Main Contacts

Beijing Head Office
19M, Oriental Kenzo Plaza, 48 Dong Zhimengwai Street, Dongcheng District, Beijing
Tel: +86-10-8454-9488
Fax: +86-10-8454-9480
Email: beijing@takasago.com.cn

Tianjin Branch Office
Room 1008, Second Tower of Henghua Building, No.501 Dagunan Road, Hexi District, Tianjin
Tel: +86-22-5831-7236
Fax: +86-22-5831-7225
Email: tianjin@takasago.com.cn

Suzhou:
Room 1B-306, Kings Tower, No.1156 Binhe Road, New District, Suzhou
Tel: +86-512-6809-2986
Fax: +86-512-6809-7842
Email: suzhou@takasago.com.cn

Guangzhou:
RM 1012, 1014, Times Square Middle Block, No. 30 Tianhe North Road, Tianhe District, Guangzhou
Tel: +86-20-3886-8297
Fax: +86-20-3881-8325
Email: guangzhou@takasago.com.cn

Takasago Thermal Engineering Co., Ltd  Internet Business Department
Shinjuku 6-27-30, Shinjuku District, Tokyo
Web: http://www.tte-net.co.jp/

Takasago Constructors and Engineers (Beijing) Co., Ltd
http://takasago.cn/index.php/

Takasago Thermal Engineering
Nov. 2014
At Takasago our objectives are clear. To provide energy efficient thermal comfort to building owners and occupants through the use of high end equipment and operational controls. With more than 90 years of history and development the company has expanded from its original Japanese roots to currently achieve a leading role in the Asian market serving Japanese and International clients’ with cutting edge technical expertise.

Our expertise assists to provide the most cost effective, energy efficient and comfortable living and working environments.

Takasago Thermal Engineering: Overseas Business

THERMAL ENERGY SAVING SPECIALISTS
WORKING ON CO2 REDUCTION

“People • Air • Future”

TTE Brief

Name: Takasago Thermal Engineering Co., Ltd
Established: 16th November 1923
Registered Capital: 13,134m Japanese Yen
Turnover: 248.43b Japanese Yen
Listing: Tokyo Stock Exchange
President: Atsushi Ouchi
Employees: 1,800
Office number: 25 in 8 countries

Business Scope:
Air condition equipment, Cleanroom and related equipment installation, Cooling and heating air condition equipment, plumbing equipment, thermoelectricity joint production equipment, electrical equipment, automatic control equipment, equipment diagnose, fault diagnose system, dehumidifier dryer equipment, nuclear facilities air conditioning equipment, precise air condition equipment, waste vacuum removing equipment, civil project, exhausted heat recycling equipment, heating cooling equipment, chilling refrigeration equipment, other environment control, thermal system design construction manufacture installation

Group Summary

Takasago Thermal Engineering Co., Ltd
16th November 1923
13,134m Japanese Yen
248.43b Japanese Yen
Tokyo Stock Exchange
Atsushi Ouchi
1,800
25 in 8 countries

History

September 1974
Opened Singapore Branch Office

November 1980
Established T.T.E. Engineering (Malaysia) Sdn. Bhd in Malaysia

July 1984
Established Thai Takasago Co., Ltd in Thailand

April 1984
Established Hong Kong Branch Office

March 1994
Established Takasago Thermal Engineering (HK) Co., Ltd in Hong Kong

October 2003
Established Takasago Constructors and Engineers (Beijing) Co., Ltd

April 2005
Established Takasago Singapore Pte. Ltd in Singapore

April 2007
Established Takasago Vietnam Co., Ltd in Vietnam

November 2012
Established Takasago Engineering India Pvt. Ltd in India

2014
Established PT Takasago Thermal Engineering in Indonesia

Established Takasago Thermal Engineering Co., Ltd in Myanmar

Established representative office in Turkey

Opened representative office in Turkey
Development in China

- Hong Kong company established in 1983 to serve HK and South China region
- JV formed in 1994 and mainland base set up to serve mainland China
- WOFE established in 2003 following China’s entry into WTO and revised regulations
- Continued growth serving Japanese clients’ before actively increasing international market share in 2014

Takasago China Brief

Name: Takasago Constructors and Engineers (Beijing) Co., Ltd
Add: 19M, Oriental Kenzo Plaza, 48 Dong Zhimengwai Street, Dongcheng District, Beijing
Investment: Wholly owned by TTE
Register Capital: 700m Japanese Yen
Employees: 160 (Including over 20 international expat engineers and project leaders)
Qualification: Construction General Contractor Third Grade
M&E Installation General Contractor Second Grade
Working Scope:
- Full turnkey construction projects
- Full M&E installations
- Specialist high grade clean room and associated facilities
- HVAC design and installation
- Fire fighting design and installation
- Process piping, utilities, water supply, drainage and other service installations
- Energy evaluation and analysis
- Miscellaneous small works, upgrades and decoration work

Qualification

General Contractor
General contracting grade 3

General contracting M&E grade 2

ISO

Quality: ISO 9001
Environmental: ISO 14001
HSE: ISO 18001

Other

Member of China Building Energy Saving Association
Reference as per location

Covered Area

North Area
Beijing, Tianjin, Shandong, Liaoning, Hebei, Shanxi

East China
Shanghai, Jiangsu, Zhejiang, Anhui, Henan

South China
Guangdong, Fujian, Hunan, Hubei, Sichuan, Chongqing

North China

Tianjin
Vehicle Precise Components
Building Area 21,000m²
SWIT AC System application

Tianjin
IDC (Internet Data Center)
Building Area 8,900m²

Tianjin
Plastic Foam Plant
Building area: 1,500m²

Tianjin
Precise machine components Plant
Building area 21,000m²

This company is awarded the Environmental Energy Saving Prize
East China

Jiangsu Province
Milk Products Factory
Building Area: 10,000m²

Jiangsu Province
Ceramics Factory
Building Area: 7,000m²

Jiangsu Province
Motor Factory
Building Area: 10,000m²

Fujian Province
Rare-earth Factory
Building Area: 7,000m²

South China

Guangdong Province
Compounding Plastic Factory
Building Area: 12,500m²

Guangdong Province
Office Equipment Factory
Building Area: 50,000m²

Guangdong Province
Metal Processing Factory
Building Area: 8,000m²

Guangdong Province
Car Parts Factory
Building Area: 30,000m²
Clean Room

Clean room – CR, means rooms which can ensure air cleanliness. According to JIS Z 8122: Clean room is an environment, where the level of pollutants such as aerosol particles and airborne microbes should be lower than specific contamination standard. Within the area, materials, drugs, water etc. to be supplied should be contamination controlled and the environment conditions such as humidity and pressure should be managed.

Industrial Clean Room
Cleanrooms for manufacturing industries, mainly control the aerosol particles in the room. Application: Semi-conductor, LCD, precise electronic components, precise machinery parts, optical fiber, optical products, printing etc.

Biological Clean Room
Cleanroom for biological technology mainly control the airborne microbes in the room. Application: Medical and pharmaceutical, food and beverage, cosmetic, agriculture industry.

CR Building Solution
1. Measures within redline
2. Measures within workshop
3. Measures on building structure
4. Measures on Air condition
5. Measures on plumbing

Foreign Bodies Prevention
1. Select internal materials accordingly
2. Use tough-rust material
3. Use difficult-cracking sealing
4. Prevent foreign matter infiltration
5. Prevent foreign matter from equipment operation

Clean Room Dry Room

Industrial Clean Room
Cleanrooms for manufacturing industries, mainly control the aerosol particles in the room.
Application: Semi-conductor, LCD, precise electronic components, precise machinery parts, optical fiber, optical products, printing etc.

Biological Clean Room
Cleanroom for biological technology mainly control the airborne microbes in the room.
Application: Medical and pharmaceutical, food and beverage, cosmetic, agriculture industry.

Dry Room

Dry Room is an environment with moisture (absolute humidity) control and dew point temperature lower than -10 °C.

“Dry Room” Technology

“Dry Room” ® is patent trademark of Takasago in Japan

1. To build energy saving dry room.
2. To achieve -100°C low dew point environment.

Dry Room Constitution

Note: There is a picture missing
Other words translation in the picture:
照明器具： Lighting
吹出口： Air outlet
入口： Exit door
吸入口： Air inlet
非常門： Emergency door
点検口： Maintenance access
外気： Air supply
排气： Air exhausting
乾燥房： Dry Room
前室： Front room

Energy Efficiency Dehumidifier WINDS

Dry Room

High airtight sandwich panel
**SWIT**

**Swirling Induction Type HVAC system**

**SWIT - Features**
1. Air condition only include living space
2. Reach comfortable temperature without strong cooled / heated air.
3. High ventilation efficiency to ensure enough fresh air.
4. Compact outlet to reduce air flow and cut down half of the outlet size compared with replacement air conditioning.
5. Reduce the equipment investment cost and operational cost.

**SWIT Principle**

- **Use natural temperature difference:** Hot air rises Cold air sinks
- **The polluted air rises up; keep the living space comfortable and clean**
- **Clean air circulation**
- **Cooling Switch on**

**SWIT Energy Saving Solution**
1. Feasibility report at early stage of a new project.
2. Energy saving plan for large space based on cooling and heating source condition.
3. Energy saving upgrade for large space by fully using cooling/heating resources.

**Annual cost saving of energy and equipment**

<table>
<thead>
<tr>
<th>Energy saving &amp; maintenance cost saving (compared with Mixed AC)</th>
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<tbody>
<tr>
<td><strong>Annual Cost Saving</strong></td>
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<tr>
<td>Energy cost percentage</td>
</tr>
<tr>
<td>Mixed AC</td>
</tr>
<tr>
<td>Energy cost percentage</td>
</tr>
</tbody>
</table>

*Take building area: 20,000 m², internal heating: 100W/m² plant as an example (external condition: Tokyo)*

**SWIT won "Japanese Energy Commissioner Award" in 2012**
Green IDC to achieve Trust Optimum & PUE Optimum & TCO Optimum

Energy Efficiency HVAC System

- By supplying the air through side wall, it can reduce air supply energy and save the space under floor to allow a lower story height.

- With the technology to keep the same temperature of air inlet surface, even higher supply temperature can cool the IT equipment. Outside air direct cooling and natural cooling can be possible through this technology.

- Compared with floor air supply, it slashes energy consumption and achieve the highest PUE in domestic.

  ❨PUE value, means Power Usage Effectiveness, which varies according to the portion of natural resource usage.

The most suitable and energy efficiency HAVC System for IDC

Previous Floor Flow HVAC

- Air intake from ceiling
- Ceiling return air box
- Floor air supply machine

IDC-SFLOW™ System constitution

- Wall air supply / extraction
- FCU Unit
- Natural cooling
- Efficiency improvement of refrigerating machine and cooling tower, longer time using natural cooling

Comparison

- Thermal air circulation lead to high temperature in higher space
- Unit air inlet temperature close to air supply temperature

System features

- Air supply from wall
- Cold air channel rectifier
- Thermal channel distinction
- FCU Unit
- Multi Air conditioning FCU can achieve N+1 (reserved) HVAC equipment
- Include the server room within a box style space to make cooling air easy to gather, which can keep the low temperature for longer time if there a power cut or fault.
Green Air: By providing environmental friendly solutions to buildings such as office, hotel, hospital, factory etc., Takasago make its contribution to protect the global environment.

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