McQuay China（Suzhou）

Report by Business Site
FY2020

Location	Suzhou, China	
Site area	83,114m²	
Established	June 2003	
Employees	519 (as of March 2021)	
Main products	Turbo compressors, screw compressors, air cooled screw chillers, air handling units	
Certified	ISO 9001	June 2003
	ISO 14001	April 2008
	OHSAS 18001	February 2010
	Green Heart Factory	October 2014 Rank: Bronze

Environment: Reducing Environmental Impacts

■ **Improving energy efficiency by reducing air compressor pressure**

Before:

1. One 55 kW INV air compressor was installed at No. 1 Factory, with a supply air pressure of 0.75 MPa. Out of 144 units that use compressed air, only two lathe units require 0.7 MPa of pressure, while other equipment require a pressure of between 0.5 and 0.6 MPa.
2. Two 37 kW INV air compressors were installed at No. 2 Factory, with a supply air pressure of 0.8 MPa. Out of 27 units that use compressed air, only one horizontal tube expander requires between 0.5 and 0.8 MPa of pressure, while other equipment require a pressure of between 0.5 and 0.6 MPa.

After:

1. The two lathe units using 0.7 MPa of pressure are pressurized alone using an air compressor pump, while the supply pressure of the 55 kW high pressure air compressor was modified to 0.6 MPa.
2. The air tool used on the two air-handling production lines was switched to an electric tool, a gas tank was added to the horizontal tube expander, and the supply pressure of the two 37 kM high pressure air compressor units was changed to 0.65 MPa.

Results of improvement:

By lowering the air supply pressure of the air compressor and reducing its operating time, the average monthly electric energy consumption on the three air compressors was reduced from 58,206 kWh to 50,803 kWh, reducing the annual energy consumption by 12.7% and eliminating approximately 72 tons of CO_2 emissions.

Three air compressor units

Local pressurization using air compressor pump (no electricity needed)

■ Improving air handling unit transportation packaging

Before:

1. Packaging method for 5# groove steel frame model (makes up approximately 80%): Groove steel base and wood pallet on the bottom and wood cover on top of the air handling unit.
2. Packaging method for models other than 5# groove steel frame (accounting for approximately 20%): Groove steel base on the bottom and wood cover on top of the air handling unit.

Before

After:

1. 5# groove steel frame model: the bottom portion was changed to sheet metal while eliminating the wood pallet, and the top was replaced from a wood cover to a paper-based protective angle packaging; and
2. Models other than 5# groove steel frame: Wood pallet on top eliminated and changed to paper-based protective angle packaging on top of the air handling unit.

After

This improvement changed the packaging to entirely paper-based protective angle, while wood pallets were eliminated on all applicable models, which reduced the use of wood and cut wood material loss by 91 tons a year.

■ Improving waste oil filtration purification

Before:

During the fin press process of the heat exchange line, the aluminum foil passed through the oil tank and flowed into the mold, while the molded parts were lubricated and cooled by injecting oil. After the work-in-progress is molded, the oil flows to the oil tank and becomes waste oil that cannot be reused. On average, four drums (200L/drum), or a total of 800L of oil were used each month.

After:

The waste oil filtration purification system was installed to perform multi-step filtration treatment of waste oil. The filtered oil reaches level 6 to 7 of cleanliness (≦0.45μm), which can be used in copper tube calibration cutting machines or in the punching machine oil recovery tank.

Effect: Waste oil reduced by 800L/month
Oil purchase cost and waste oil treatment cost reduced by 16,400 yen/month

Environment: Protect Biodiversity

■ Company green space maintenance

We work with a landscape management company to maintain the green space at our business site. Withering plants are promptly tended to.

Our grounds are adorned with camellia blooms in winter, peaches and cherry blossoms in spring, azaleas in summer, and sweet osmanthus in autumn. The company' beautiful space serves as a habitat for a wide variety of birds such as magpies*.

*Magpies: birds in the passerine family

Environment: Environmental Communication

■ Legal update information gathering

The EHS department keeps abreast of updates in laws and regulations concerning environment, health and safety in real time. It compiles revised legal information and provides a monthly update at the Environmental Safety meeting to the Environmental Safety Management Committee members and plant supervisors (total of 25 people).

In 2020, six updates on environment-related laws were compiled and 12 information sessions were conducted.

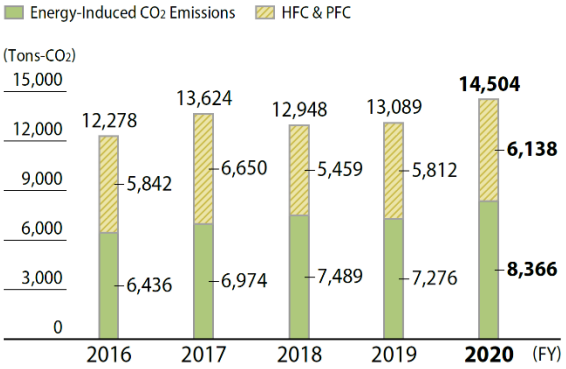
■ Training on waste sorting

In June 2020, we actively conducted information sessions on waste sorting in response to the call for advancing garbage sorting in Suzhou's housing complexes to promote awareness on sorting different types of waste. Following a presentation on the current situation of waste globally and potential for a future crisis, participants gained an appreciation that garbage sorting is an imminent trend. In the session, participants learned about sorting garbage by category through pictures with different types of garbage.

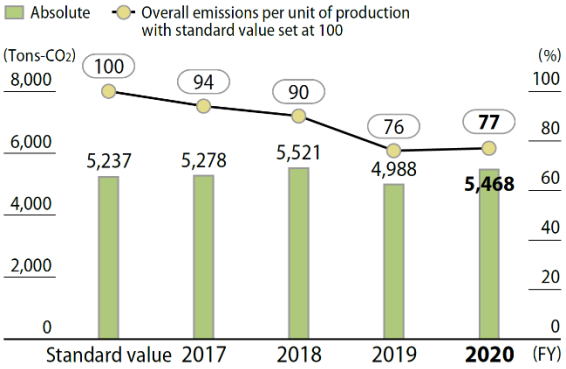
We are now preparing to implementing the waste sorting imitative in 2021.

Environment: Environmental Performance Data

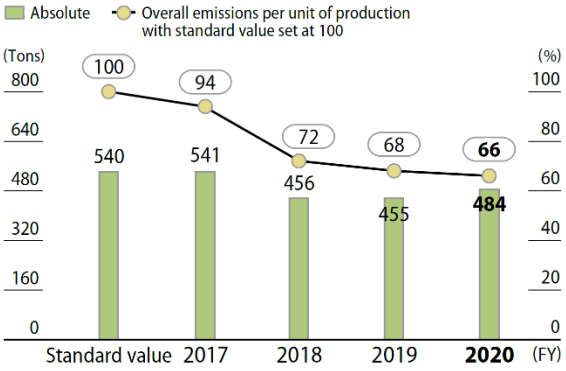
■ Greenhouse gas emissions



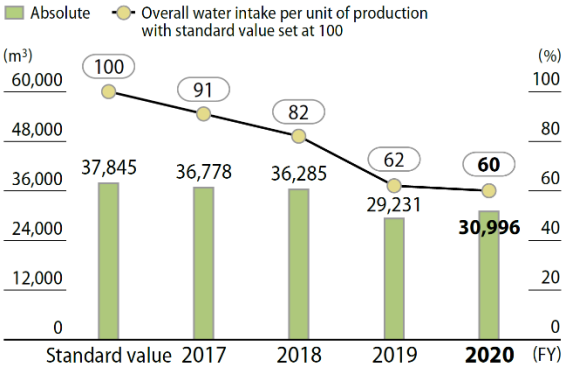
■ Energy-induced CO_2



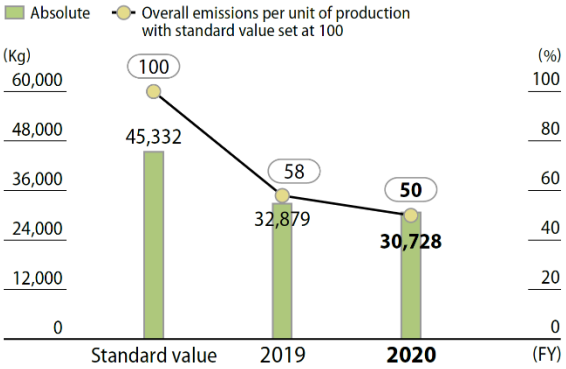
■ Waste (Including valuable materials)



■ Water intake



■ VOC emissions



Customer Satisfaction: Improving Product Quality

■ Supplier quality improvement

① In fiscal 2020, based on customer feedback on quality deficiencies, the AC Quality department worked with 11 suppliers to analyze the deficiencies in quality system and manufacturing process. We came up with 46 items for process improvement and made revisions to 26 documents. Suppliers have made improvements with regard to all of the above items. In fiscal 2020, we conducted 19 training sessions for 26 quality assurance personnel from suppliers based on the quality demands of the plant.

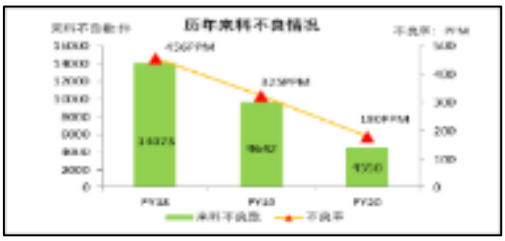
Through the above improvement efforts, the deficiency rate in products purchased from suppliers in 2020 dropped by 145 PPM compared to 2019.

② Concurrently, the Compressor Quality department conducted 12 improvement activities using analytics, including PCC and 8D, with four casting manufacturers and six processing manufacturers. We added 15 items to the supplier quality system audit, made 45 revisions and improvement to the processing procedure, added 18 rounds of annual supplier re-audits, and attended 32 supplier quality meetings.

Through the above improvement efforts, the deficiency rate in products purchased in 2020 dropped by 1.82 percent versus 2019.

Supplier training and networking





■ **Switched from manual to automated inspection of air-cooled screw exchanger leaks**

Before

After

Before:

The airtight inspection of screw heat exchangers was performed manually by pressurizing and visually confirming the test pressure level. There was a large room of error when visually checking the pressure gauge and adjusting the pressure (as much as ±0.3 MPa), while the pressure was unstable, with variance by inspector.

After:

We installed an automated inspection system, through which a software program automatically controls and maintains the airtight pressure. After the pressure was maintained, the system automatically signals the completion of the inspection. This process only requires operation of the system by an inspector, which improves the precision of the leakage inspection (precision of ±0.1 MPa) and ensures the inspection quality while reducing reliance on people.

■ **Improving awareness of quality among all employees**

We held company-wide quality activities in October to coincide with Quality Month. Through a knowledge competition, collecting ideas for improvement, and review of quality improvement activities, we worked to improve all employees' awareness of quality.

Customer Satisfaction: System to Reflect Customer Needs

■ Meeting directly with customers to assess their needs and resolve issues

Previously, the needs input of compressor development mainly came from the chiller plant which conducted customer needs survey and passed it on to the compressor developer. In fiscal 20, the development staff in the compressor development began to directly meet with customers to assess their needs. Through meeting with sales personnel, the development staff can also assess customer needs and complaints to create a resolution plan and adjust the direction of development.

Example:

On January 14, 2021, compressor development staff visited the distributor in southern China. Through meeting with the sales staff, we found out that the turbo product developed in the United States had some application issues in the south. The main reason for this was that it was designed with AHRI compatibility in mind. In order to address customers' needs, the development department made a slight adjustment to the turbo compressor's impeller to create a product that suits the market's needs. At the same time, we made a new development plan with this product to be completely developed into a series in fiscal 2021.

The Chinese market encompasses large regions between the north and south, where customers needs are also largely different. The development staff is also scheduled to visit markets within the northern region. We are grasping customer needs and developing products that meet their demands through regular interactions such as these.

■ Continuous development of new products

We organized meetings of the development team of the Compressor Business Department, Wuhan Plant, Shenzhen Plant and overseas customers to solicit their opinions and requirements and continue to improve upon the design of compressors.

Human Resources: Training for Employees

■ Knowledge transfer with in-house instructors

In fiscal 2020, we gathered in-house instructors to develop a lecture course. The curriculum is related to management knowledge and technical skills. The instructors conduct internal training to convey knowledge and skills apart from workplace basic knowledge in striving to enhance the overall skills of employees. Currently, there are 28 in-house instructors.

In fiscal 2020, these instructors conducted 48 courses, including presentations on new products, principles and application of measuring instruments, among others.

■ Promoting infection control

In response to COVID-19, in 2020 we conducted online knowledge training on infection control in order for staff to minimize their health risk and grasp knowledge related to infection prevention. At the end of the training, staff reached a passing rate of 100%. Through this, we have effectively promoted information on infection control.

■ Wuhan staff conducted technical review and study in Suzhou

In December 2020, a number of development and technical staff of the Wuhan Plant reached out to the Suzhou Plant with 10 questions to learn more about the principles, structure and design of compressors. The development and production technology departments at Suzhou Plant compiled a response covering these 10 questions. Through a two-day study and interaction, the Wuhan staff was able to resolve their questions and apply their knowledge in their future work.

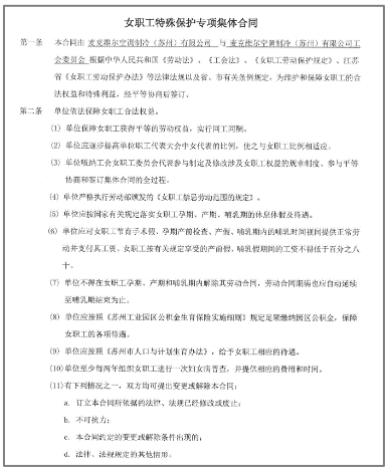
Human Resources: Promoting Diversity

■ Contract concluded with a special protection group for female workers

Total staff: 502 (as of January 2021)
Female staff: 91, comprising 18.1%
Minorities: 5, comprising 1.0%

In order to ensure female workers receive equal labor rights as well as the same work and compensation, we strictly enforce the ”Provisions on scope of Labor for Female workers” as set out by the Ministry of Labor. This includes providing access to leave and medical treatment for female workers during pregnancy, childbirth and while nursing.

Following the above, the company signed a three-year contract with the labor union and special protection organization for female workers in 2020.



女职工特殊保护专项集体合同

第一条 本合同由麦克维尔空调制冷（苏州）有限公司与麦克维尔空调制冷（苏州）有限公司工会委员会，根据中华人民共和国《劳动法》、《工会法》、《女职工劳动保护规定》、江苏省《女职工劳动保护办法》等法律法规以及省、市有关条例规定，为维护和保障女职工的合法权益和特殊利益，经平等协商后签订。

第二条 单位依法保障女职工合法权益。

(1) 单位保障女职工获得平等的劳动权益，实行同工同酬。

(2) 单位应逐步缩减单位职工代表大会中女代表的比例，使之与女职工比例相适应。

(3) 单位吸纳工会女职工委员会代表参与制定及修改涉及女职工权益的规章制度、参与平等协商和签订集体合同的全过程。

(4) 单位严格执行劳动部颁发的《女职工禁忌劳动范围的规定》。

(5) 单位应按国家有关规定落实女职工孕期、产期、哺乳期的休息休假及待遇。

(6) 单位应对女职工生育子女假、孕期产前检查、产假、哺乳期内的哺乳时间提供法定劳动并支付其工资。女职工按有关规定享受的产前假、哺乳假期间的工资不得低于百分之八十。

(7) 单位不得在女职工孕期、产期和哺乳期内解除其劳动合同，劳动合同期满也应自动延续至哺乳期结束为止。

(8) 单位应按照《苏州工业园区公积金生育保险实施细则》规定足额缴纳园区公积金，保障女职工的各项待遇。

(9) 单位应按照《苏州市人口与计划生育办法》，给予女职工相应的待遇。

(10) 单位至少每两年组织女职工进行一次妇女病普查，并提供相应的费用和时间。

(11) 有下列情况之一，双方均可提出变更或解除本合同：

a. 订立本合同所依据的法律、法规已经修改或废止；

b. 不可抗力；

c. 本合同约定的变更或解除条件出现的；

d. 法律、法规规定的其他情形。

■ Mothers’ station (breast milk expressing room)

We set up a milk expressing room for nursing mothers. We received the recognition of ”Model Mothers’ Station” from the Suzhou Labor Union.

Female employees: 91
Nursing mothers: 4

Human Resources: Occupational Safety and Health

■ Fire drill

In November 2020, the fire safety team compiled a proposal and conducted a fire drill involving all staff from 4:10pm to 4:55pm on November 30 upon the approval of management.

In the drill planned for 515 participants, 456 people attended the evacuation drill (51 on night shift, three away on business, and three away on vacation were absent). Approximately 100 people from both the business office and plant attended the fire extinguisher training. In this evacuation drill, the time took from sounding the alarm to assembly was 2 minutes 36 seconds.

■ Infection control and restarting production

In January 2020, COVID-19 broke out in Wuhan and spread across the entire country. Upon information becoming available, we gathered staff and put together relevant requirements from the government in taking the initiative to prepare for production to reopen. On February 9, 2020, McQuay received the government's permit to reopen as the first group of manufacturing companies to restart operations.

Specific measures included:

1. establish an emergency response team,
2. develop emergency measures plan and response plan (personnel management, plant disinfection, etc.), and
3. conduct open dialogue with the government and keep abreast of the latest updates in a timely manner to revise the infection control plan.

Infection control team meeting with government staff

Visitor registration and temperature taking

Disinfection instruction inside the factory

Communities: Environmental Protection

■ **Eco outing activity**

In October 2020, we hosted an eco cycling event at Taihu Lake, with a total of 20 employees and their families attending.

The event encouraged the philosophy of eco-outings for employees to choose eco-friendly transportation and public transit for commuting and everyday living, while reducing use of private vehicles.

■ **Eco conservation hike**

In November 2020, a total of 27 employees and their family participated in the eco conservation hike event.

They took part in picking up, sorting and disposing roadside trash along the hiking trail. The practical actions promoted McQuay's philosophy of environmental preservation among employees, their family, and other hikers, and established a brand image of environmental conservation.

Communities: Support for Education

■ **Students of Suzhou University of Science and Technology toured Suzhou McQuay**

In January 2020, construction environment and equipment engineering students from Suzhou University of Science and Technology visited and toured plant at Suzhou McQuay. We provided an introduction to our products and corporate culture as well as a tour of the production line and enjoyed interacting with the students.

Communities: Other Local Activities

■ Volunteer mask makers

During the Lunar New Year holidays in January 2020, when COVID-19 struck the hardest, we dispatched volunteer workers to help manufacture masks during night shifts due to labor shortages at mask factories in order to support Wuhan.

Mask manufacturing volunteer
Yong Mei Ju, McQuay employee

■ Respect for healthcare workers on Nursing Day

In welcoming Nursing Day on May 12, 2020, McQuay joined a corporate welfare society and visited 12 medical staff who supported Hubei Province at the children's hospital in the industrial park and 35 medical staff serving the frontline of infection control at Dongsha Lake Health Facility in fulfilling our corporate social responsibility.

External Evaluation: Awards

■ Received awards at the Industrial Park Forklift Driving Competition

Four employees participated in the Suzhou Industrial Park Forklift Driving Competition held on November 14, 2020, which aims to foster workmanship and promote skilled industrial workers. Out of 200 participants from 80 companies, two of our employees took home the first place in individual events, and two other employees won third place in group competition.

■ Corporate citizenship award

In 2020, we actively took part in various events hosted by the Dongsha Lake Community Organization in Suzhou Industrial Park. These events included Industrial Park Forklift Driving Competition, the Double Ninth Festival in respect of elders, and the Children’s Calligraphy Contest, which enhanced morale and happiness among employees and also promoted the company's image. The Dongsha Lake Community Organization chooses three companies out of over 100 in the area to recognize for good corporate citizenship, and McQuay was chosen as one of them.