Kyowakiden Industry Co., Ltd.

Introduction of Company & Engineering Products
Kyowakiden Industry Group runs business to make people’s lives "more comfortable", "more safe" as an environment creating company.

Company Name : Kyowakiden Industry Co., Ltd
Representative : Hideyuki Sakai
Address : Nagasaki, Japan
Establishment : 1948
Employees : Approx. 580

[ Business Field ]
for Water treatment & Electric power industry
System design
Machinery
Electrical construction
Power/Maintenance
IT/R&D

Togitsu Factory (ISO9001&ISO14001)
Network

HQ: Nagasaki

From Nagasaki to the World

[Group Company]
Kyokan
Useful
Kiden plant
Ashitaba kiden
Genyo denki

Kyowa Environmental Co., Ltd. (Shenzhen, China)

Kumamoto

Fukuoka

Osaka

Nagoya

Tokyo

Tohoku

Kantou

Togitsu Factory

Head Office

Togitsu Factory

Kyowa Environmental Co., Ltd. (Shenzhen, China)
Water treatment equipment

Main: Water treatment plant
Propose systems, Design/assemble/install machineries

Others:
Design, manufacture and construct energy-saving & automatic machineries for factory use

- Sludge collector
- Chemical feeder
- Membrane filtration system
- Sea water desalination system
- Automatic screening
- Water recycling unit
Electrical equipment

◇ Main: Water treatment plants
   Propose integrated plan of system design, monitoring, control system and electrical technologies etc.
   Others needed for facility operation such as design and manufacturing of panels, and electrical construction

◇ Others: Electrical construction,
   Installation of instruments and communications for roads or various structures
Maintenance

◇ Regular check and repair of rotating, electrical and controlling equipment of internal combustion engine, hydraulic & thermal power plants etc.
◇ Operation and maintenance of water treatment plants etc.

Repair of rotating equipment

Balance test of rotors

Maintenance

O&M
Service for Customers

[Our advantages]
Provide consistent service from proposal, design of electric/mechanical equipment, manufacturing, construction to maintenance
Meet customers’ diverse needs promptly by our one-stop solution system

We provide with “One-Stop Solution”
Our Achievement

- Sea water Desalination Plant -

Location  Fukuoka Pref.
Site area  46,000 m2
Product water volume  50,000m3/day

Equipment
- UF membrane filtration units
- High pressure RO units
- Low pressure RO units
- High/Low pressure RO pump
- Safety filter
- Energy recovery system/Pumps
- Water tanks/Chemical injection equipment

We have developed new technologies to save beautiful nature

Permeation intake system is applied with effective utilization of natural resources.
Reverse osmosis is applied for sea water desalination.

Domestic water for 250,000 residents is produced.
Sea water Desalination Plant
Sea water Desalination Plant
Overseas Business of Kyowa Group

2003:
Kyowa Environmental Consulting (Hong Kong) Ltd.
Shenzhen Engineering Center

Japanese design power (Number of designers) + Chinese design power
Streamlining of design (3D-CAD, R&D)

2007: Technical Interns from Vietnam

Vietnam → Kyowakiden
Technical training of welding, coating, assemble/electric wiring
Up to now, accepted approx. 20 interns
2007:
Kyowa Environmental Consulting (Shenzhen) Ltd.
Number of employees: 55 (Japanese: 4)
※As of September, 2012

Design
- Water treatment equipment: Assembly drawing, Manufacturing drawing
- Plant facility: Piping drawing, Skelton drawing, Support drawing
- Control panels: System design drawing, Construction drawing

Water
- Reuse of potable water and waste water of plants or industrial districts
- Diagnosis/proposal, Construction management of above system
- Selling of products and consumables of water treatment

Electricity
- Manufacturing and construction of control panels
- Diagnosis/proposal, Construction of new energy and saving energy
- Selling of electrical apparatus
Our Achievements

- Treatment & Recycling System of Wastewater -

Shenzhen Techno-Center (China)

Capacity

- Wastewater treatment volume: 700 m³/day
- Wastewater recycling volume: 510 m³/day
- Well water purifying volume: 814 m³/day

Effects

- Solve domestic water shortage of Techno-Center
- Improvement of domestic water quality
- Improvement of environment of Techno-Center
- Cost cut by recycling
Our Achievements

- Treatment & Recycling System of Wastewater -

Food processing plant (China)

**Capacity**

- Wastewater treatment volume: 1600m³/day
- Wastewater recycling volume: 600m³/day
- Increase an existing 500 m³/day to 1,200 m³/day
- Establish a new equipment of 400m³/day
- Adopt Japanese technologies and products to main parts
UF Membrane Filtration Unit

95% of the raw water recoverable as treated water
Stable treatment by automatic operation.

Features
- Standard recovery rate of UF membrane filtration: 95%
- Ultra filtration removes bacteria and turbidity completely
- Fully automatic operation & easy control
- Compact skid-base configuration

Objects
- Turbidity
- Bacteria

Applications
- Recycling of industrial effluent
- Various pretreatment processes
- Filtration of effluent water
- Filtration of river water
- Reuse of sewage water
- Other applications

Models & Capacity

<table>
<thead>
<tr>
<th>Models &amp; Capacity</th>
<th>UF-40</th>
<th>UF-80</th>
<th>UF-160</th>
<th>UF-240</th>
<th>UF-320</th>
<th>UF-400</th>
</tr>
</thead>
<tbody>
<tr>
<td>KYOWA-UF</td>
<td>40 m³/Day</td>
<td>80 m³/Day</td>
<td>160 m³/Day</td>
<td>240 m³/Day</td>
<td>320 m³/Day</td>
<td>400 m³/Day</td>
</tr>
</tbody>
</table>

Standard System

Objects
- Remote Monitoring and Control Systems
- Auto Monitoring
  - Raw water turbidity
  - Treated water turbidity
- Outdoor type
RO Membrane Treatment Unit

Removes (metal) ions from raw water at 85% of recovery rate. Stable treatment by automatic operation.

Features

◎ Standard recovery rate of low pressure RO membrane treatment: 85%
◎ Removal of ions separated by low pressure reverse osmosis membrane
◎ Fully automatic operation & easy control
◎ Compact skid-base configuration

Objects

● Ions
● Salts
● Scales
● Hardness
● Dissolved organic matters

Applications

● Treatment & recycling of cooling tower drainage
● Recycling & treatment of scrubber drainage
● Purification of well water

● Reuse of wastewater
● Water purification
● Other applications

Models & Capacity

<table>
<thead>
<tr>
<th>Models &amp; Capacity</th>
<th>LR-50</th>
<th>LR-100</th>
<th>LR-200</th>
<th>LR-300</th>
<th>LR-400</th>
<th>LR-500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>50 m³/Day</td>
<td>100 m³/Day</td>
<td>200 m³/Day</td>
<td>300 m³/Day</td>
<td>400 m³/Day</td>
<td>500 m³/Day</td>
</tr>
</tbody>
</table>

Standard System

Recommended optional systems

- Remote Monitoring and Control Systems
- Monitoring Ionic contents
- Conductivity meter
- Anti-scalant injection system

Objects

- Remote Monitoring and Control Systems
- Monitoring Ionic contents
- Conductivity meter
- Anti-scalant injection system
Small Scale Water Treatment System

- Raw water tank
- Pre-treatment (UF membrane)
- Desalination (RO membrane)
- Product water tank

- PV generator
- Small scale power generator

Contaminated lakes

- Power
On-board-type water treatment equipment

Low-pressure RO membrane

Capacity: 34m³/day
Removal capacity of fluorine: 3.1mg/L → Under 0.08mg/L

Our water treatment equipment was adopted because fluorine was found to exceed the reference value from a well water for washing bottles. Transportation and installation became easy by storing the equipment in containers. Cost was also reduced.
Our Achievement

- Demo. Plant of Desalination -

Well water Desalination for Drinking Water (Indonesia)

Capacity

- Well water treatment volume: 6m³/day
- RO Membrane
Our Achievement

- Demo. Plant of Desalination -

Desalination Unit
6m³/day

Nagasaki
Engineering

Technology

Shenzhen
Drawing Manufacturing

Equipment

Sumatera
Site work
# RESCUE WATER BOX (KYUSUIBAKO)

<table>
<thead>
<tr>
<th>Type</th>
<th>KAW-200 (Brand name: KYUSUIBAKO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water sources</td>
<td>Swimming pool, remaining water in bathtub, water reservoir tanks, etc.</td>
</tr>
<tr>
<td>Filtration capability</td>
<td></td>
</tr>
<tr>
<td>Drinking water</td>
<td>200L/H (average) total filtration volume approx. 2000L</td>
</tr>
<tr>
<td>Multi-purpose living water</td>
<td>500L/H (average) total filtration volume approx. 5000L</td>
</tr>
<tr>
<td>Pre-filter</td>
<td>Filtration accuracy: 5µm</td>
</tr>
<tr>
<td>AC filter</td>
<td>Activated carbon</td>
</tr>
<tr>
<td>Lead, trihalomethane filter</td>
<td>Zeolite + Fiber activated carbon</td>
</tr>
<tr>
<td>Sterile filter</td>
<td>MF membrane / Accuracy: 0.1µm</td>
</tr>
<tr>
<td>Pump</td>
<td>Manual pump Max. pressure 0.22MPa</td>
</tr>
<tr>
<td>External dimensions (mm)</td>
<td>W400 x H400 x D300</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>Approx. 13 (dry)</td>
</tr>
<tr>
<td>Spare parts</td>
<td>Pre-filter (1pc.), Sterile unit (1pc.)</td>
</tr>
<tr>
<td>Accessories</td>
<td>Aluminum container, Chlorine sterile agent, etc.</td>
</tr>
</tbody>
</table>

![Diagram showing the filtration process](image1)

![Image of the product](image2)
To the people, to the community and to the future---

We are the environment creating company.

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