



③City of Kitakyushu Environment Bureau Environmental Industries Promotion Office




City of Kitakyushu Eco-Town project
~creating a sustainable society ~



City of Kitakyushu Environment Bureau
Environmental Industries Promotion Office

1 Historical background

The first blast furnace of Yawata Works
(Completed in 1901)




3


Overcoming environmental pollution
by City of Kitakyushu




Campaign against pollution by women
~Origin of women's group activities~



Access to the plant by a women's association



Workshop on the air pollution by specialists




Documentary 8mm movies
"I want a blue sky"




Request postcards to the government and companies

An activity toward overcoming environmental pollution
by concerned parties

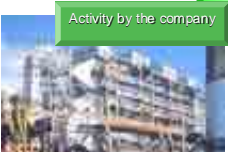
Partnership




Visiting companies



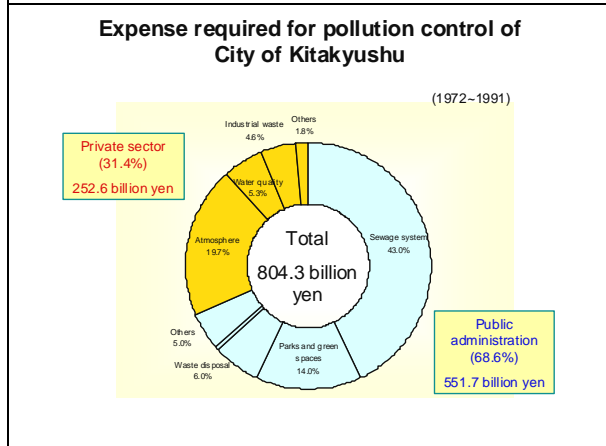
Lectures made by professors



Energy-saving type production process and improvement of the equipment for pollution control



Environment monitoring as well as environment infrastructure development



Taking advantage of the experience of having overcome environmental pollution in global cooperation

● **Basic philosophy**

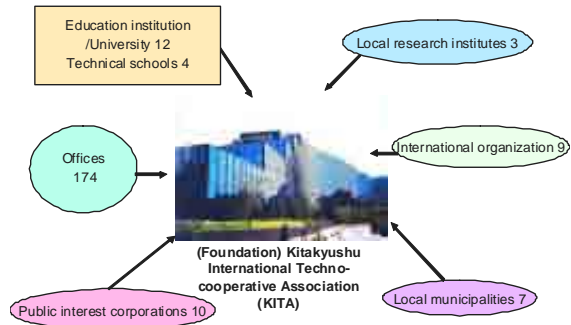
“For the people, the earth and the next generation”

-Urban development allowing sustainable development with less load to the environment-

● **Goal**

- Contribution to the global environment conservation
- Contribution to urban development to improve living conditions
- Contribution to local revitalization

Support system of the international training



Environmental global cooperation



Training scene

Dispatching specialists



International assessment for City of Kitakyushu

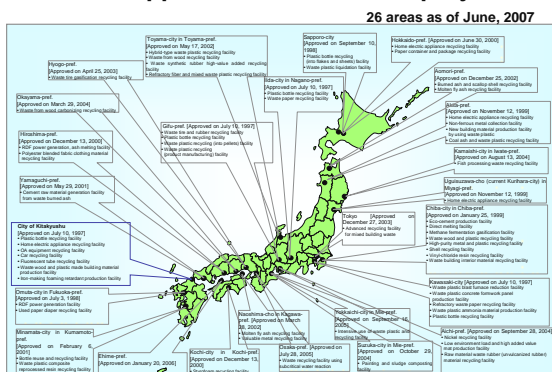
1985	Mentioned in “ Situation report of the environment ” of OECD (Organization for Economic Co-operation and Development) “Green city/City of Kitakyushu” (Gray city to green city)
1990	Awarded by the UN Environment Programme “ Global 500 ” (First of Japanese local municipalities)
1992	Awarded by the Rio Summit “ UN Local government honor ” (12 cities worldwide)
2000	Adopted by the UN ESCAP Environment Minister Meeting “ Kitakyushu initiative for a Clean Environment ”
2002	Awarded by the Johannesburg Summit “ Earth Summit 2002 Sustainable development honor ” (Two worldwide) Written in the executive plan of the Johannesburg Summit “ Kitakyushu initiative for a Clean Environment ”

2 Overview of the Kitakyushu Eco-Town project

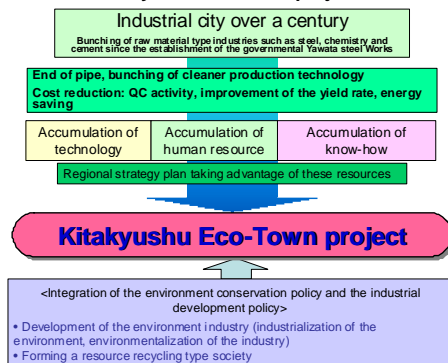
What is a Eco-Town project?

It is an activity to aim at building a **resource recycling society** and advanced environment-conscious urban development managed by the local government through collaboration between industry, educational institutions and the administration by promoting “**cultivation of the environment industry**” taking advantage of the local industrial accumulation and “**controlling of generation / recycling of waste**”.

Areas approved the Eco-Town project



The course of events to the Kitakyushu Eco-Town project

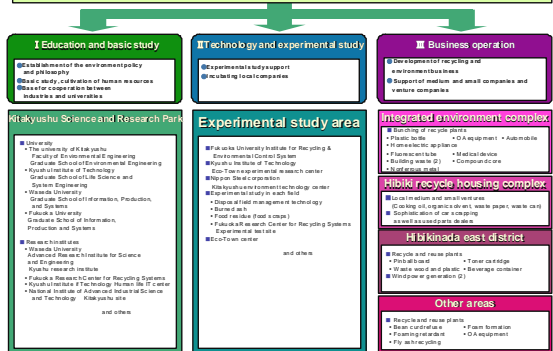


Background of the Eco-Town planning

October, 1989	An investigation started on the direction of the development in the Hibikinada district
March, 1992	"Basic concept of the Hibikinada district development" was planned
March, 1996	"Basic plan of the Hibikinada development" was planned
1996-1997	A study session between the city and private companies was held
July, 1997	"Kitakyushu Eco-Town plan" district was approved
August, 1997	"Kitakyushu environment industry promotion meeting" started
August, 1997-March, 1998	"Executive planning committee of the Kitakyushu Eco-Town plan"
April, 1998	"Kitakyushu Eco-Town executive plan" was made
August, 2002	"Kitakyushu Eco-Town plan second-term plan" was made
October, 2004	"Second-term plan" was revised for all areas in the city

Strategy of the environment industry development of City of Kitakyushu

Comprehensive deployment from the basic study to technical development, experimental study and business operation



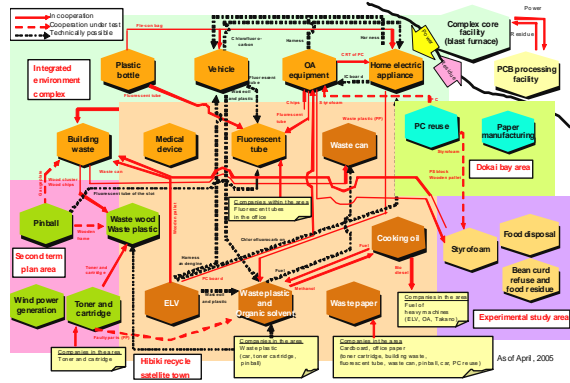
City of Kitakyushu Eco-town project

- Investment amount:** About 602 billion yen (City: 6.1 billion yen, Government: 115.5 billion yen, Private sector: 42.6 billion yen)
- Employees:** About 1,000 (including part-time reusers etc.)
- Visitors:** About 560 thousand people (total)
- Outside evaluation:** Publication in the white paper on environment and textbooks of elementary and junior high schools

Full view of the integrated environment complex and Hibi recycle satellite town

The first "Zero emission satellite town" in Japan including thermal recycling

Cooperation between Kitakyushu Eco-Town projects



Effect of the Eco-Town project 1

- Approach to the environment industry development**
- 26 projects have been created including Hibi kinada district in Wakamatsu-ward (Various types of recycles, reuse and wind power generation projects)
- Approach to promoting the environment technology development**
- At experimental study area**
 - Three permanent facilities (Fuukuoka University, Kyushu Institute of Technology / Nippon Steel) have moved into the area
 - 17 research projects are ongoing (other 18 researches have finished)
- Economic effect and job-creation effect**
- Direct investment: About 60.2 billion yen (Private sector: City: Government=7:1:2)
Job-creation: About 1,000 (Current number of people)
- * "Initial goal: Investment of 60 billion yen, job-creation of 800 people"

Effect of the Eco-Town project 2

- Effect of CO₂ reduction (About 150 thousand tons per year)**
- CO₂ emission: 23 thousand tons (those associated with the resource and energy use)
- CO₂ reduction: 175 thousand tons (those associated with the reduction of virgin resource use)
- Consciousness of the citizen**
 - Promoting understanding of the citizen by showing facilities to the public
 - The Eco-Town is the living environment study field and contributes to heightening of the environmental consciousness of the citizen (rubbish is the resource, importance of recycling).
 - Visitors to the Eco-Town: About 580 thousand people (1998-2006)
- Interests from Asia and China**
 - Many visitors have been accepted from Asia (especially China and Korea).
 - Actual number of visitors from overseas in 2006: 2,294 people

Expansion of the Eco-Town project 1

Kitakyushu Eco-complex concept

From "internal optimization" using the resource and energy to "local optimization"

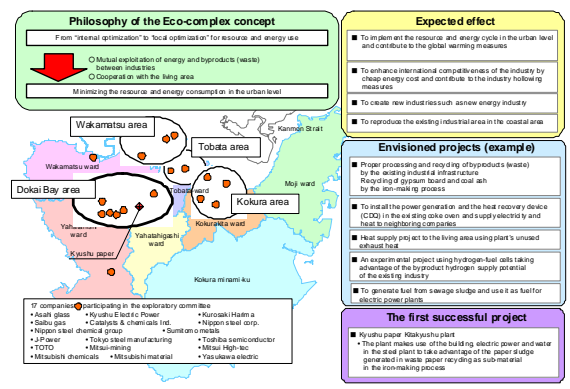
- Mutual exploitation of energy and by-products (waste) between industries
- Cooperation with the living area

Minimization of resource and energy consumption in the urban level

Examples of success

- Surplus energy of Mitsui mine in Hibikinada is used by adjacent Kubota Matsushita exterior building material
- Kyushu Paper uses existing infrastructure in the premise of Nippon steel to do waste paper recycling business. Sludge discharged from paper-making processes is used as forming retardant in the converter
- Waste roof tiles of the Kokura castle are used as brick material by Kurosaki-harima and used around Katsuyama park

Overview of the Kitakyushu Eco-complex concept



Expansion of the Eco-Town project 2

Project to create Kitakyushu Eco-premium industries

We select eco-premium (such as "eco-product and "eco-service") from the approach and achievement in the industrial and technical areas in the city. We plan to expand and spread "Eco-premium" and promote the environment-friendly activity in the entire industry in the city.



Project to support acquisition of Eco-action 21

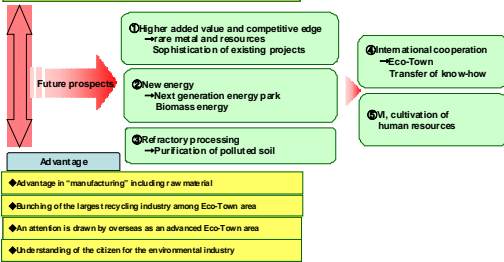
We promote an approach to the environment management of medium and small companies in the city by supporting acquisition of the environment management system "Eco-action 21".

3 Deployment in the future

Current issues and future prospects

Issues and social requests

- ◆ Various projects corresponding to various recycle laws have already started
- ◆ Fierce competition between existing projects due to the change of the social situation
- ◆ Efforts against global warming and new energy policy



Higher added value and competitive edge ~To keep on running as a leading runner~

① Recycling of rare metal and resources, environment-friendly material

- Taking advantage of the base as the raw material type industry city with a focus on metal and chemistry
What projects are valuable and profit-earning?

- ▶ Collection of rare metal from waste boards and cables by Nippon Magnetic Dressing
- ▶ Diffusion of biomass plastic and development of chemical recycling technology
- ▶ Kitakyushu car weight saving and advanced member processing technology study group
▶ Automobile industry

② Strengthening competitiveness of the existing projects

- Improvement of the quality of recycled goods, generation of valuable resource from waste, solution to new products

- ▶ Response to flat-screen TV, recycling technology for refractory recycling material such as mixed waste plastic
- ▶ Starting segregation of container, package and plastic, improvement of the rate to collect waste paper → Securing raw material

New energy

- From the town that has supported modernization using fossil fuel as energy to the town that generates new energy and takes advantage of it -

① Next generation energy park concept

▶ To take advantage of various energy-related facilities including wind power generation, waste to generation, oil stock and cogeneration generation being developed around Kitakyushu area and link to V1 as a field of environment learning and attraction of enterprises by providing cheap energy.

② Biomass energy

- ▶ Started an experimental test to refine biomass ethanol from food scraps
- ▶ Manufacturing BDF from waste cooking oil → Further expansion of collection points
- ▶ Nandohara (Rape blossom) project

③ Advanced technology study (Academic research city)

- ▶ Kyushu DME study group

International expansion

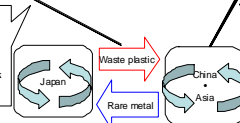
- From international contributions in antipollution measure to international cooperation and contributions toward forming a recycling-oriented society -

① Appropriate international resource cycle

Building a mechanism to appropriately circulate what are recyclable and environmentally-friendly through international cycle based on the domestic resource cycle

- Securing international traceability
- Improvement of safety and efficiency by forming a base

Implemented by the Ministry of Economy, Trade and Industry modeling after Kitakyushu in 2006
Private businesses seek commercialization from 2007



② Transfer the know-how of Eco-Town

Movement of Eco-Town building modeling after Japan (Kitakyushu as the model) into the course of promoting 3R policy in China (Qingdao-city)
OEco-Town planning support
○ Technical transfer in a private sector etc.

The Ministry of Economy, Trade and Industry plans to implement a cooperative project for specific Eco-Town areas in Japan and cities in China in 2007
▶ The city is preparing to implement a cooperative Eco-Town project with Qingdao-city

Forming a base to cultivate environment human resource in Asia

■ **Staunch policy in 2005** (Basic policy 2005 on economical and fiscal administration and structural improvement)

"We will develop a global advanced base with an advanced environment and recycling technology used as a core by the local area and promote resource cycle and human resource cultivation in Asia in an effort to be the area to take the initiative in the world."

KITA will take in 2000 trainees for 5 years to come

We will cultivate human resources to contribute to improving the environment worsening in the significant economic growth in Asian areas

■ Two-week to one-month curriculum has been prepared

■ Environment conservation, 3R policy, environment policy in Kitakyushu and corporate environment measures in Japan etc.

Further enhancement of the Kitakyushu Science and Research Park

Adding to bunching of advanced environment technology fields such as nanotechnology, new energy and sensing, further functional enhancement in the environment conservation and resource cycle fields

■ Enhancement of researchers in those fields described above
■ Synergistic effect by transferring city laboratories to Universities etc.

Use of fields in Kitakyushu
"100 years of accumulation as a manufacturing town"
"experience in overcoming public pollution" "advanced Eco-Town"

"Eco-Technology Exhibition 2007"

~"3R promotion national convention" are held simultaneously~

- **Overview:** The largest environment exhibition in west Japan designed to plan highlighting of consciousness and promoting environment business
- **Term:** October 17 (Wed) - 19 (Fri), 2007
- **Place:** West Japan general exhibition Center
- **Remark:** Visitors in 2006⇒32,183
Company entries⇒284
- **Future direction:** We continue to hold the exhibition as a setting to promote environment businesses, especially as a setting for PR and business meeting of companies in the city.



"Second 3R promotion national convention"

Term: October 18 - 20, 2007
Place: Rihga Royal Hotel Kokum and others.
Detail: Memorial lecture, associated events, prize-giving
Host: Environment ministry, Fukuoka-pref., City of Kitakyushu, 3R activity promotion forum



④ Nippon Magnetic Dressing Co., Ltd.

Company Overview

Name Nippon Magnetic Dressing Co., Ltd.

Year & month established February 1949

Capital 448.6 million yen

Sales 18.152 billion yen (for the period ending September 2006)
Approximately 20 billion yen (forecast for period ending September 2007)

Number of employees 450 (as of September 2006)

Types of operations

- Ore dressing and refining operations
- Industrial waste processing and disposal operations
- The production and sales of various processed goods and byproducts related to Items 1 and 2
- The manufacture and sales of steel, nonferrous metals, chemicals, ceramics, mining-related products and general materials
- The production and sales of ore dressing machinery
- Consulting activities related to ore dressing
- The sales and lease of real estate and real estate mediation activities
- Construction
- The production of raw materials for public works construction; public works mediation
- The design, manufacture and creation of ore-related equipment



Management Philosophy

- To pursue the development of Nippon Magnetic Dressing and the well-being of our employees while serving society and our country
- To commit ourselves to our creative abilities so that we may develop the natural resources that we are endowed with and realize their special beneficial characteristics

Let's become a '3S' company!
3S: offering Solutions to our customers
Steadily and Safely


Aiming to become company with a comprehensive recycling program that contributes to the creation of a society that fully utilizes resources and duly respects the environment

'Resources are finite, but ideas are infinite'

Operations Transformations - Part 1

Steel slag recycling operations

1. Facility locations

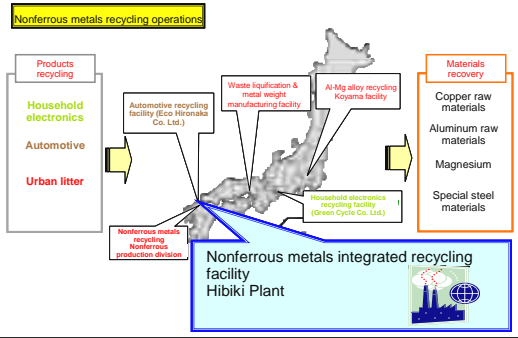


2. Separation technology

Physical separation	Magnetic	Various forms of magnetic separation
Wind	DWS (Dry wind separation)	
Gravity	LISM (Local interstellar medium)	
	HLS (Heavy liquid separation)	
	Nagasa (Inertia separation)	
	JIG	
Size	Gulflume treatment	
	Vibrating screens	
	Trommels	
Color	Metal X (Metal detection & separation)	
	Plastic separation	
Metalurgy	Smelting	Melting furnaces
		Rolling furnaces
		Electric furnaces
Chemical processing	Electrolysis	Cu & Co recovery
	Solvent extraction	Ni & Co separation

Operations Transformations - Part 2

Nonferrous metals recycling operations



Products recycling

- Household electronics
- Automotive
- Urban litter

Materials recovery

- Copper raw materials
- Aluminum raw materials
- Magnesium
- Special steel materials

Nonferrous metals integrated recycling facility Hibiki Plant



Hibiki Seaside Industrial Park

Nippon Magnetic Dressing Co., Ltd. Hibiki Plant

Photograph Showing Exterior of Plant



Operations Concept

Domestic Resource Circulation Efforts

Over the last several years, as Nippon Magnetic Dressing has strengthened recycling concerns unrelated to slag processing, the company has become aware that large amounts of resources are being discharged overseas. Particularly noteworthy are the complex byproducts and mixtures of nonferrous metals for which separation and classification by metal type is not possible domestically due to the costs involved. Increasingly these items are being exported to China, which is seeing an increase in its own natural resource-related needs.

As a company that has its sights set on becoming a fully integrated recycling concern, Nippon Magnetic Dressing is concerned about this loss of valuable resources overseas. Therefore, with the ultimate aim of creating a domestic resource circulation system in Japan, Nippon Magnetic Dressing has decided to establish an operation in Kitakyushu dedicated to increasing the company's know-how regarding the separation and classification of these resources, as well as the realization of their associated added value.


Cooperation With Kitakyushu Eco-Town

A great deal of processing aimed at the recycling of waste is carried out at the Eco-Town complex. However, at the same time, there is no doubt that byproducts that cannot be directly recycled are also being produced.

It is our aim to reclaim these resources.

Increasing the Convenience of Recovery

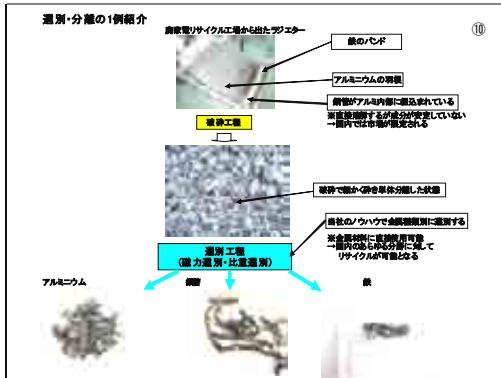
As a part of plans to recover raw materials and ship finished products subsequent to manufacture, adjacent harbors will be utilized.



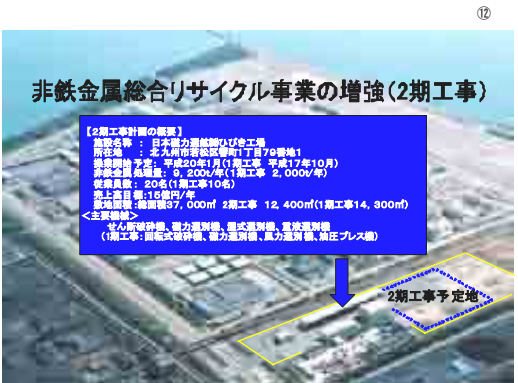


Pulverization Processing

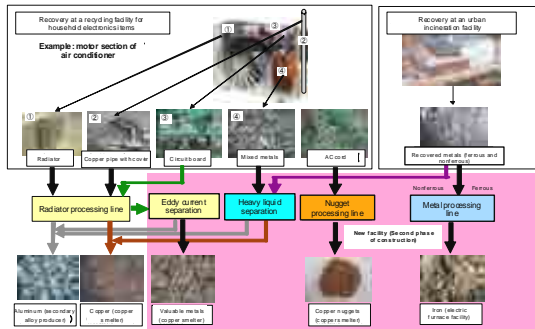
Product	Before processing	After pulverization	After separation
Radiator			
Coated copper pipe			
Circuit board			



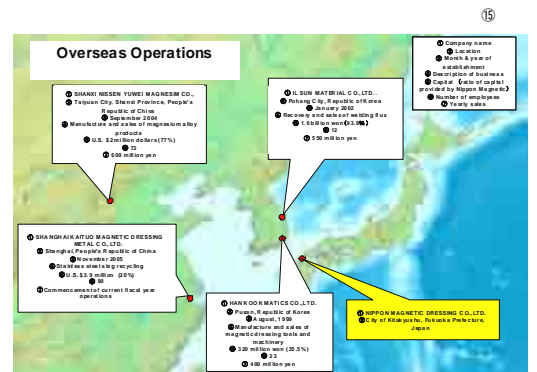
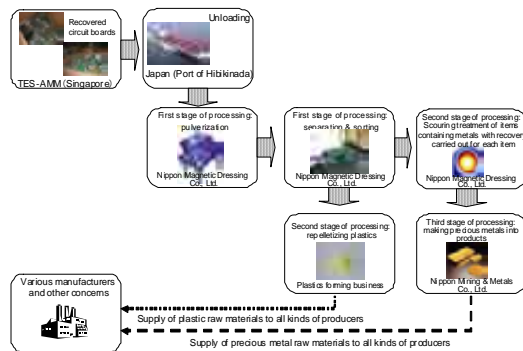
Separation Activities at the Facility



Nippon Magnetic Dressing Co., Ltd. Hibiki Facility: An Introduction to the Recycling of Nonferrous Metals




Materials Recycling of Circuit Boards in the City of Kitakyushu: an Explanatory Diagram(Nippon Magnetic Dressing Co., Ltd.)

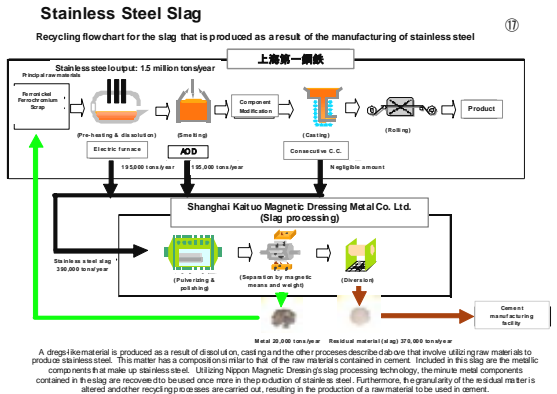


An Introduction to Overseas Recycling Operations

1. Stainless Steel Slag Recycling Operations in the People's Republic of China



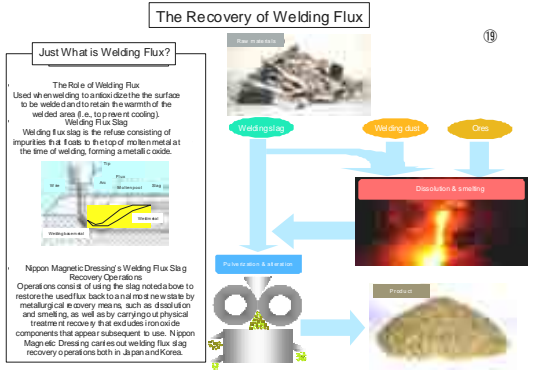
- Company name: Shanghai Kaiuo Magnetic Dressing Metal Co. Ltd.
- Registered capital: roughly US\$ 53.9 million
- Investment ratio: 上海第一鋼鐵有限公司 : 51%
Nippon Magnetic Dressing Co., LTD. : 20%
Tianjin Industry & Trade Corporation : 29%
- 735 Chang Jiang Lu, Baoshan, Shanghai, People's Republic of China
- Company director: Chi Liang Yang
- Number of employees: 30
- Date of establishment: October 26, 2005 (trial operations commenced January 2007)
- Business description: handles the processing of stainless steel slag produced by 上海第一鋼鐵有限公司 (Shanghai Kaiuo Magnetic Dressing Metal Co. Ltd.)
- Role of the company: technical supervision (three technical supervision staff members dispatched)
- Manufacturing scope (planned): stainless steel coil, 1.2 million tons/year; slag processing volume: 300,000 tons/year (basic unit of production: 20 kg tons)
- Background: founded to assist in the prevention of environmental degradation that occurs with the production of slag that accompanies stainless steel production at steelworks located in large cities. (technological support to protect the environments of large cities)
- Recycling status of raw used items:
 - Metal items: recovered stainless steel is wholly returned to the steel producer in the form of utilizable resource.
 - Residual materials (materials remaining after metals are removed): used as ingredients for cement




2. Welding Flux Recycling Operations in the Republic of Korea




- Company name: IL SUN MATERIAL CO., LTD.
- Capital: approximately 1.6 billion won
- Ratio of capitalization provided by Nippon Magnetic Dressing: 99.8%
- Location: Pohang City, Gyeongsangbuk-do, Republic of Korea
- Representative: 李 强 英
- Number of employees: 12
- Established: January 2002
- Business description: recovery and sales of welding flux and slag, etc.
- Production volume: approximately 50 tons/month (basic unit of use for flux: (example) spiral weld pipe - approx. 4 kg/ton)
- Sales: 550 hundred million yen/year
- Background: This joint venture was founded with the intent of providing an avenue for the sale of welding flux recovered in Japan. Afterwards, the company began to take into account the decrease in manufacturing costs that would occur with the expansion into the Korean market of welding flux recovery operations. Ultimately, such recovery operations were set up and are now in operation.



Technical Cooperation with Overseas Companies



Technical cooperation overseas

- October 1983, Korea: 浦項製鐵所 (Pohang Iron Works) Technical cooperation agreement reached
- July 1984, China: 上海第一鋼鐵有限公司 (Shanghai Kaiuo Magnetic Dressing Metal Co. Ltd.) Technical cooperation agreement reached
- May 1984, Korea: POSCO (Pohang Iron Works) Technical cooperation agreement reached
- April 1985, Korea: POSCO (Pohang Iron Works) Technical cooperation agreement reached
- February 1990, Korea: POSCO (Pohang Iron Works) Processing technology for stainless and general steel
- February 1990, Korea: POSCO (Pohang Iron Works) Technology cooperation
- February 1990, Korea: POSCO (Pohang Iron Works) Technology cooperation
- February 1994, Korea: POSCO (Pohang Iron Works) Slag processing technology and technological cooperation
- July 1994, Korea: POSCO (Pohang Iron Works) Technology cooperation
- February 2007, Korea: POSCO (Pohang Iron Works) Technical cooperation
- June 2008, China: 上海第一鋼鐵有限公司 (Shanghai Kaiuo Magnetic Dressing Metal Co. Ltd.) Technical cooperation
- June 2007, Russia: 俄罗斯联邦 (Russian Federation) Technical cooperation related to the sale of slag processing equipment

This concludes our explanation regarding Nippon Magnetic Dressing's recycling initiatives.

We continue to make use of our technology and know-how to effectively utilize resources, thereby contributing to society.



NIPPON MAGNETIC DRESSING CO., LTD