktop systems, Servers and Storage systems, IA (information appliances), Networking and Communication products. The company also provides various Design, Manufacturing and After-sales service support functions under expanded EMS model. Since 2002, the group records over US\$2B in revenues.

Winstron has a number of subsidiary companies and multi-national manufacturing base.

1. Wistron Corp is a contract manufacturer of PC/notebook components and assembly.
2. NeWeb Corp. designs and manufactures wireless communication equipment such as WLAN, PAN, Mobile handsets and satellite communication serial products.
3. M-Display designs TFT-LCD display for computers, mobile phones, PDAs, and digital still cameras.
4. AOpen supplies PC components and peripherals such as motherboards, optical drives, housings to multimedia and communication solutions, monitors etc for PC and notebook computers.
5. AnexTEK offers a diverse customer-centric storage networking products such as DAS, NAS and Fibre Channel SAN systems. AnexTEK also provides integrated solutions—IPSNS—designed to meet the demands of storage-intensive environments, as well as storage-based digital security solutions for data-rich digital video surveillance systems.
6. Mirrors International focuses on Contract Software Development (CSD) to multinational software vendors.
7. PlayCoo Corporation is a game developing company.

The following diagram shows the supply chain organisation of Winstron Corp. Components are manufactured and sourced in Kunsan (Jiansu province) and Zhongshan (Guangdong province) in China as well as Subic Bay in the Philippines. PC and notebook computers are built-to-order or configured-to-order for customers in two major configuration centers, one in Hungary another in Mexico for the European and US market. The production is supported with R&D centers in Taiwan and US and customer service centers in Japan, Taiwan and the US.

The ICT h:



Source: Winstron website

The research covers 4 factories that supply to ACER in the Zhongshan City Science and High-Tech Park in Guangdong province of China. Two of them are located in the ACER Science Park and they are Winstron and Aopen. Winstron is an independent supplier now after the spin off from ACER. Winstron produces computer and electronic game devices and telephones for a number of buyers including ACER whereas Aopen is a direct subsidiary factory of Winstron and supplies CPU to ACER solely. The third company located within the same industrial park, Lian Yi Precision Company Ltd supplies plastic semi-finished products to ACER and Winstron located in the same Zhongshan city. The fourth company, Foxconn, is located in the Foxconn Scientific Park in Shenzhen City of Guangdong province. Foxconn is a big conglomerate ODM (original equipment manufacturing) company supplying a number of products such as case for computer, cell phone and electronic products, CPU, displayers etc to various buyers including ACER, Philips, HP, Dell, Apple, Sony, Nokia and the Mainland Chinese computer brand company Leveno.

All the four companies/factories recruit new workers through vocational schools from inland provinces. (See Box 1 on vocational schools and recruitment) The general working conditions are the same at Aopen and Winstron whereas workers from Lian Yi suffer from worse pay and work conditions. Aopen and Winstron pay production workers by time rate at RMB480 per month which is in compliance with the legal minimum wage of the city. However if there is no

order for work or when workers are waiting for materials and parts supply in Aopen and Winstron, workers' monthly income would be deducted on hourly and daily basis. Foxconn workers receive a monthly basic wage of RMB450-480 after the 3-month probation. The basic daily wage in Lian Yi however ranges from RMB13 to 15 for 8-hour-day which is in violation of the legal minimum wage of RMB21/day. All the four companies/factories pay overtime compensation at 150%, 200% and 300% at weekday, weekend and statutory holidays. However as Lian Yi does not pay up to the legal daily minimum wage, the overtime compensation is also lower than legally required. To make up for the low minimum wage, Lian Yi provides a number of subsidies such as RMB6/day for food subsidy, skills bonuses of RMB40-100/month for workers graded at different skills level. Foxconn also uses incentives to promote worker productivity. Workers will get RMB30/month for full attendance, RMB20/month as productivity bonus and RMB10/day for food subsidy (to be deducted from the monthly salary if workers eat at the factory canteen). Only Aopen, Winstron and Foxconn have minimum wage protection for production line workers in the low season. The monthly income would not be less than RMB500 a month in the low season. Aopen and Winstron deliver RMB225 a month as food subsidy to workers in the low season to sustain their survival. But a lot of workers complain that it is not enough in case there is few and even no work in the low season. Workers in Lian Yi complain similarly about receiving an unsustainable wage of only RMB200-300 a month in the low season. On average, the salary workers receive from the three factories vary a lot. Workers in Aopen, Winstron and Foxconn receive RMB900-1000, sometimes up to RMB1600 a month in the peak season while their counterparts in Lian Yi receive only RMB600-700 a month in the peak season.

In terms of working hours, workers in Aopen and Winstron work in 2 shifts of 8 hours a day in the low season and 10 hours a day in the peak season. Foxconn workers work 12 hours a day in two shifts. The number of working hours in Lian Yi varies between departments. Workers in the color coating department work on 2 shifts of 10 hours a day while assembly line workers work 8-12 hours a day and sometimes overnight in the peak season. Workers have to work roughly 60-100 overtime hours a month. Aopen and Winstron workers are entitled to more rest days. They have at least have 2-3 days off a month in the peak season while in the low season they have 1 day off per week. Foxconn and Lian Yi workers seldom have day off in the peak season. This is worse in Foxconn. Workers complain that they have no day off at all for months and have to work even in statutory holidays in the peak season. They are off time only when there is electricity shortage or when they are waiting for materials and parts supply. In terms of the number of working hours and rest day, only Aopen and Winstron are in better compliance with the labour law which require at least 1 day off per week for workers.

The recruitment and employment policies are similar amongst the four companies/factories. New workers have a 3-month probation period. Regular workers have one-year labour contract with their employers. New workers are recruited from vocational schools from inland province and have to pass through basic examination, body check, basic factory rule training before employment. Workers from Lian Yi have a lot of opinion about not having the freedom to resign. The company has relatively high mobility and the management does not approve for resignation in the peak season although the labour law requires only one-month advance notification. Workers usually sacrifice their back wages if they want to quit without approval. In terms of social security, all the four companies/factories have insured their workers with comprehensive social security which include old age, medical and work injury insurance as required by the local government. Workers from Aopen, Winstron and Lian Yi are paying RMB48 a month for social security insurance and Foxconn workers pay RMB75 a month. The four companies/factories employ similar policies in managing the social life of the workers. Factory canteens provide subsidised food and free dormitories for all the employees. About 8 to 10 persons stay in these dormitory rooms and workers have to pay not more than RMB40 a

month in general for water and electricity. Social entertainment facilities such as library, video room and sports facilities are provided. Workers from Foxconn have a number of social facilities within the factory complex such as basketball court, snooker tables, karaoke, internet café, library and a number of interest classes to attend.

The electronics sector require high quality control and this becomes one major factor adversely affecting the occupational health and industrial relations at the workplace. Workers from all four companies/factories admit feeling pressured at work due to stringent quality control. They receive severe criticisms from the middle management when defects are found in production. Workers making CPU in Aopen complain the most about work stress. Workers from Lian Yi complain more about the factory discipline and penalties if they fail to follow the rules at work, in the dormitory or fail to meet the quality demand. Their productivity bonus would be deducted. Workers in Aopen, Winstron and Foxconn are not allowed to talk or leave without authorisation from the workplace.

The occupational safety and health problems are various. Exposure to chemical dust and welding smoke is a common problem for assembly workers in all companies/factories. Workers in the SMT section in Aopen have to put a chemical coating on the CPU board before automatic assembly. Ventilation is not strong enough and they suffer from skin allergy and respiration problems. They suffer also from noise hazard with the automatic assembly machines. The same problem of exposure to chemicals is found from workers in the color coating department in Lian Yi. They are working in air-conditioned rooms which makes ventilation poor and workers complain about feeling dizzy, weak, loss of appetite and want to throw after working 10 hours a day. Other workers in the trimming department are also exposed to chemicals. Their work is to flatten the plastic boards with heat press and therefore are suffering from chemical exposure. They report similar syndromes as feeling dizzy and having skin allergy. The second category of OSH problems relates to ergonomics and noise hazards. The assembly workers in Winstron have to stand working on the production line for 8-10 hours a day in the peak season and they complain about having back and leg pain at the end of the day. Aopen workers in the SMT section suffer from noise pollution with the automatic assembly machines. They don't have regular hearing test to monitor their occupational health. Eye irritation and deterioration of eye sight is another common safety and health problem in the CPU assembly and testing process. Workers in Aopen suffer from eye problems and have to another department after working for one year in the department. Again regular and specific body check for occupational disease is not provided in all the four companies/factories.

## 5. Report case study on Fujitsu-Siemens

The research on the suppliers of Fujitsu-Siemens covered three Taiwan owned companies in Guangdong province. They are all parts and components suppliers to various buyers including Fujitsu and Siemens. These companies are ODM (original design manufacturing) companies meaning they design and manufacture the parts and components products and sell to the computer brand or software companies. G-Tech Computers Co Ltd is located in Dongguan city manufacturing computer case, plastic boards and accessories for notebook computers and cell phones. G-Tech suppliers include Fujitsu, Dell, IBM and others. Located in the same city is Delta Company which has subsidiary plants in mainland China and Thailand. Delta is the world's biggest manufacturer of adaptors and capacitors for computers. The Dongguan factory complex consists of a number of plants manufacturing adaptors, capacitors, cooling fans for computers and other accessory products for computers and telecommunication products. The buyers of Delta include Siemens, Dell and the other Taiwan owned ODM company Foxconn. The third company is Hua Tong Computers Co Ltd which is located in Huizhou city. The company manufactures circuit boards for computers and cell phones and sell to buyers such as Siemens, Nokia and Foxconn. All the three companies employ a sizeable workforce recruited through vocational schools in inland provinces in China. Delta is the largest employing about 20,000 workers in Dongguan whereas Hua Tong has a 3000 workforce and G Tech employs about a thousand workers.

All the three companies recruit workers aged between 18-25 mainly through vocational schools in inland provinces. The male-female ration is around 4 to 6. Students in the inland vocational schools usually pay RMB500-600 for job placement. All the factories have 3-month probation period for new workers after which they would be required by the management to sign one-year contract. However they usually are not given a copy of their contract. According to the labour law, workers can resign in one-month advance notice. Some factories such as Delta may not approve of workers' resignation in the peak season. All new workers would be given brief orientation about the factory rules and quality control. Only Hua Tong provides body checkup for new workers.

From interviews with workers it is found that these electronics companies have a similar pattern of employment and working conditions which are not in compliance with the local labour law. All the company pays a much lower time-rated basic wage to workers while at the same time use performance-related incentives to guarantee productivity. The legal monthly minimum wage on a 8-hr day and 21.5days basis is RMB450 in Dongguan and Huizhou city. The legal minimum daily wage should be RMB20.9 and RMB2.6 per hour. Delta however pays RMB280 a month to the probation workers and raises that eventually to RMB410 to regular workers who have worked for more than 1 year. G-Tech pays probation workers RMB12 a day and RMB14 a day to regular workers. Whereas Hua Tong workers receive RMB13.4 a day during probation. Hua Tong therefore pays only 65% of the legal monthly wage, Delta pays 60% of the legal monthly wage to probation workers and G-Tech pays just 57-66% of the legal wage. Paying less than the legal minimum as the basic wage also means that workers receive less overtime compensation. Hua Tong pays 150%, 200% and 300% of the basic hourly wage for overtime work on weekday, weekend and statutory holidays. But that means Hua Tong is paying only RMB2.5, RMB3.35 and RMB5 per hour for overtime work which is much lower than the legal OT rate of RMB2.7/hour for weekday, RMB5.2/hour for weekend and RMB7.8/hour for statutory holiday overtime work. Delta pays only RMB2.5-3.5/hour for OT work on weekday and RMB3.2-4.6/hour for overtime work on weekend. G-Tech is the worst case as the company pays a

standard OT rate of RMB2.25/hour starting after the 208<sup>th</sup> hour (which should be 172 hours for normal work according to law) in the month for all workers. If workers cannot meet the daily production quota, the hourly OT rate would be deducted.

To compensate for the low basic wage payment, all three companies pay various kinds of incentives to “promote” workers’ productivity. The incentives scheme of Hua Tong for example, include RMB50/month for full attendance, RMB250/month as performance bonus based on assessment (although workers complain that they can at most get RMB150 a month as performance bonus), RMB4/day for night shift work and RMB50/month as Hua Tong bonus after the probation period. A worker’s monthly income is largely composed of all these incentives and overtime work bonus and compensation. In the case of Delta, workers receive RMB60 a month for full attendance, RMB60-200 a month as performance bonus and RMB4/day for night shift work. G-Tech however does not have incentive scheme as the other two companies and the interviewed workers have the strongest complaints about low wage. On average they receive RMB500-600 a month. Whereas Delta workers receive about RMB7-800 a month and G-Tech workers get RMB800-900 a month in the peak season.

Workers in all the three companies work in general more than 10 hours a day in the peak season. Workers in the assembly department usually work longer OT hours. In G-Tech, the pressing and the color coating department have 10-11 hour working day whereas the assembly workers may have to work 2-5 OT hours a day ie 10-13 hours a day in the peak season. Similarly, the assembly workers are working 3-4 OT hours or 11-12 hours a day in the peak season while other production workers work 10-11 hours a day. Hua Tong workers work between 10-12 hours in two shifts everyday in the peak season. Workers from Hua Tong complain the most about the long working hours. They do not have any day off in the peak season for months. The same situation applies to Delta and G-Tech. In the low season, workers will have 1-2 day off a week. In all three companies, workers have only 30 minutes for lunch and dinner break. They have one small break in each shift.

The working conditions in all three factories are similar. The migrant workers in the production line are living in dormitory provided by the employers. Delta workers stay in 16-person dormitory rooms while workers in the other two factories stay in 8-10 person rooms. Hua Tong workers may rent places outside to stay and the company will subsidise RMB70 a month to them. There is no deduction of dormitory fee but workers have to pay for water and electricity. All the three companies provide food subsidy to workers to be deducted each month from the monthly salary for eating at the factory canteen.

All the three factories are providing social security according to the local law to the workers. The Chinese government requires employers to pay old age, medical, work injury and unemployment insurance to the local ministry of labour and social security. All the three factories are paying a comprehensive social security to the local government on old age, work injury and medical insurance.

In terms of management practices and industrial relations, all the interviewed workers seem not to be aware of whether there is a trade union in their company/factory. On the other hand, they all complain about the stringent quality control and therefore strict work discipline on the shop floor. Workers in Delta for instance are not allowed to talk or leave the work place without authorisation. G-Tech requires workers to finish the daily production quota before off time and the hourly OT rate would be deducted if they fail to meet the quota. Such practice highly intensifies the work stress at the workplace. Hua Tong adopts the most comprehensive disciplinary measures for production line workers. Workers are penalised and have to pay fines ranging from RMB50 upwards for violation of factory rules or quality requirement. In the peak

season, workers cannot take leave without permission. Unauthorised leave involves losing the full attendance bonus and the performance bonus. Although there is complaint channel such as the complaint box, workers in general show no confidence in raising issues regarding working hours and wages to the management.

The occupational safety and health conditions in all three factories are not satisfactory. The assembly workers in general are suffering mainly from long hours of work, work stress, ergonomics and exposure to chemicals. Workers from Hua Tong are making circuit boards which exposure them to various kinds of chemical solvents to clean the circuit boards. They have skin allergy and eye irritation. Although the factory provides nylon gloves to them, the long exposure time to the chemicals, lack of rest time in the peak season and lack of education on safety and health highly increases the occupational hazards to their health. The assembly workers in all the three factories have to stand working 10-12 hours a day in the peak season and have no rest day. They all report having back pain, sore legs and other ergonomical problems. The assembly workers usually work longer hours and have daily production quota to finish. G-Tech workers for instance complain about high work stress as their hourly wage would be deducted if they cannot finish the daily quota. Workers in the testing department and quality control have eye problems and dizziness due to long hours of inspecting at the circuit boards. The other major problem suffered by workers in the pressing department in all the three factories is noise. Workers in the pressing department from Delta and G-Tech complain about the lack of personal protective equipment. They are given ear plugs made from cotton which is not effective to safeguard them from the noise hazards at the work place. Both factories also do not provide regular hearing test to the workers which gives them no protection if they acquire hearing problem after they have left the factory.



## Summary of the Working Conditions in the supplier factories researched.

Table 3: Table of Summary of the Working Conditions in the Supplier Factories Researched

	ACER			Siemens			Fujitsu
6. Factory Name	Aopen	Wistron	Lian Yi Precision	Foxconn	Hua Tong	Delta	G-Tech
<i>Product and supply relations</i>	Subsidiary companies under Winstron Group. Supply CPU to ACER. Others are Dell, Microsoft		Supply plastic products, case to Aopen, Winstron	Case for computers and electronic products, CPU, display. Other buyers: Dell, Apple, HP, Sony, Philips, Leveno, Nokia	Computer and cell phone circuit boards. Other buyers: Nokia, Foxconn	Adaptors, capacitors, cooling fans for computers, accessories. Other buyers: Dell, Foxconn	Plastic computer case, and boards. Notebook accessories. Other buyers: Dell, IBM
<b>6.1 Recruitment</b>	Vocational school from inland province. Workers pay RMB5-800 for placement.		Vocational school from inland province. Recruit from agency RMB150 agent fee.	Vocational schools in inland province Workers pay RMB800 placement fee. Or through job agencies and pay RMB3-400	Vocational schools in inland province Pay RMB600 placement fee.	Vocational schools in inland province.	Vocational school in inland province. RMB5-600 placement fee.
<i>Employment</i>	3-m probation. 1-yr contract. 1-month notification for resignation.		3-m probation. 1-yr contract. Management not approve resignation in peak season.	3-m probation 1- yr contract. 3-month severance when dismiss workers	3-m probation 1-5yr contract determined by management	3-m probation. 1-yr contract. Advance notification for resignation.	3-m probation. 1-yr contract. Advance notification for resignation.
<b>6.2 Legal Minimum Wage</b> <i>21.5days/month</i>	RMB450/month, RMB20.9/day, RMB2.6/hour OT rate: RMB3.9/hr weekday, RMB5.4/hr weekend, RMB7.2/hr on holidays			RMB540/m RMB25/day RMB3.1/hour	RMB450/month, RMB20.9/day, RMB2.6/hour OT rate: RMB3.9/hr weekday, RMB5.4/hr weekend, RMB7.2/hr on holidays		



<i>8 hrs/day</i>						
<b>6.3 Basic Wage paid by companies</b>	RMB480/month	Probation: RMB12-13/day Regular: RMB13-15/day	Probation: RMB340/ Month Regular: RMB430-480/month	RMB13.4/day	Probation RMB280/ Month Regular: RMB310-410/month	Probation: RMB12/day Regular: RMB14/day
<i>OT compensation</i>	150% on weekday, 200% weekend, 300% statutory holiday. Deduction of daily basic wage if there is no work or waiting for material supply. Guaranteed minimum wage RMB480/m in low season.	150% for weekday, 200% for weekend based on basic wage.	150% for weekday, 200% for weekend based on basic wage.	RMB2.5/hr, RMB3.3/hr, RMB5/hr	RMB2.5/hr and. RMB3.2/hr	Standard RMB2.25/hr after 208 <sup>th</sup> hour
<i>Other incentives</i>	Nil	Productivity: RMB40-100/m Special allowance for color coating dept: RMB90/m	Full attendance RMB30/m Efficiency: RMB20/m	Full attendance RMB50/m Efficiency: Up to RMB250/m Night shift: RMB4/day Hua Tong bonus: RMB50/m	Full attendance: RMB60/m Productivity: RMB60-200 Night shift: RMB4/day	Full attendance: RMB2/day
<b>6.4 Subsidies</b>	RMB225/m food	RMB126/m food	RMB10/d food	Nil		Nil
<i>Average wage</i>	>RMB1000/m in peak season for about 100 OT hrs. RMB6-700/m in low season.	Peak season: RMB500-600/m Low season: RMB200-300/m	Peak season: RMB1000/m Low season: RMB500	Peak season: RMB8-900/m	Peak season: RMB700/m Low season: RMB5-600/m	Peak season: RMB600-700/m Low season: RMB4-500/m
<i>Working hours</i>	Two-shift work. 8hrs/day and 2 day off a week in low season. 10 hrs/day and 2-3 day off a month in peak season.	Two-shift work for color coating department 12 hrs/day. One hour shift for assembly workers 8hr/day plus 2-4 OT hrs/day in peak	8-12 hrs/day in 2 shifts 30 min for lunch. No day off in peak season.	10-12 hrs/day in 2 shifts. 30 min for lunch. No day off in peak season. No OT or now work only when waiting for material supply.	One shift work:8 hr/day plus 3-4 hrs OT/day. Two-shift work: 10 hr/day. 1 day off/month in peak season	One shift 8.5 hrs/day plus 2-5 OT/day in peak season. Workers have to meet daily production quota before clock off



		season. 0-1 day off in peak season.				otherwise no OT rate is paid. No day off in peak season.
<i>Living conditions</i>	3 meals/day subsidised. 8 people/dormitory room deduct RMB50/m.	3 meals/day subsidised. 8 people/dormitory room Deduct RMB40/m for water electricity	Subsidised meals from Mon-Fri. RMB10 food subsidy/d on weekend. Subsidised dormitory 8-10 people/ room	3 meals/day subsidised. Subsidised dormitory or RMB70/m for housing. 8 persons/dormitory room.	Deduct RMB90/m for food. 16-18 people/dormitory room.	3 meals/day fully subsidised. 8 people/dormitory room
<i>Social insurance</i>	Deduction of RMB48/m for comprehensive insurance: old age, medical and work injury.	Deduction of RMB48/m for comprehensive insurance: old age, medical and work injury.	Old age insurance and medical insurance at RMB75/m. 3-m maternity leave for women workers.	Old age insurance RMB52/m deducted.	Part of the workforce have old age insurance RMB63/m deduction. Workers in high risk departments have work injury insurance	Partial workforce covered with comprehensive insurance deduction RMB50/m
<b>6.5 Discipline</b>	Strict quality control and discipline. No talking or leave without authorisation from work.	Strict quality control and factory discipline. Deduction of monthly productivity bonus for violation of rule	Strict quality control.	Strict discipline Deduction of RMB50 or the efficiency bonus in case of un-athourised leave or refuse to work OT.	Strict quality control	Strict control over compulsory daily production quota.
<b>6.6 Trade Union</b>	Workers not sure if there is union.	Workers not sure if there is union.	Yes. But workers are not sure about its functions.	Workers not sure if there is union.	Strike in the plastic products department last year against cancellation of 10-	Workers not sure if there is union.



					min break time. It was ratified after the action.	
<i>OSH</i>	SMT automatic assembly department: welding irritation, chemical exposure, noise hazards, ergonomics for stand working. Work stress due to high quality control.	Machine guard installed in pressing department. Assembly: welding irritation, skin allergy. Color coating: chemical exposure in air conditioned room.		Exposure to chemical solvent. Noise. Work stress.	Noise hazard and ergonomics for stand working in the pressing department. Eye problems for workers in the assembly and testing department.	Machine guard installed in pressing department. Simple safety training provided. Ergonomics for assembly and pressing workers for stand working 10-12 hrs/day. Noise hazard in pressing department.

## Additional research on Foxconn (Shenzhen)

### Part One, Company Information

Mother Company	Hon Hai Precision Technology Ind. Ltd based in Taiwan. Production facilities in Shanghai KunSan Industrial Area, Jiangsu province and Shenzhen city Guangdong province. Overseas production bases include the US and recently in Czechoslovakia. In Shenzhen Foxconn Industrial Area, there are a number of subsidiary companies including: 1. Fujin Precision Industry (Shenzhen) Co Ltd 2. Innolux Display Corporation Hong Fu Jing Precision Ind, and others.
Factory location	Yau Song Industrial District, Long Hua Town, Shenzhen City, Guangdong province
Capital	Taiwan
Products	The plants in Shenzhen assemble computers and produce peripheral products such as computer case, notebook computers, monitors, CPU, connectors, game cards and mobile phones.
Export to	US, Japan, Europe, mainland China
Major buyers	Dell, Apple, HP, Compaq, Sony, Acer, Samsung, Leveno, Nokia, HP (game cards)
Peak season	Second half of the year. The company has stable orders throughout the year and does not have remarkable high and low season.
Certificate	ISO9000:2000, ISO14000
Number of workers	About 50,000
Origin of workers	Henan, Hunan, Hubei, Jiangxi, Anhei, Shandong province etc
Sex distribution	About 2:3
Time of research	Nov-Dec 2002, April 2003. AND January 2005

## Part Two: Working Conditions

### (1) Working hours

- Most of the production workers work in 2 shifts of 12 hours each and change regularly. The day shift working schedule starts from 07:30 – 19:30. Night shift starts from 19:30 – 07:30. Excluding the lunchtime, workers work an average of 10.5 – 11 hours per day. When relatively less order is placed, workers work 8 hours a day. The number of OT hours on average is 2 - 3 hours a day. For each session workers have a 10-minute break.
- There is no day off in the peak season. When less order is placed, workers have Saturday and Sunday off.

### (2) Wages

- New workers have 3-month probation. The basic wage in the probation period range from RMB430 - 480/month for 8 hours a day and 5 days a week. The other working hours are counted as OT work.
- The same OT rate is given at 150% and 200% of the normal rate for OT work on weekdays and weekend.
- The factory withholds wages for half a month before delivering to workers. Workers keep the pay stuff but the pay stuff records the number of OT hours and not the OT rate.
- Other subsidies are provided to workers such as night shift subsidy. There is food subsidy for RMB10/day.
- On average, a worker that works 27 days a month and 10-11 hours a day will receive about RMB1000 a month including all the subsidies and OT compensation.

### (3) Recruitment and contract

- New workers are recruited from vocational schools and recruitment agents in inland provinces. Students pay RMB800 as recruitment fee to the schools and RMB500 to agents for job placement at the factory. The factory does not collect down payment from new workers.
- New workers have body check and applicants that fail the body check will not be recruited. Regular body check is provided for regular workers. If workers fail in the body check, they have to leave the factory and they can come back to work again if they have recovered.
- New workers receive training on the quality requirement and safe operation. Supervisors at each workplace will also brief workers about the job and safe operation.
- All production workers sign one-year contract with the factory and keep a copy of the contract.

### (4) Insurance and medical provision

- All production workers are insured for industrial injury. RMB75 is deducted per month for old age and medical insurance.
- Each department has a clinic that provides free service to workers. Workers can get paid sick leave if they provide medical record from the clinic.

(5) Living conditions

- Workers are subsidized for food from Monday to Friday and they do not pay for eating at the factory canteen. But there is no subsidy for workers eating at the canteen on Saturday and Sunday. The interviewed workers in general are satisfied with the food quality.
- The dormitories are dispersed and located both inside and outside the factory complex. 8 – 10 people stay in one room furnished with toilets and washing facilities. Lodging as well as water and electricity is subsidized. Workers are also satisfied with the living conditions.

(6) Factory rules and penalty

- The interviewed workers find that factory rules and penalty are reasonable. They are seldom fined for violating factory rules and no penalty is imposed if they make minor mistakes in production.
- When the factory has to retrench and dismiss workers in the low season, the dismissed workers will be compensated. If new workers are fired during the probation period, the factory will give them 3-month wages as compensation.
- Production workers also have maternity leave and other annual leave to go back home.

(7) Workers' organization

- According to the workers, there is no workers' union but the interviewed workers told the researchers that they could use the complaint channel to reflect their opinions. The factory generally will take response to the complaints launched by workers.
- The factory complex has basketball courts, badminton courts, snooker, ping-pong ball court, karaoke, internet café and a library.

(8) Factory audit

- The factory is frequently visited by buyers or government officials. They are not sure if these visitors also inquire about the social and working conditions of workers. The interviewed workers have not heard about code of conduct.