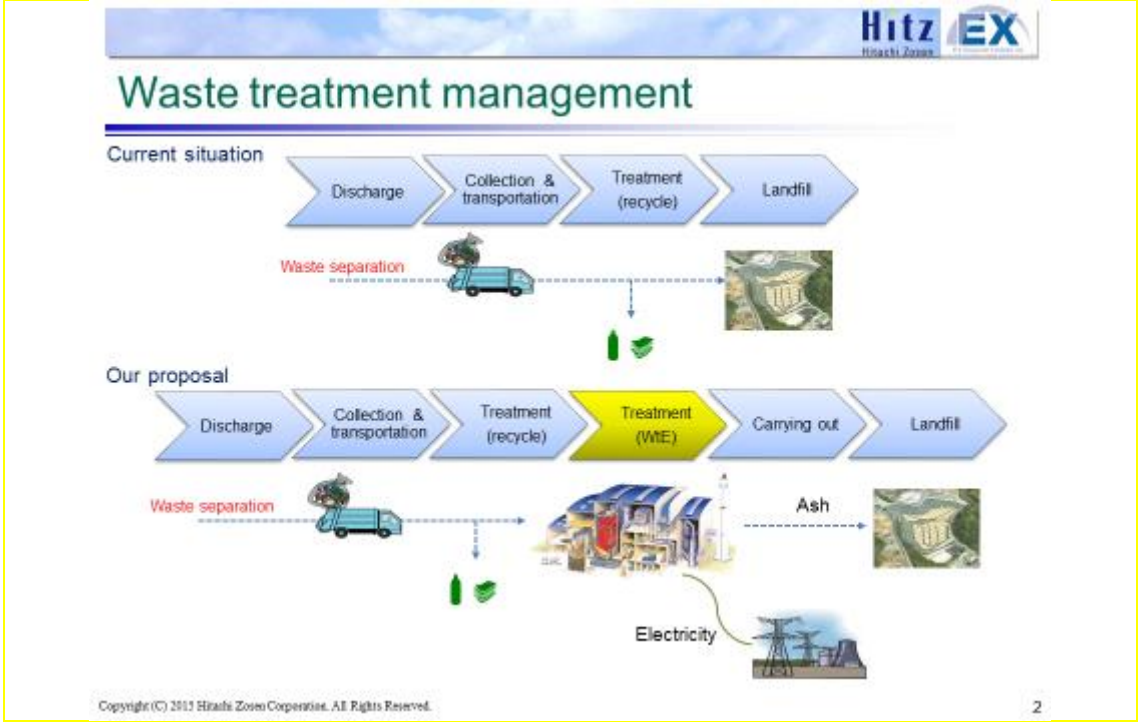
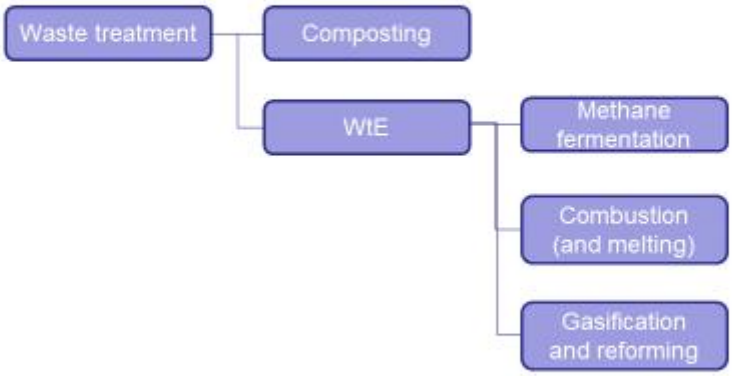
添付資料（トレーニングセッションでの説明資料）

No.1：WTE 技術の種類



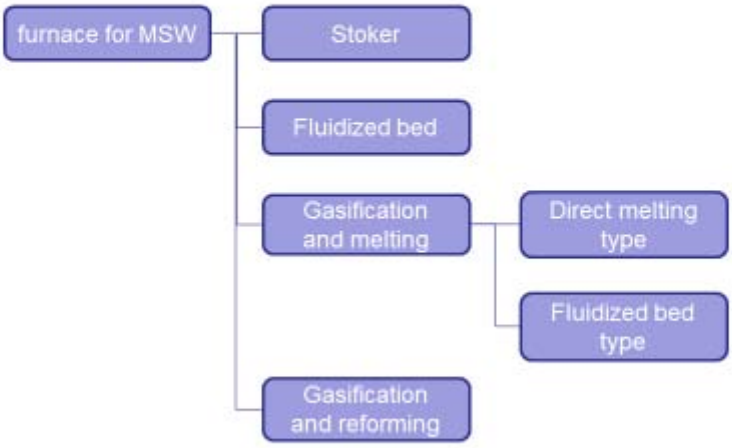
The kind of waste treatment



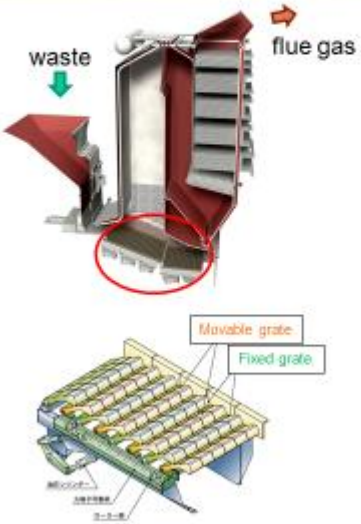
Characteristic of waste treatment

	Composting	Methane fermentation	Combustion (& melting)
Characteristic	☐ Organic matter is decomposed by microorganism. ☐ It is possible to recycle as compost for agriculture. ☐ But, it is up to waste quality.	☐ Organic matter is decomposed by bacteria and a biogas is generated. ☐ It is possible to recycle as with composting process. ☐ The energy as well as compost can be generated.	☐ Waste is treated by burning hygienically. ☐ It is possible to utilize energy of waste effectively. ☐ Landfill lifetime can be extended by burning waste. (reduction volume)
Capacity of treatment	☐ Need to much time to treatment waste. ☐ Installation area is very wide.	☐ Capacity is low.	☐ Capacity is very high.
Product	☐ Compost	☐ Energy (low) ☐ Compost	☐ Energy (high) ☐ Construction material (recycle)

The kind of WtE System



Stoker



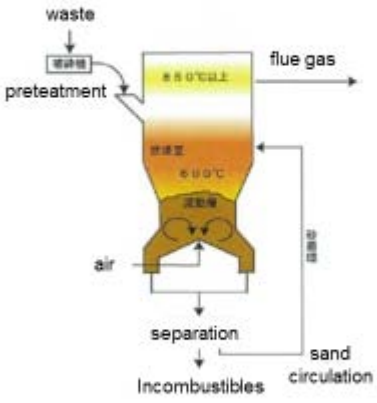
Outline

- Waste is burned by autogeneous combustion while moving on the grate.
- Air is provided under the grate.
- Waste is burned slowly on the grate for 1 to 2 hours.

Characteristic

- It is possible to treat a large amount of waste in short time.
- It is easy to meet fluctuation of waste quality flexibly.
- It is not necessary to pretreat waste.

Fluidized bed



Outline

- The sand in the furnace is stirred by air provided from the bottom.
- Waste is floated combustion by the movement as described above.
- Sand and incombustibles are discharged from the bottom of furnace and separated separately.Sand is returned in the furnace again.

Characteristic

- It is possible to retrieve metal in the state of non-oxidation.
- Pretreatment is required to cut MSW under 10cm.
- It is difficult to meet fluctuation of waste quality.

Gasification (Direct melting type)

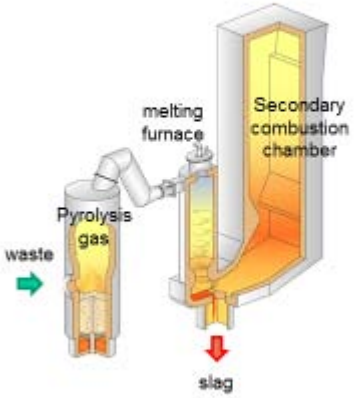
Outline

- Gasification part and melting of ash part will be an integral structure.
- Cokes and limestone are provided with waste from the upper part of furnace.
- Melted matters are discharged from bottom of furnace, after that they will be granular slag and metal by cooling.

Characteristic

- It is possible to utilize ash as slag.
- There is a lot of CO_2 emission due to using coke and limestone.
- It is difficult to operate due to need blast furnace operation skill.

Gasification (fluidized bed type)



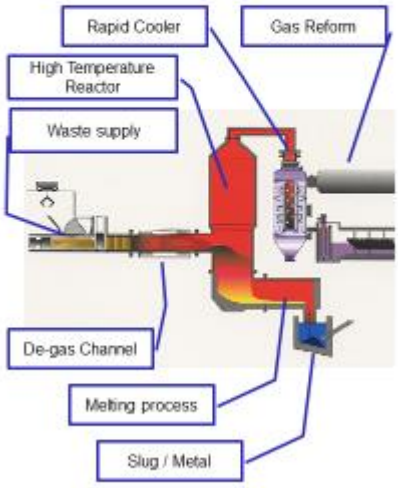
Outline

- The sand in the furnace is stirred by air provided from the bottom.
- Waste is gasified by the movement as described above, and it is melted in melting furnace.

Characteristic

- It is possible to retrieve metal in the state of non-oxidation.
- Pretreatment is required to cut MSW under 10cm.
- It is difficult to meet fluctuation of waste quality.

Pyrolysis



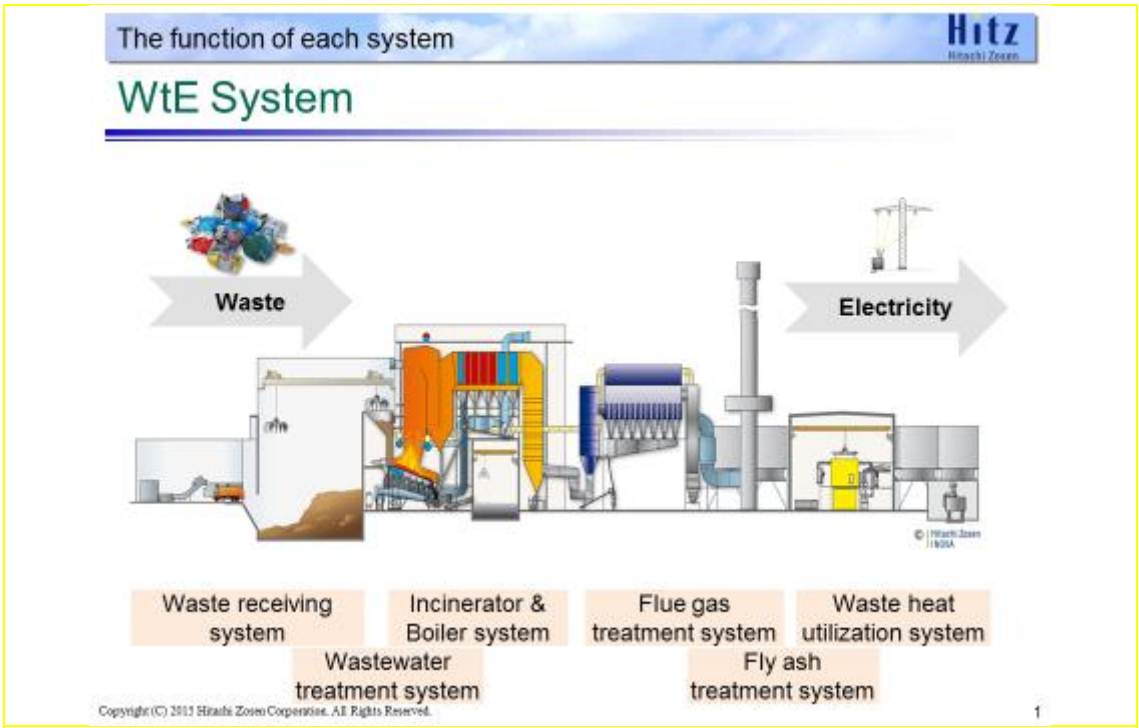
Outline

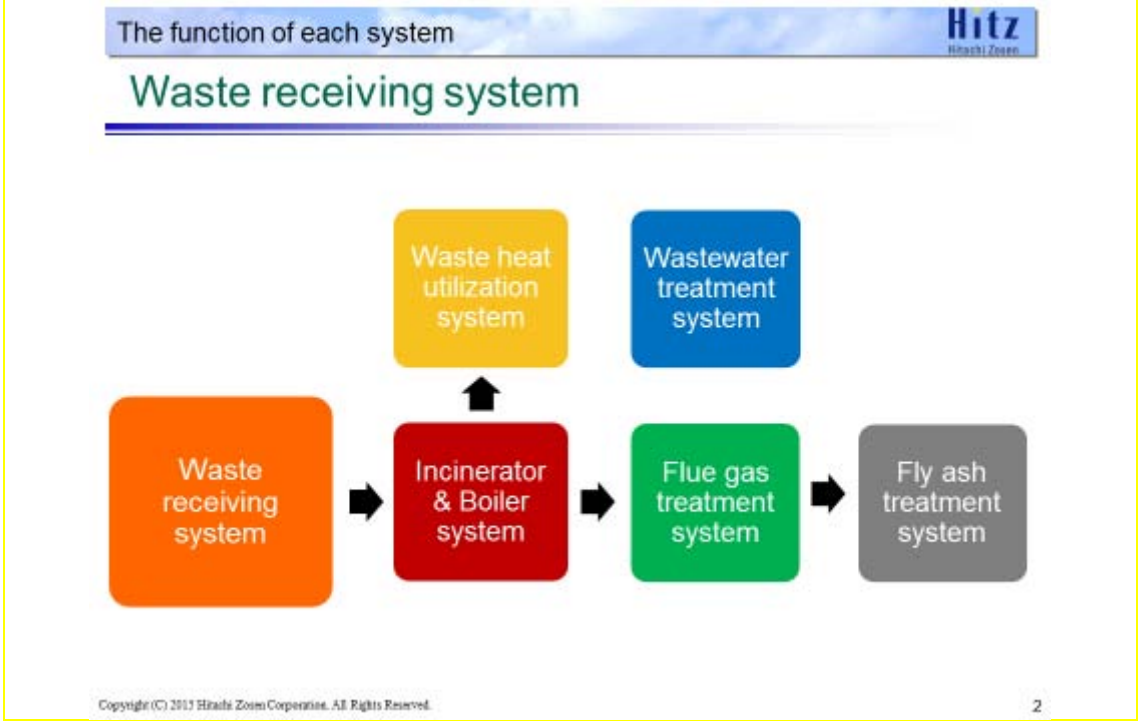
- Waste is compacted and supplied.
- Waste is heated indirectly and dried, thermal decomposed at de-gassing channel.
- By oxygen, waste is melted to slug and metal.
- Exhausted gas is cooled and reformed / refined.

Characteristic

- Slug / metal can be recycled.
- Gas is reformed.
- Lots of oxygen and water are necessary, therefore running cost is expensive.
- Very few actual construction.

No.2：ストーカ方式 WTE 施設の説明





Waste receiving system

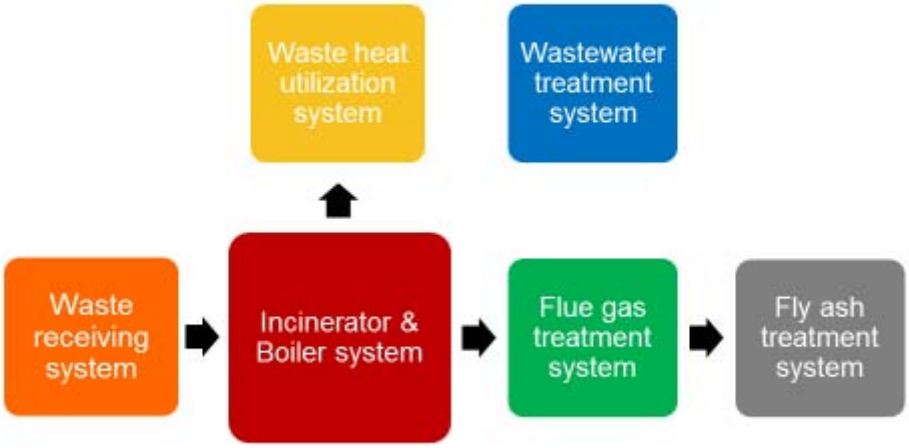
Weighing bridge

Waste receiving system

Waste pit & crane

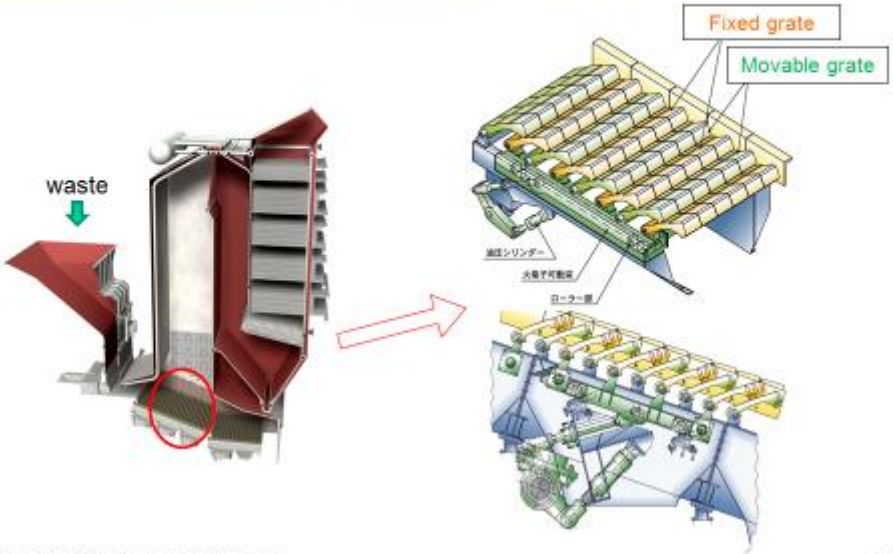
The function of each system

Incinerator & Boiler system



The function of each system

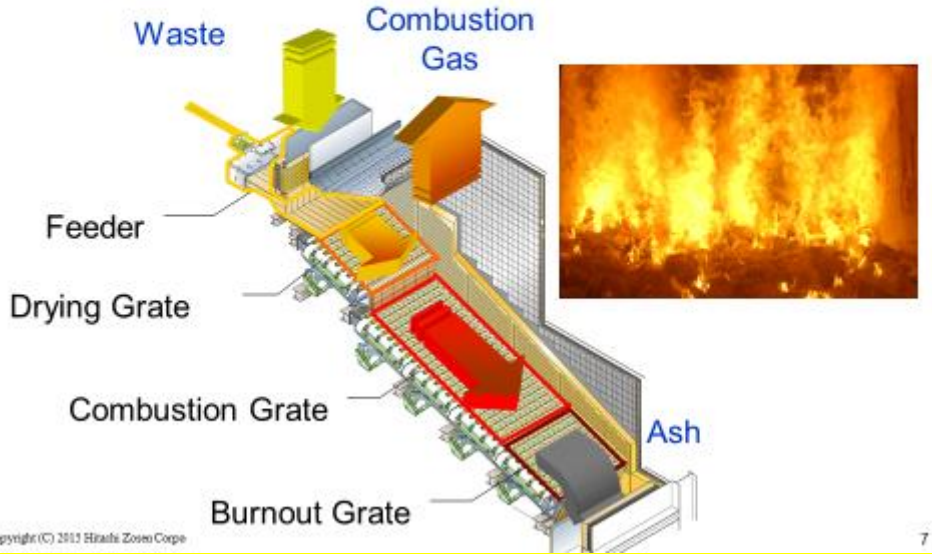
Incineration & Boiler system



The function of each system

Hitz Hitachi Zosen

Incinerator & Boiler system



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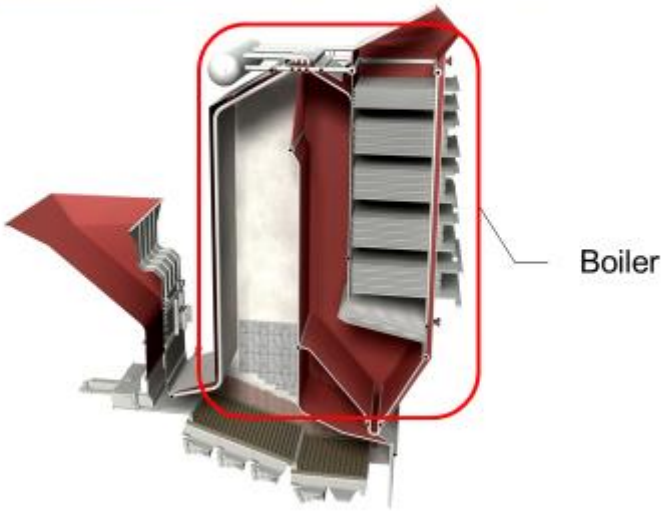
The function of each system

Hitz Hitachi Zosen

Incineration & Boiler system



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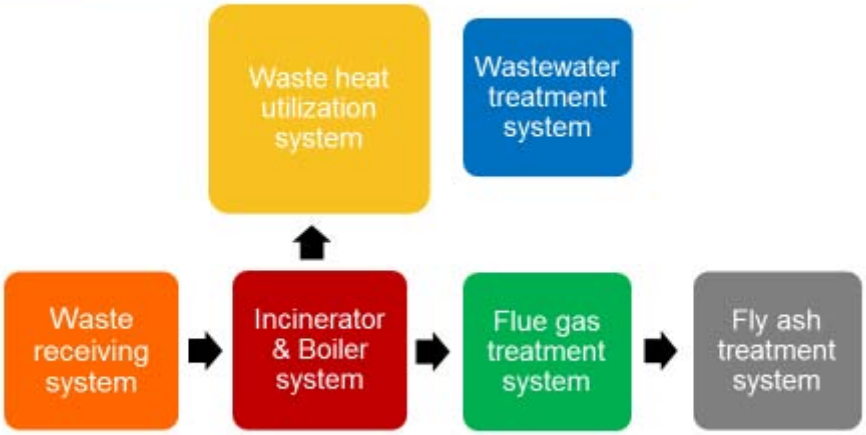
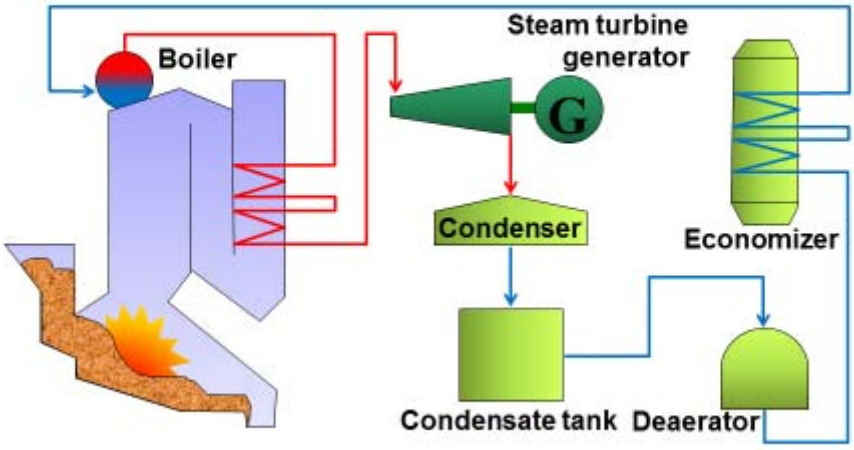
The function of each system

Waste heat utilization system



The function of each system

Waste heat utilization system



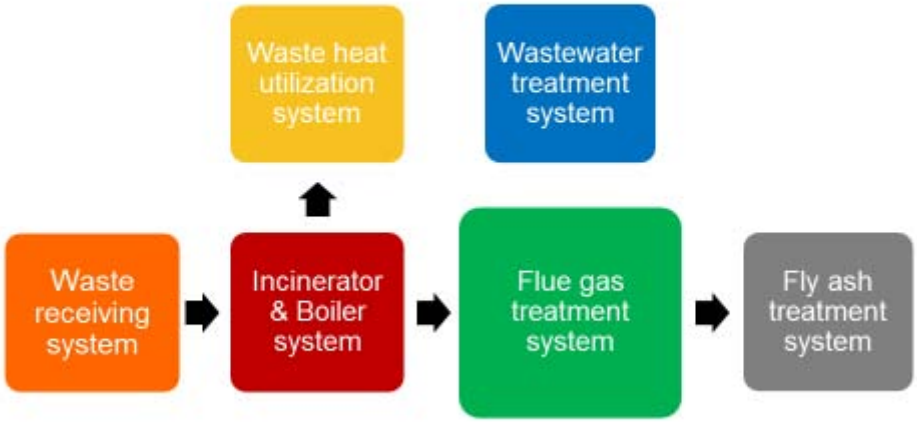
The function of each equipment

Waste heat utilization system

Steam turbine generator

The function of each system

Waste heat utilization system



The function of each equipment

Hitz

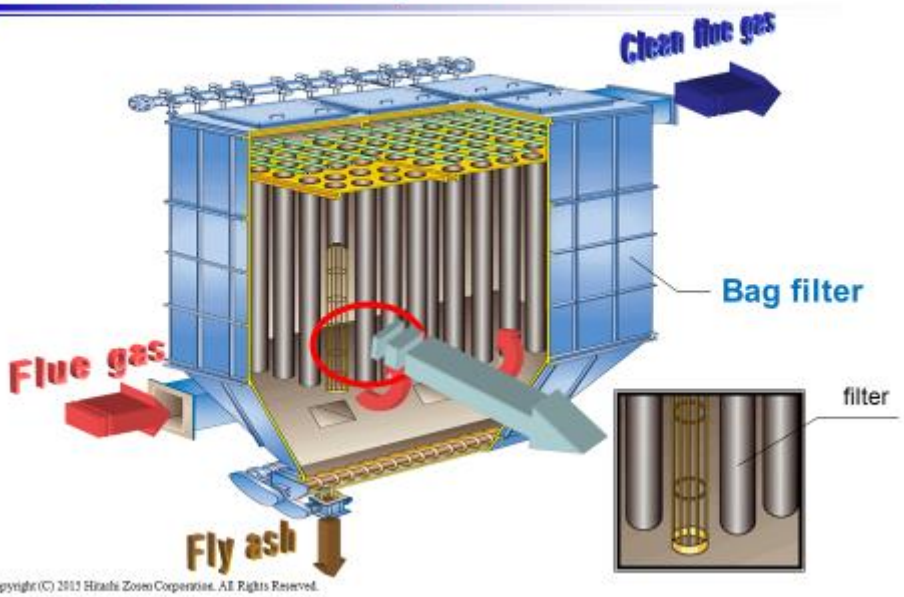
Flue gas treatment system

	Dust	NOx	HCl SOx	Dioxin	Remarks
Bag filter	●		●	●	Dry type Semi-dry type
Wet scrubber			●		Wet type
Non-catalytic de-NOx device		●			SNCR
Catalytic de-NOx device		●		●	SCR

The function of each equipment

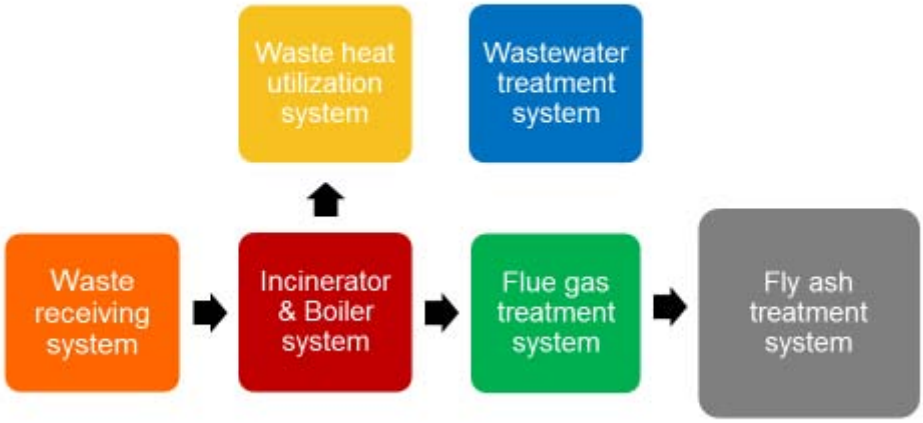
Hitz

Flue gas treatment system



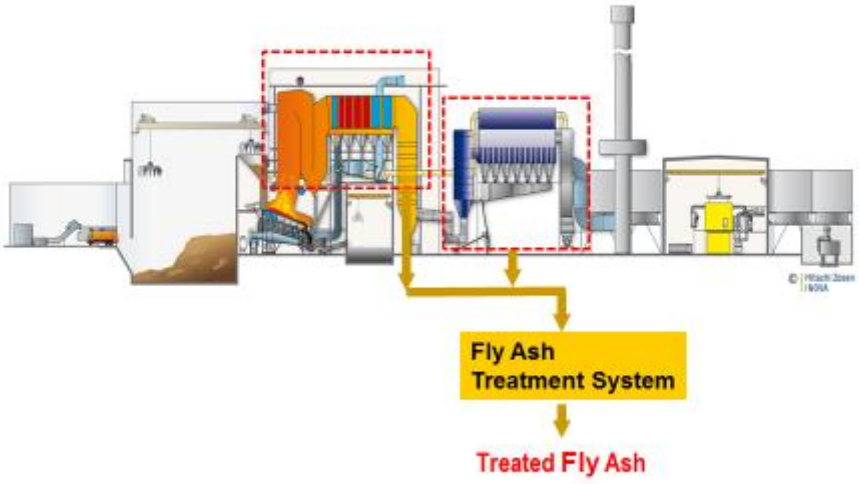
The function of each system

Fly ash treatment system



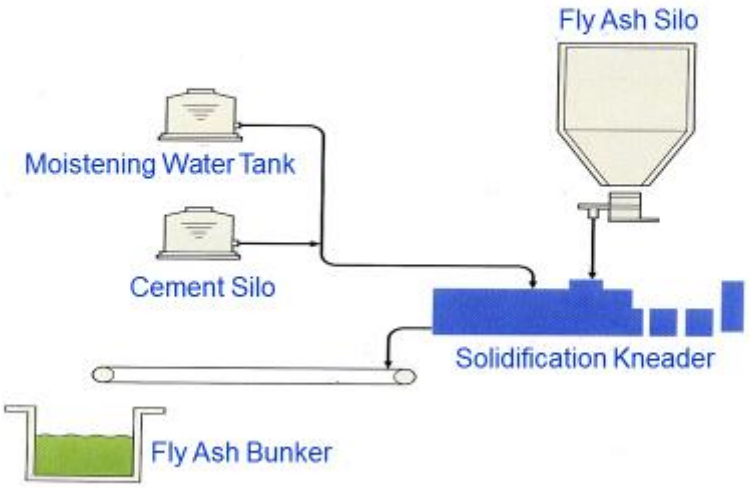
The function of each system

Fly ash treatment system



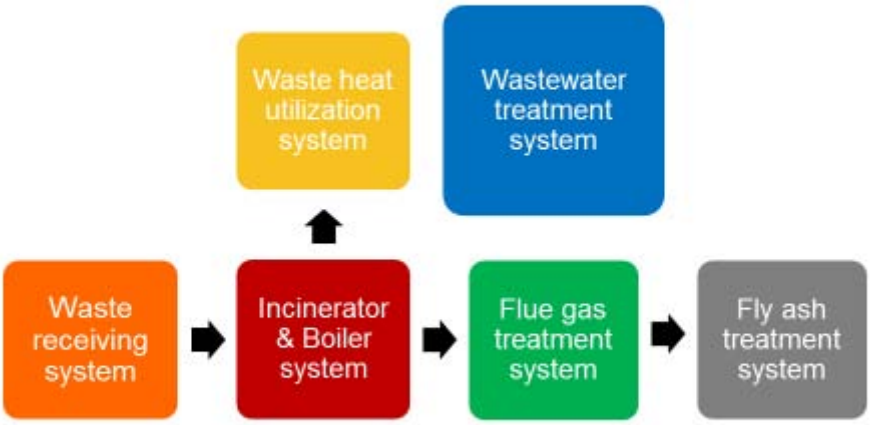
The function of each system

Fly ash treatment system



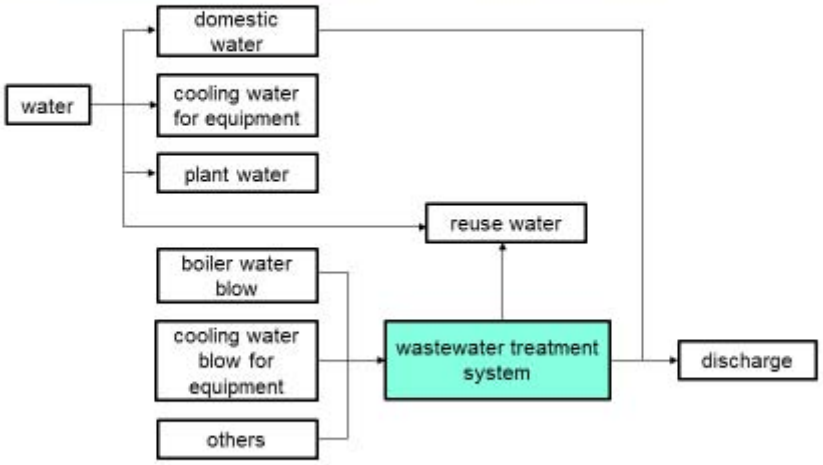
The function of each system

Wastewater treatment system



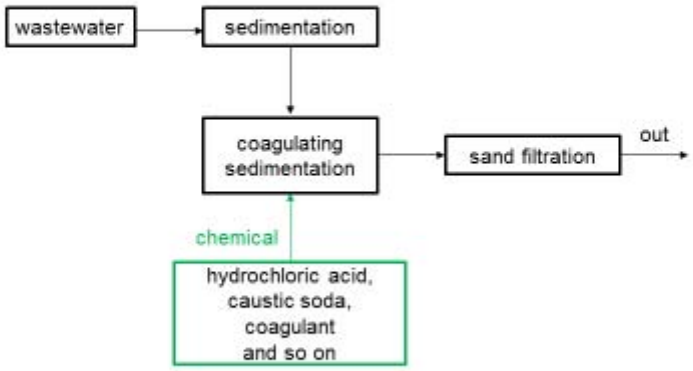
The function of each system

Wastewater treatment system



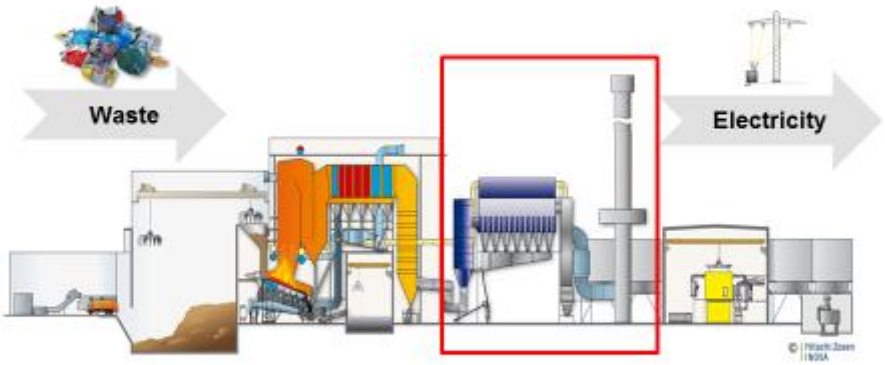
The function of each system

Wastewater treatment flow



No.3：排ガス処理とダイオキシン対策

Flue gas treatment



Waste receiving system	Incinerator & Boiler system	Flue gas treatment system	Waste heat utilization system

1

Effect of equipment for flue gas treatment

	Dust	NOx	HCl SOx	Dioxins	Remarks
Bag filter	○		○	○	Dry type Semi-dry type
Wet scrubber			○		Wet type
Non-catalytic de-NOx device		○			SNCR ※1
Catalytic de-NOx device		○		○	SCR ※2

※1 SNCR: Selective Non-Catalytic Reduction
※2 SCR: Selective Catalytic Reduction

2

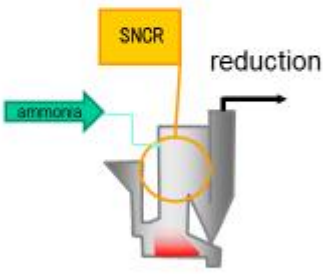
Method of flue gas treatment : Dust

Dust

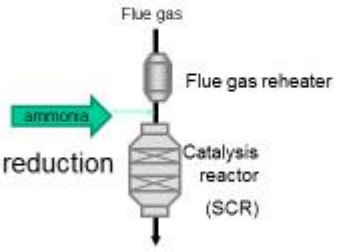
Method of flue gas treatment : NOx

NOx

Method①



Method②



$$4NO + 4NH_3 + O_2 \rightarrow 4N_2 + 6H_20$$

Method of flue gas treatment : HCl & SOx

HCl, SOx

Method①

filtering + neutralization

$2HCl + Ca(OH)_2 \rightarrow CaCl_2 + 2H_20$

$SO_2 + Ca(OH)_2 \rightarrow CaSO_3 + H_20$

Method②

$HCl + NaOH \rightarrow NaCl + H_20$

$SO_2 + 2NaOH \rightarrow Na_2O_3 + H_20$

Method of flue gas treatment : HCl & SOx

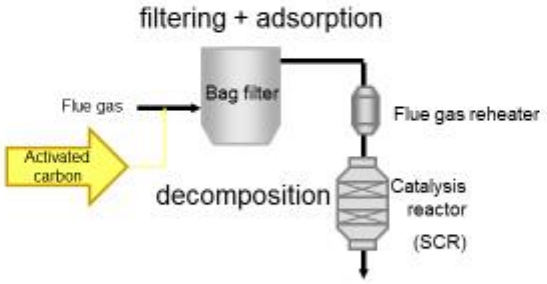
HCl, SOx

Method③

- **Characteristics of semi-dry type**
- Based on BF-technology
- All pollutants (except NOx) separated in one step
- High solid recirculation rate, therefore high buffering capacity against peaks, low additive consumption
- Proven compliance with European emission limits

Method of flue gas treatment : Dioxins

Dioxins



Reference (Hokkaido)

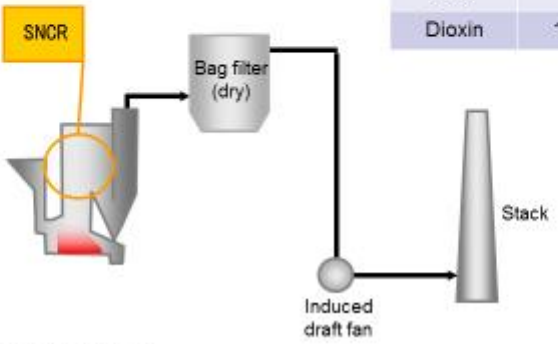
Client: Waste Processing Association of Nakakitasorati
Start-up:2013

Technical Data
Fuel: MSW
Waste capacity: 85t/d (42.5t/dx2)
Generator capacity: 1.77MW
Flue gas treatment: BF+SNCR

	Emission standard
Dust	0.01g/m3N
HCl	100ppm
SOx	50ppm
NOx	100ppm
Dioxin	1ng-TEQ/Nm3

Reference (Hokkaido)

	Emission standard
Dust	0.01g/m3N
HCl	100ppm
SOx	50ppm
NOx	100ppm
Dioxin	1ng-TEQ/Nm3



Reference (Kanagawa)

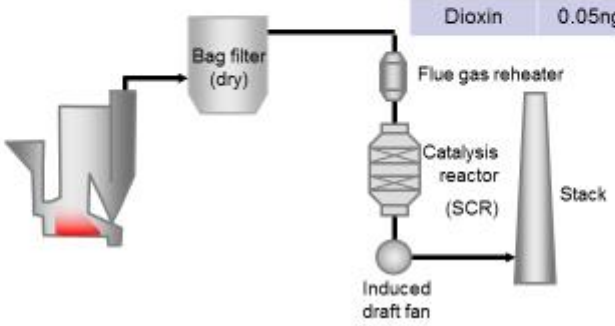
Client:Hadano city Isehara city
Environmental Health Union
Start-up:2013

Technical Data
Fuel: MSW
Waste capacity: 200t/d (100t/dx2)
Generator capacity: 3.82MW
Flue gas treatment: BF+SCR

	Emission standard
Dust	0.01g/m3N
HCl	30ppm
SOx	30ppm
NOx	50ppm
Dioxin	0.05ng-TEQ/Nm3

Reference (Kanagawa)

	Emission standard
Dust	0.01g/m3N
HCl	30ppm
SOx	30ppm
NOx	50ppm
Dioxin	0.05ng-TEQ/Nm3



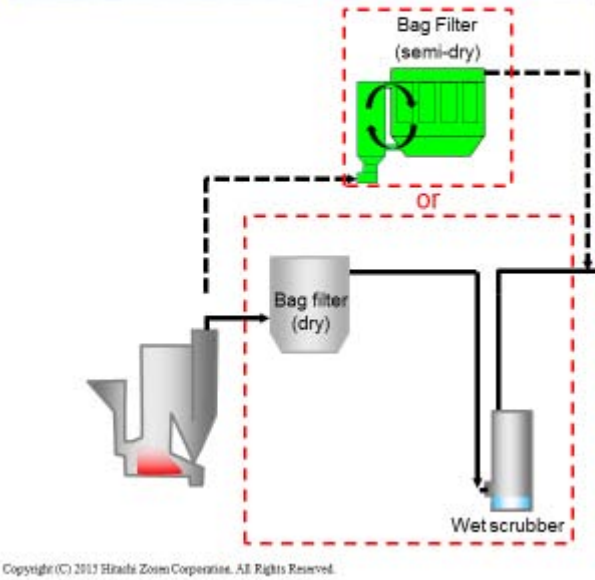
Reference (Tokyo)

Client: Clean Association of Tokyo 23
Start-up: 2017

Technical Data
Fuel: MSW
Waste capacity: 600t/d (300t/dx2)
Generator capacity: 24.2MW
Flue gas treatment: BF+WET+SCR

	Emission standard
Dust	0.01g/m3N
HCl	10ppm
SOx	10ppm
NOx	50ppm
Dioxin	0.1ng-TEQ/Nm3

Reference (Tokyo)

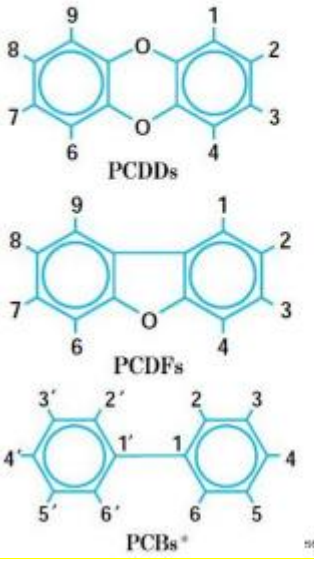


	Emission standard
Dust	0.01g/m3N
HCl	10ppm
SOx	10ppm
NOx	50ppm
Dioxin	0.1ng-TEQ/Nm3

13

What is Dioxins? => Compounds of Dioxins

Toxic Equivalency Factor



	化合物名	TEF値
PCDD (ポリ塩化ジベンゾ-パラ-ジオキシン) **75 kinds**	2,3,7,8-TCDD	1
	1,2,3,7,8-PeCDD	1
	1,2,3,4,7,8-HxCDD	0.1
	1,2,3,6,7,8-HxCDD	0.1
	1,2,3,7,8,9-HxCDD	0.1
	1,2,3,4,6,7,8-HpCDD	0.01
	OCDD	0.0001
PCDF (ポリ塩化ジベンゾフラン) **135 kinds**	2,3,7,8-TCDF	0.1
	1,2,3,7,8-PeCDF	0.05
	2,3,4,7,8-PeCDF	0.5
	1,2,3,4,7,8-HxCDF	0.1
	1,2,3,6,7,8-HxCDF	0.1
	1,2,3,7,8,9-HxCDF	0.1
	2,3,4,6,7,8-HxCDF	0.1
	1,2,3,4,6,7,8-HpCDF	0.01
	1,2,3,4,7,8,9-HpCDF	0.01
	OCDF	0.0001
コプラナーPCB **10-20 kinds**	3,4,4',5-TCB	0.0001
	3,3',4,4'-TCB	0.0001
	3,3',4,4',5-PeCB	0.1
	3,3',4,4',5,5'-HxCB	0.01
	2,3,3',4,4'-PeCB	0.0001
	2,3,4,4',5-PeCB	0.0005
	2,3',4,4',5PeCB	0.0001
	2',3,4,4',5-PeCB	0.0001
	2,3,3',4,4',5-HxCB	0.0005
	2,3,3',4,4',5'-HxCB	0.0005
	2,3',4,4',5,5'-HxCB	0.00001
	2,3,3',4,4',5,5'-HpCB	0.0001

How are Dioxins formed and affect?

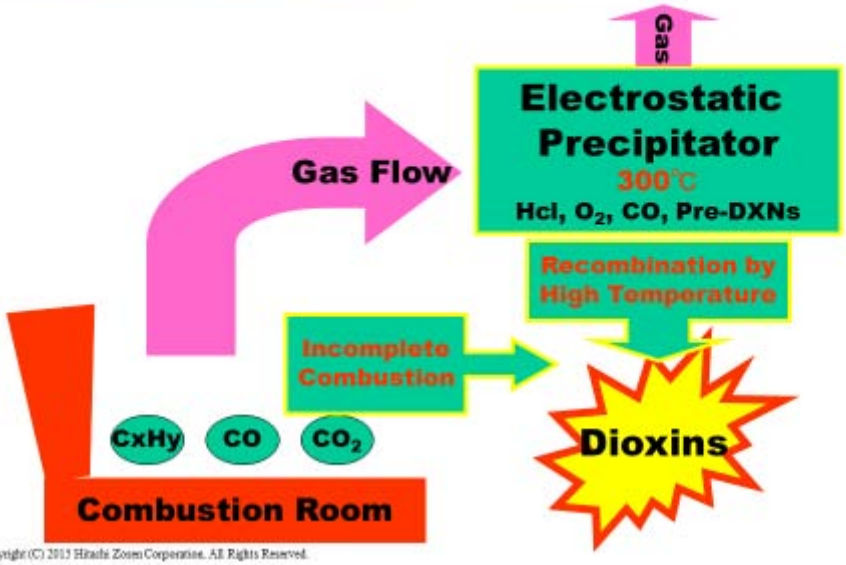
Formation

- Secondary products during manufacturing processes such as herbicide manufacture and paper manufacture
- combustion processes , such as waste incineration, forest fires and backyard trash burning

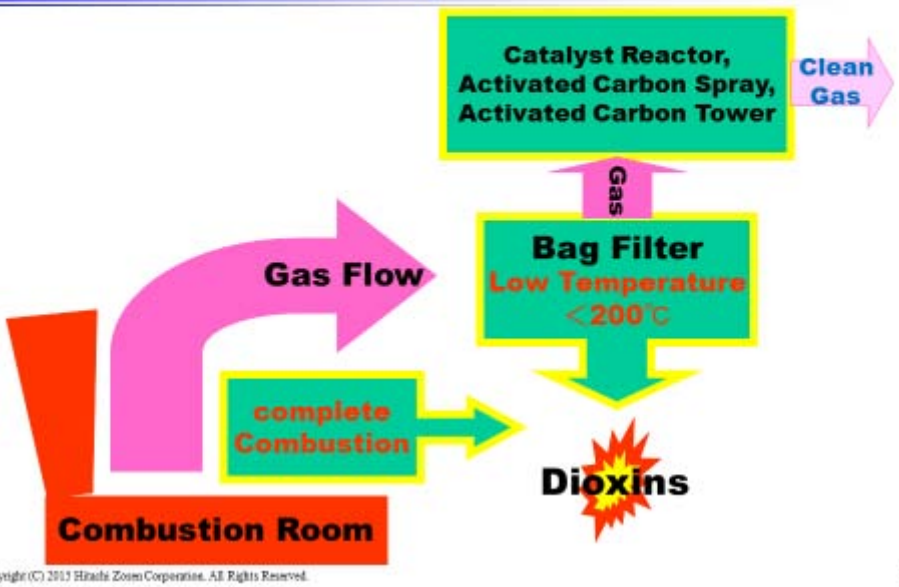
Impact

- Carcinogenic
- Fetal malformation
- Reproductive toxicity
- Decline in immune function

Dioxins emission from incineration plant



Dioxins control in incineration plant



Indicator / Monitor for complete combustion

1. Temperature

=> over 850℃ +

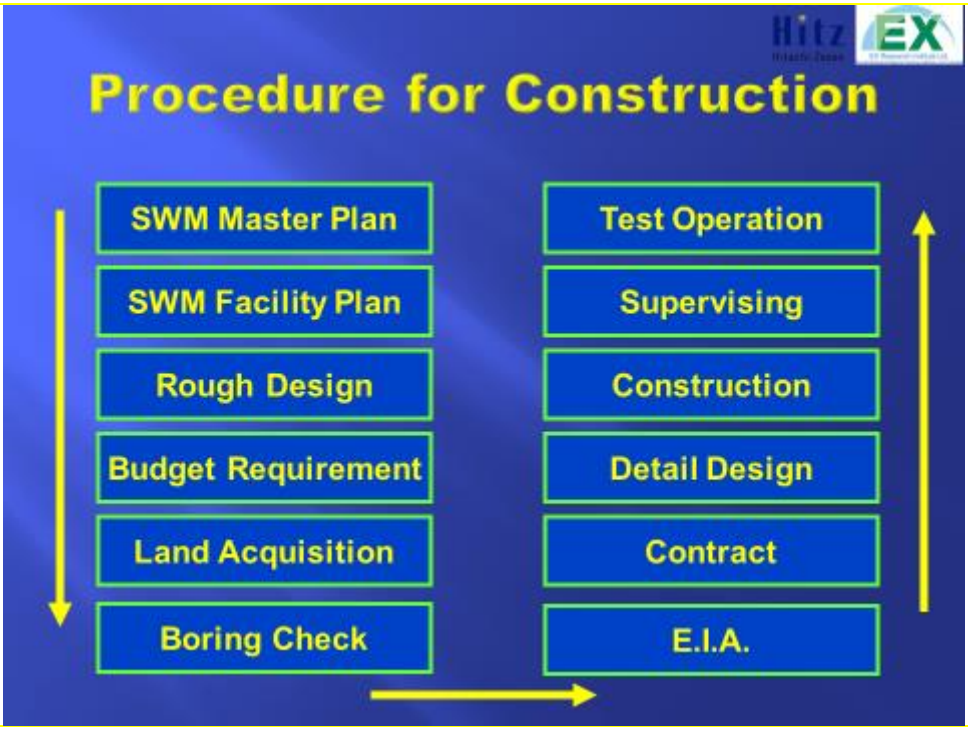
retention time is over 2 seconds

2. CO concentration

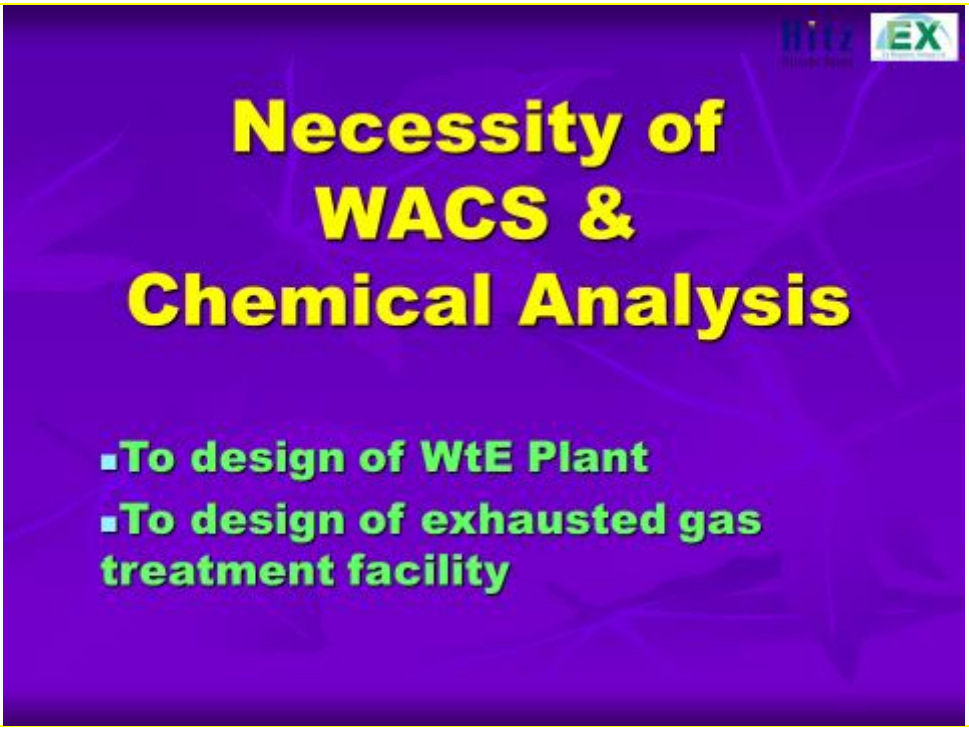
=> less than 30ppm (O_2 12%, 4hours average)

=> less than 100ppm (instance)

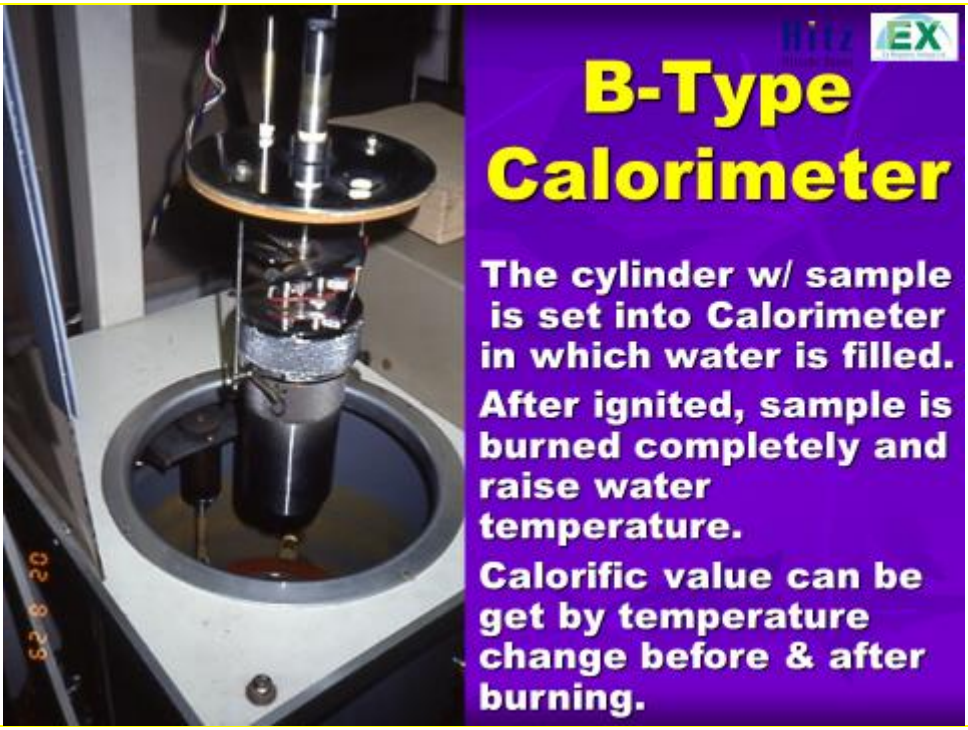
No.4：WTE 施設の建設と住民説明

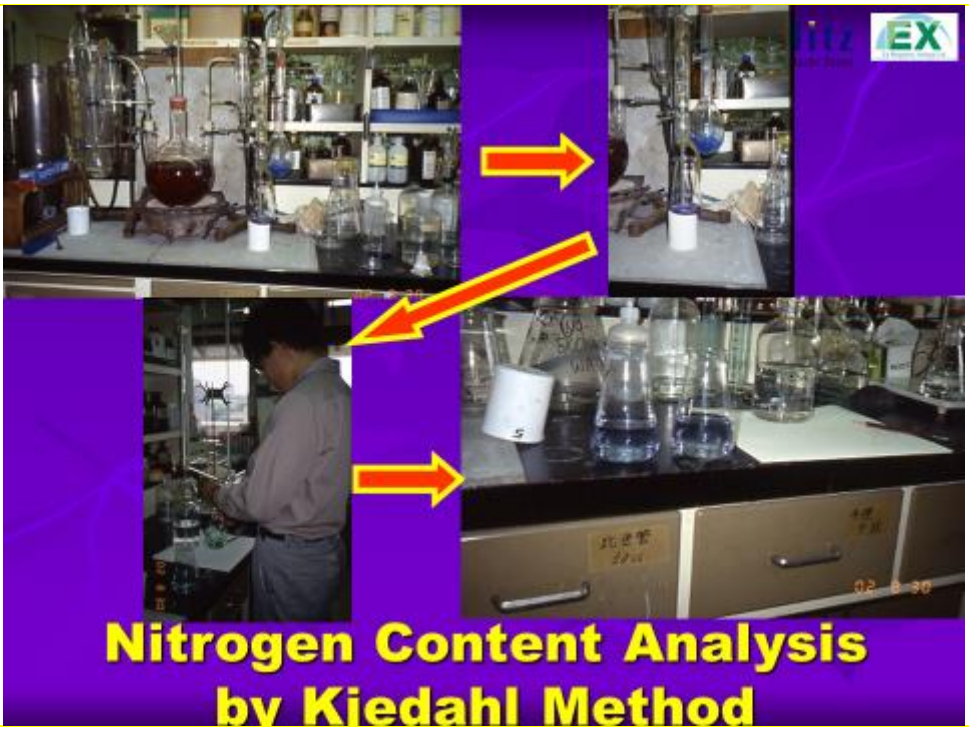



Master Plan
Long Term Plan (10 – 15 years)
Identify target area (wider is better)
Prospective Waste Generation Amount & Composition (Detail WACS for WtE)
Plan of Waste Generation Control
Recyclables Identification for Separate Collection
Fundamental Items for Appropriate Waste Treatment as well as Final Disposal
Capacity of Waste Treatment Facilities
Others

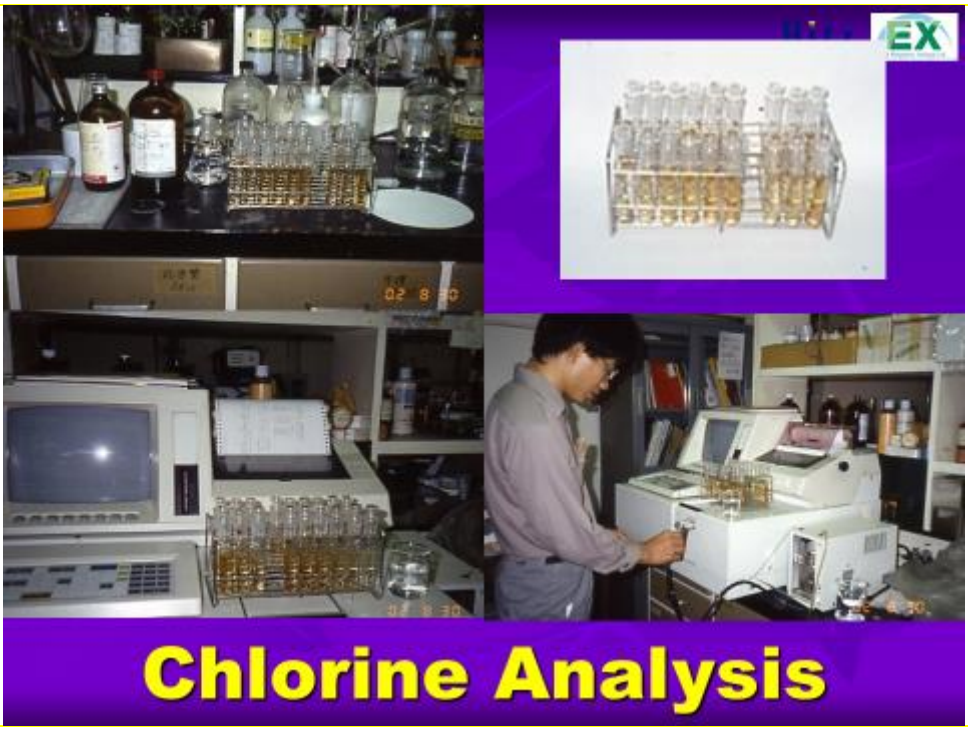

Necessity of WACS & Chemical Analysis
To design of WtE Plant
To design of exhausted gas treatment facility


Flow of Waste Analysis
(Waste Composition)
•Kitchen Waste
•Paper
•Textile
•Grass & Wood
•Plastic
•Others (less than 5mm)
3 Component
Moisture, Ash &
Combustible
Calorimeter
Calorific Value Ho
Chemical Element
Analysis
N, Cl, S, C, H
Necessary Air Volume
for combustion &
Pollution Control
Calorific Value Hu


B-Type
Calorimeter
The cylinder w/ sample is set into Calorimeter in which water is filled.
After ignited, sample is burned completely and raise water temperature.
Calorific value can be get by temperature change before & after burning.


Nitrogen Content Analysis
by Kjedahl Method


Sulfur Content Analysis


Chlorine Analysis


Carbon & Hydrogen
Content Analysis

Financial / Initiative Plan

- **Selection of Initiatives of the Project**
  - Local Government Initiatives VS P.F.I.
  - Responsibility of each sector by "Implementation Step"

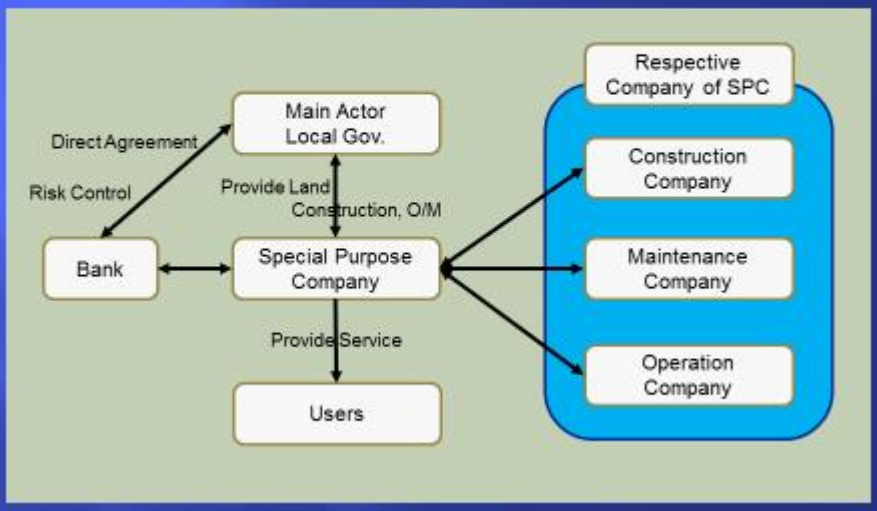
No.	Step	Responsible Sector
1	Finance	Public or Private
2	Design	
3	Build	
4	Operation	
5	Maintenance	
6	Transfer = Own	

- **Characteristics of PFI**
  - Evaluation by VFM, Appropriate allocation of responsibility/risk between Public & Private sector

Patterns of Initiatives

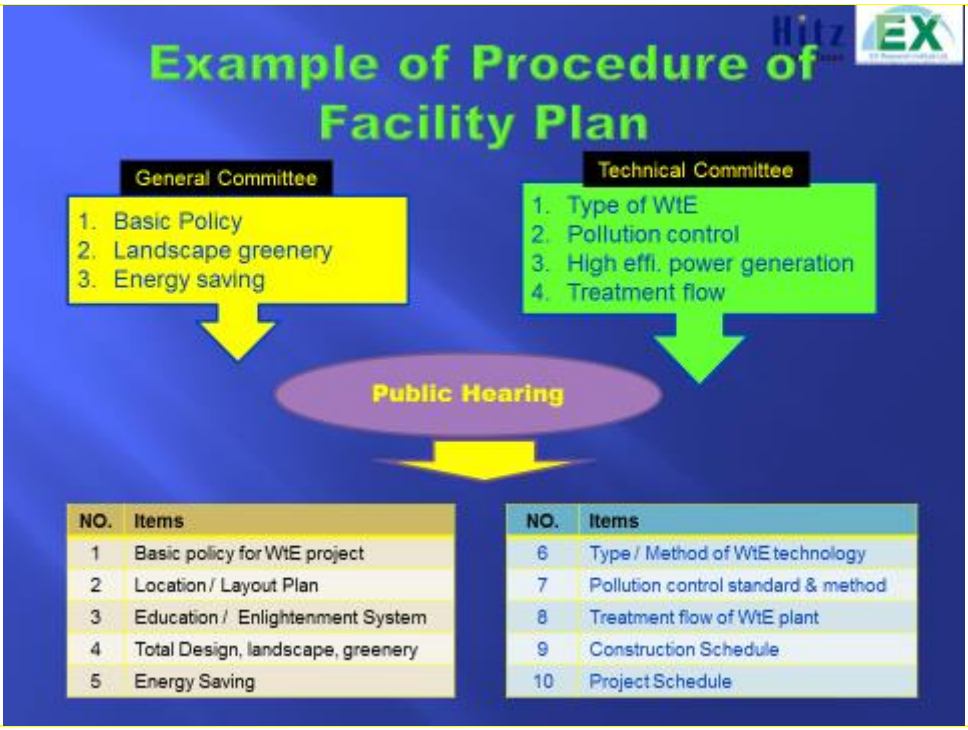
Initiative / Step		Finance	Design	Build	O & M		Transfer
					Operation	Maintenance	
DB (Total Public Management)		Public	Public	Public	Public	Public	Public
PPP	DB + M (Only maintenance is privatized)	Public	Public	Public	Public	Private	Public
PPP	DB + O (Long term O/M privatization)	Public	Public	Public	Private	Private	Public
PPP	DBO	Public	Private	Private	Private	Private	Public
PPP / PFI	BTO	Private	Private	Private	Private	Private	B: Private O: belong to Public
PPP / PFI	BOT	Private	Private	Private	Private	Private	After operation => Public
PPP / PFI	BOO	Private	Private	Private	Private	Private	After operation => Private
PPP	Semi-public joint venture company	Public Private	Public Private	Public Private	Public Private	Public Private	Public Private

Scheme of the Project by PFI



Facility Plan

- **Project Planning**
  - Type & Capacity of the Plant, Schedule, Combination with Waste Collection/Transportation as well as final disposal
- **Location & Layout**
- **Rough Design**
  - Pollution Control
  - Thermal Recycling
  - Capacity & Height of the plant / building
- **Financial Plan**
  - Financial Resource (Bonds, Subsidy, PFI, ODA)
- **Safety Measure**
- **Demolition of Old Facility if there is**


Example of Procedure of Facility Plan
General Committee
1. Basic Policy
2. Landscape greenery
3. Energy saving
Technical Committee
1. Type of WtE
2. Pollution control
3. High effi. power generation
4. Treatment flow
Public Hearing
NO. Items
1 Basic policy for WtE project
2 Location / Layout Plan
3 Education / Enlightenment System
4 Total Design, landscape, greenery
5 Energy Saving
NO. Items
6 Type / Method of WtE technology
7 Pollution control standard & method
8 Treatment flow of WtE plant
9 Construction Schedule
10 Project Schedule


Set up Committee
Purpose of the Committee is to propose below
Master Plan / Facility Plan / Financial Plan
Financing / Construction / Operation Method
Contract Method for Construction & O/M
Committee Member
Literates / Professionals (Technical / Financing / Law)
Decision makers of the city / organization
Representatives of Community / NGOs
Duration of the Committee
From planning to finishing the project
(depend on the purpose of the request to the committee)
Necessity of Study Team / consultant

Procedure how to evaluate WtE technology

1. Create decision making system
   - Clarify decision making items, procedure, member(s)/group(s) & responsibilities
   - Formulate "special committee" for decision making
   - Set up study team including outsourcing
2. Basic Policy on Solid Waste Management
   - Clarify basic policy of the city for SWM / Environment issues
3. Decide evaluation method and items
   - Decide target WtE technologies to be evaluated
   - Decide evaluation method (hurdle / score evaluation)
   - Clarify main items for evaluation depends on basic policy
4. Decide detailed items for evaluation
   - Line-up clear evaluation items easy to compare each WtE technology
5. Evaluation study
   - Information acquisition from manufactures / users, study trip, etc.

Evaluation method

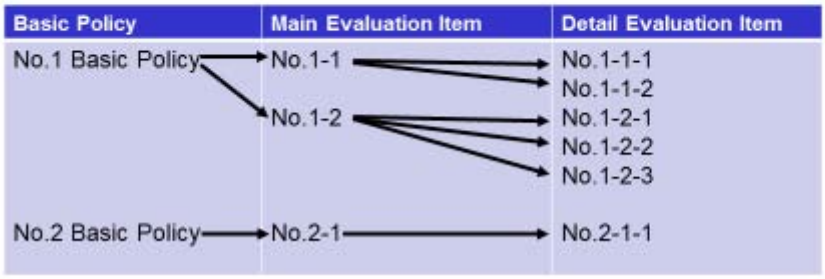
- Evaluation Method

Hurdle Method	Score Method
If you may have "Critical limitations", list them up and the WtE tech which cannot clear one of the limitation, then this WtE tech will be avoided.	Put appropriate score to each evaluation item, and each WtE tech is evaluated by total score

- Examples of limited condition of "Hurdle Method"
  - The facility must be accommodated in the designated proposal site
  - Unnecessity of change of existing waste collection service
  - Existing of manufacturer who can construct the WtE plant
  - Enough construction & operation experiences
  - Respect national & local government policies

Examples of basic polity and image of score system

- Examples of basic policy
  - Appropriate & stable treatment and disposal
  - Secure of confidence and safety
  - Consideration to the environment with high energy efficiency
  - Economy consideration
- Image of preparation of evaluation Items of "score method"



Example of evaluation items & score (TI City)

Basic Policy	Main Evaluation Items	Score	
Safe and Peaceful Facility Loved by Citizen and Contribute to the Citizen	Stable Operation	37.5	50
	Safe Operation	12.5	
Environmental Consideration Facility	Environment Consciousness	33.3	50
	Recycling / Conservation	16.7	
High Cost Performance Facility	Economy	30.0	50
	Management / Maintenance	20.0	

Example of evaluation items-1 (TI City)

Main Eva. Items	Detail Evaluation Items	Study Items
Stable Operation	Operational experiences	Annual operation days
		Continuous operation days
	Flexibility to changing waste	Flexibility of calorific value fluctuation
		Flexibility of waste size
	Risk of Accidents	Experiences of accidents, trouble & its countermeasure
	Reliability	No. of construction achievements
Safety	Operational safety	Existing of dangerous work
	Earthquake	Risk by earthquake

Example of evaluation items-2 (TI City)

Main Eva. Items	Detail Evaluation Items	Study Items
Environmental consciousness	Emission control	Dioxins' emission amount
		Waste water emission amount
	GHGs emission	Total CO_2 emission including Electricity consumption
	Foul odor	Air ratio, Ventilation capacity
	Load to final disposal	How much residue are generated in 20 years in volume
	Landscape	Height of plant / building
Recycling / Conservation	Thermal recycling	Power generation efficiency (annual Ave.)
		Power generation amount, Amount of selling power (annual Ave.)
	Residuals recycling	Existence of recycling root of residuals

Example of evaluation items-3 (TI City)

Main Eva. Items	Detail Evaluation Items	Study Items
Economy	LCC	Life Cycle Cost (20 years)
	Economy when waste is changed	Fluctuation of calorific value of standard waste
	Price fluctuation	Operation Cost when fossil fuel price up
Operation & maintenance	Operation condition	No. of operator
		Easy operation
	Maintenance condition	Period of maintenance of main equipment
	Flexibility of traffic route	Floor area of plant

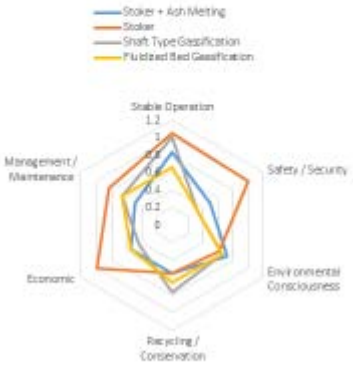
Example of result of evaluation (TI City)

■ Example of "T-I City, Japan"

	Stoker + Ash Melting	Stoker	Shaft Type Gassification	Fluidized Bed Gassification
Stable Operation	0.83	1.05	1	0.66
Safety / Security	0.5	1	0.33	0.33
Environmental Consciousness	0.72	0.61	0.66	0.66
Recycling / Conservation	0.55	0.55	0.77	0.66
Economic	0.55	1	0.44	0.55
Management / Maintenance	0.5	0.83	0.66	0.66
Total	3.65	5.04	3.86	3.52

Mass Treatment

Result of Evaluation by Radar Chart



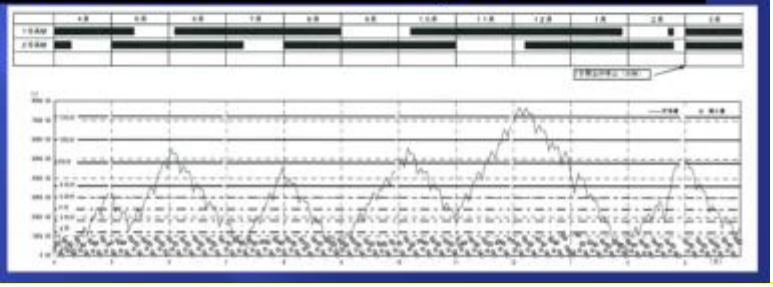
Land Acquisition

- Study for Appropriate Candidates
  - Capacity, Area and Shape
  - Risk check (Active fault line, etc.)
  - Necessity of change of City Planning
  - Access Road Connection
  - Utilities (Water, Electricity)
  - Landowner and Land Price
  - Land History Record (soil contamination)
- Decision of the best site
  - Comparison study among candidate sites
- Purchase
  - Preparation of Budget
  - Negotiation with Landowner

After Land Acquisition
Boring Check
Soil Contamination recover
Design Infrastructure

Study on Number of Unit

200t/d X 3 units VS 300t/d X 2 units considering Construction Cost



Layout & Traffic Route Plan

Environmental Impact Assessment in Japan

- EIA Methods Study
  - Kinds of measurements and assessments
  - Public hearing to receive opinions from stakeholders
- Current condition measurement
  - Wind direction/velocity
  - Ambient Air, Water, Species, etc.,
- Impact Assessment
  - Rough design of the plan with clear location/layout
  - Calculation of prediction of gas emission by Plume / Puff Model
- City Planning
- Assessment
  - During construction & after operation

Examples of EIA Study

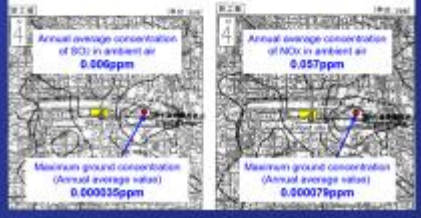
EIA items	Existence of the facility	Operation of the facility	Driving of waste collection vehicles	Construction work
Air quality		✓	✓	✓
Water & sediment quality				
Noise		✓	✓	✓
Vibration		✓	✓	✓
Low-frequency noise		✓		
Offensive odors				
Ground subsidence				
Soil pollution				
Sunshine obstruction	✓			
TV wave interference	✓			
Waste		✓		
Scenery	✓			
Global environment		✓		
Atmospheric, terrestrial and aquatic phenomenon				
Animal life and plant life				
Cultural assets	✓			

Check items & occasion

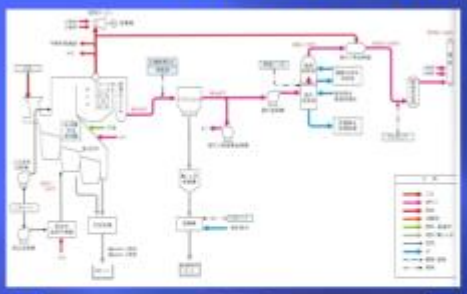
Air quality check points

Prediction of sunshine obstruction on midwinter day

SO_2 NO_x



Treatment Flow, Landscape & Visitors Route Design



Public Explanation

- Kinds of Explanation
  - Master Plan / Facility Plan
  - Environmental Impact Assessment
  - Facility & Construction Plan
  - Land Acquisition
- Explanation to;
  - Relevant organizations
  - City Councils
  - Community / Citizen

Specification for Contract

- Preparation of Spec.
  - Prepare general & basic specification
  - Ask several manufacturers to submit their own "idea"
- Design Study
  - Comparison study among several ideas
  - Fix fundamental specification
  - Consideration of contract method
- Specification
  - Capacity, No. of units, Input & Output, Layout, Flow
  - Outlines of equipment
  - Performances / capabilities
  - Laws / Regulations / Guidelines to obey
  - Guarantees


Contract
Methods of Contract
Nomination
Tender (Open / Nomination / Overall Evaluation)
Proposal
Contract Coverage
Overall Contract
Separate Contract
Plants (Mechanical Equipments)
Buildings
Equipments (Lighting, Waterworks, Bathroom)


Construction
Specific Design / Detail Design
Consultation w/ Manufacturer
Decision of detail design / equipment / maker
Detail Schedule of Construction
Permission for Construction
Construction
Consensus from neighbors
1st Stage: Foundation
2nd Stage: Building
3rd Stage: Plant Equipment
4th Stage: Test Operation / recording

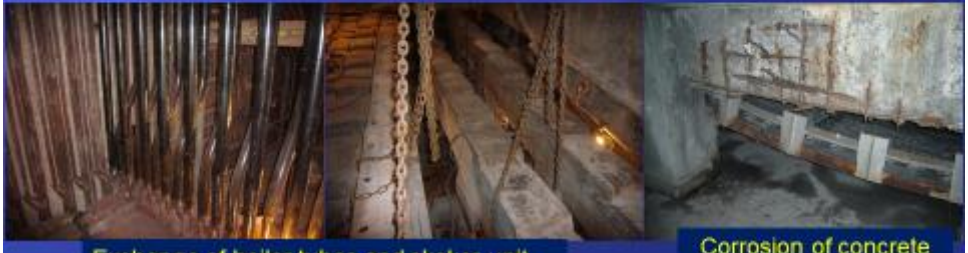
Schedule of Construction

Year	1	2	3	4	5	6	7	8	9	10	11	12
Technical Committee	←	-	-	-	-	-	-	-	-	-	→	
Master Plan	↔											
Facility Plan		↔										
Public Explanation	←	-	-	-	-	-	-	-	-	-	-	→
Land Acquisition	↔	↔	↔									
E.I.A.			↔	↔	↔		←	-	-	-	-	→
Specification					↔	↔						
Contract						↔	↔					
Construction							↔	↔	↔	↔	↔	
Operation											↔	↔

Overhaul of WtE Plant

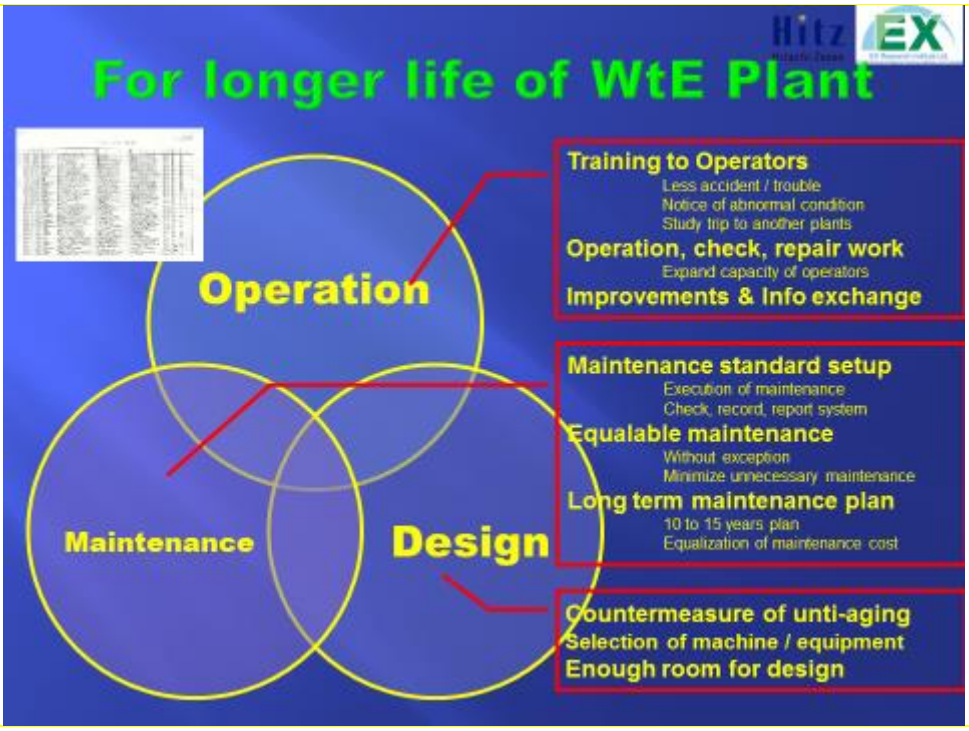
Exchange of bricks and hopper plates

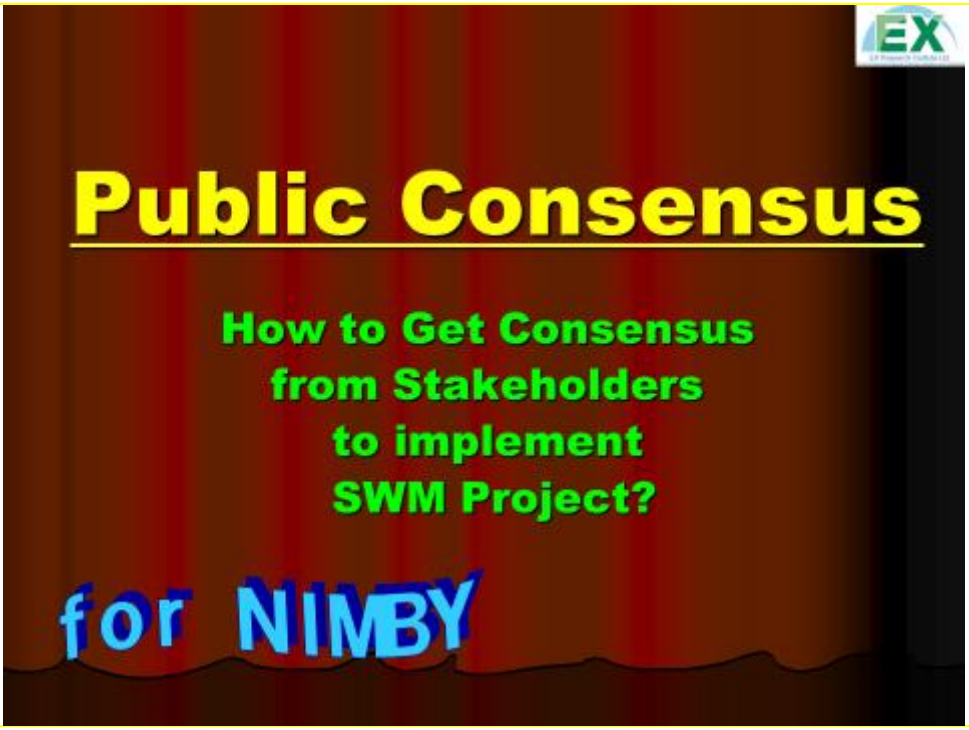
Clean up boiler drum



Exchange of boiler tubes and skoker unit

Corrosion of concrete

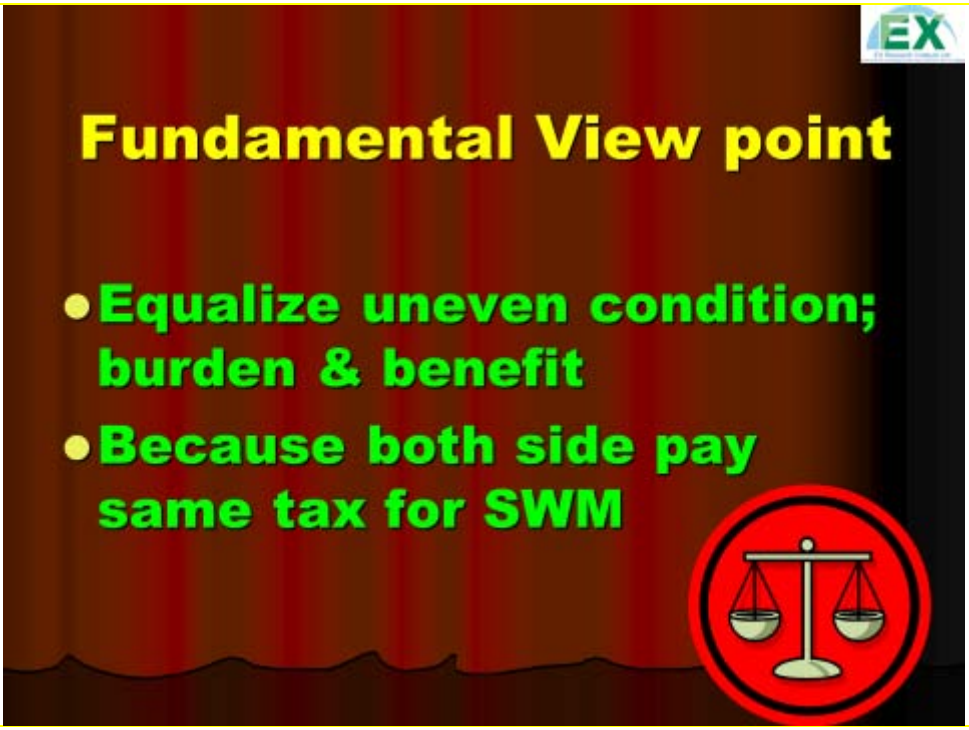

Hitz
EX
For longer life of WtE Plant
Operation
Maintenance
Design
Training to Operators
Less accident / trouble
Notice of abnormal condition
Study trip to another plants
Operation, check, repair work
Expand capacity of operators
Improvements & Info exchange
Maintenance standard setup
Execution of maintenance
Check, record, report system
Equalable maintenance
Without exception
Minimize unnecessary maintenance
Long term maintenance plan
10 to 15 years plan
Equalization of maintenance cost
Countermeasure of unti-aging
Selection of machine / equipment
Enough room for design


EX
Public Consensus
How to Get Consensus
from Stakeholders
to implement
SWM Project?
for NIMBY


Public Consensus
Usually, we are encountered by serious opposition against our SWM project, especially construction of waste treatment/disposal facilities.
NO!
It is very important how to explain and get consensus from stakeholders especially neighbor citizen.


Reasons for Opposition against SWM Projects
1. Poor Plan/Project
• Unreasonable Plan/Project
2. Pollution
• Gas, Leachate, Foul Odor, etc
3. Traffic Concentration
• Heavy traffic, Bad Manner Driving
4. Bad Image
• Disliked facility
5. Not In My Back Yard
6. Others
• Unfair Dealings


Benefit & Burden of Waste Disposal
Citizen in City Center Enjoys BENEFIT
Waste Removal
Waste
Waste Dumping
Citizen near from Disposal Site Shoulders BURDEN

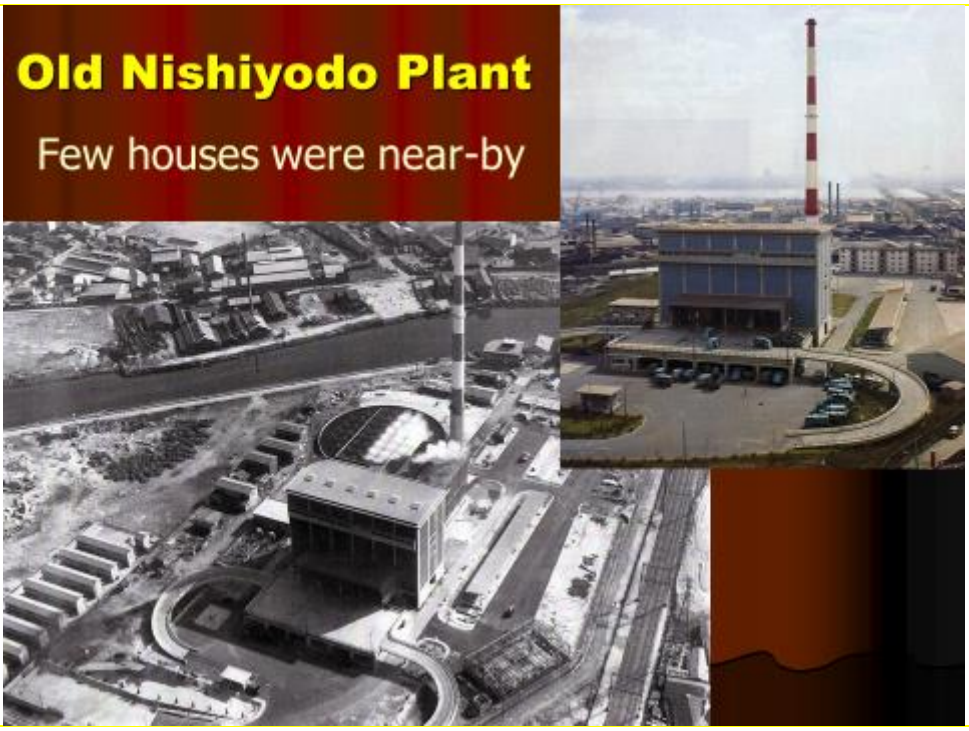

Fundamental View point
Equalize uneven condition; burden & benefit
Because both side pay same tax for SWM


Efforts to Minimize the Oppositions
1. Planning
• Best Plan Preparation on SWM
2. Pollution control
• Design top level pollution control
3. Traffic Concentration
• Minimize / Control Traffic
4. Bad Image
• Change Image by various matters
5. Not In My Back Yard
• Proper Explanations
• Benefits for Damaged Area


How to Ease NIMBY? (Planning Stage-1)
• Study Harder to make the best plan
• Respect relevant Laws/Regulations
• Refer Mitigation during Planning Stage
• Can we Avoid our Project or not?
• Can we Minimize our Project or nor?
• Can we Rectify or not?
• Can we Reduce/Eliminate or not?
• Compensation
• Consider Alternative plans
• Consider Total SWM Improvement


How to Ease NIMBY?
(Planning Stage-2)
• Consider Wider Project/Development
• Under City Planning
• Infrastructure Level-Up
• Benefits for Vicinity of the Project Site
• Examples
• Access Road, Bridge
• Water Supply/Electric Service
• Expected Facilities for Vicinity
• Future Development
Benefits for Damaged Area


Osaka's Case
Nishiyodo Incineration Plant
• Project Location is in City-Center
➢ Construction of Swimming Pool by using generated steam from Incineration Plant
• Maishima Osaka Plant
• Concentration of waste trucks
➢ Complex: sports facility & renewal of (1) Firefighter Station, (2) Emergency Hospital, (3) Meeting Room &
➢ (4) Water Works Service Sta.


Old Nishiyodo Plant
Few houses were near-by


Newly constructed Nishiyodo-Plant
Old Plant
WtE plant in City-Center

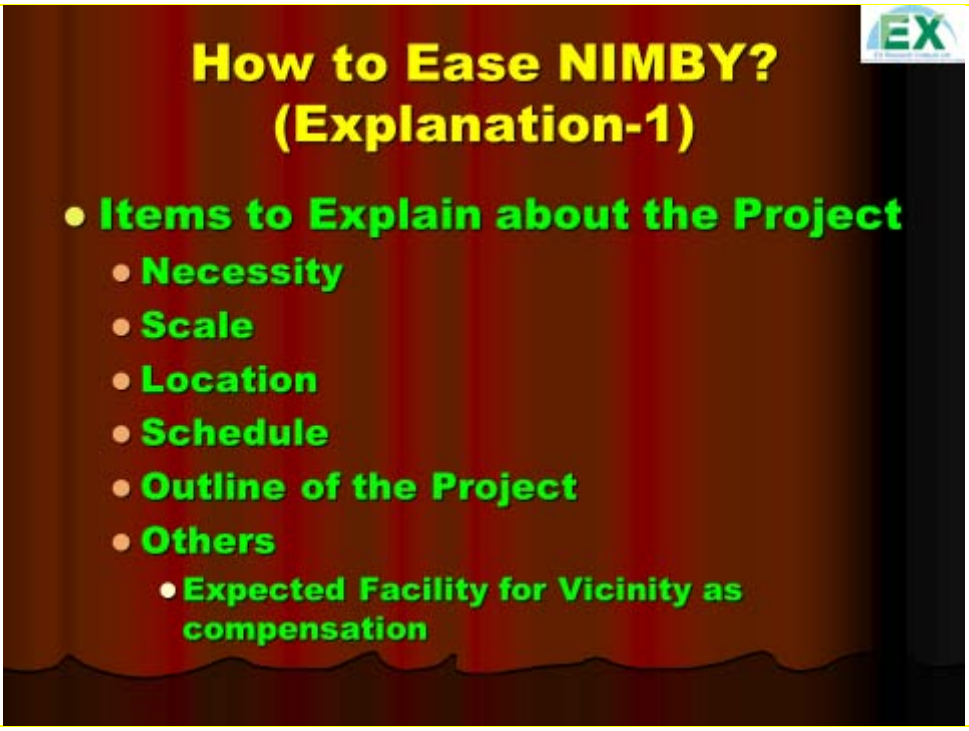
Prepared Sports Facility; swimming pool by using steam from WtE plan for vicinity

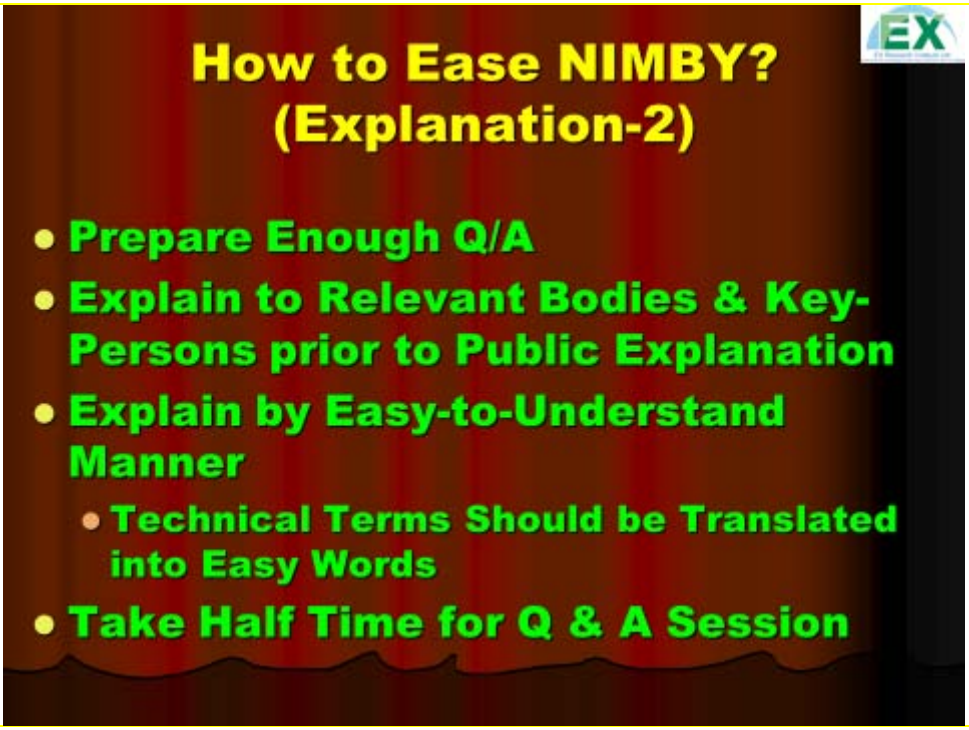
Maishima Osaka Plant under construction

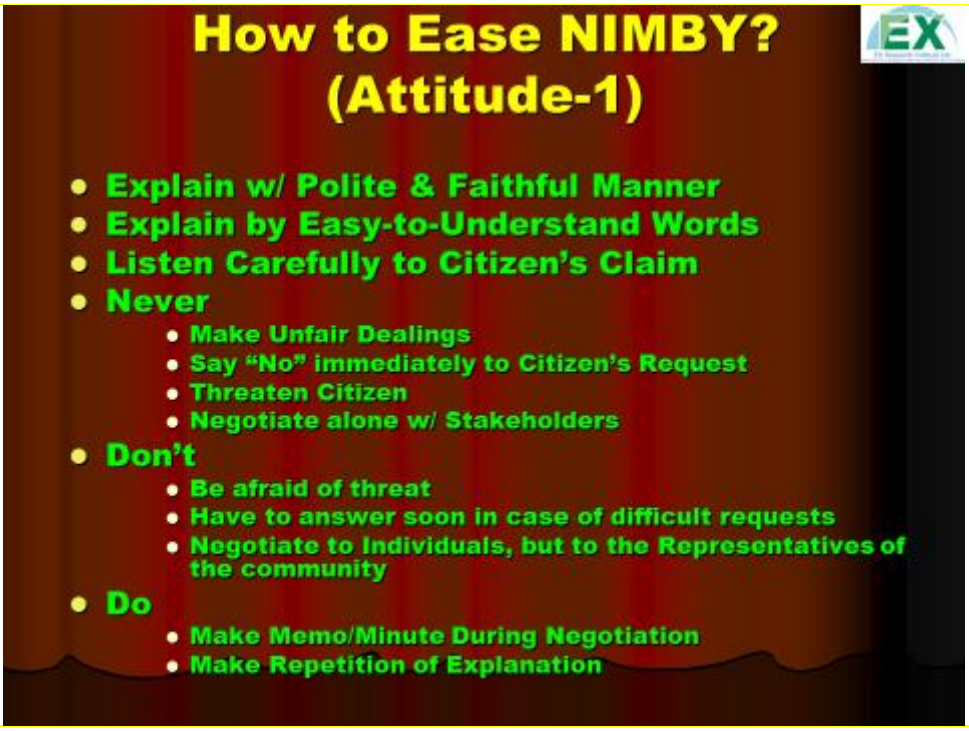
Compensation Complex

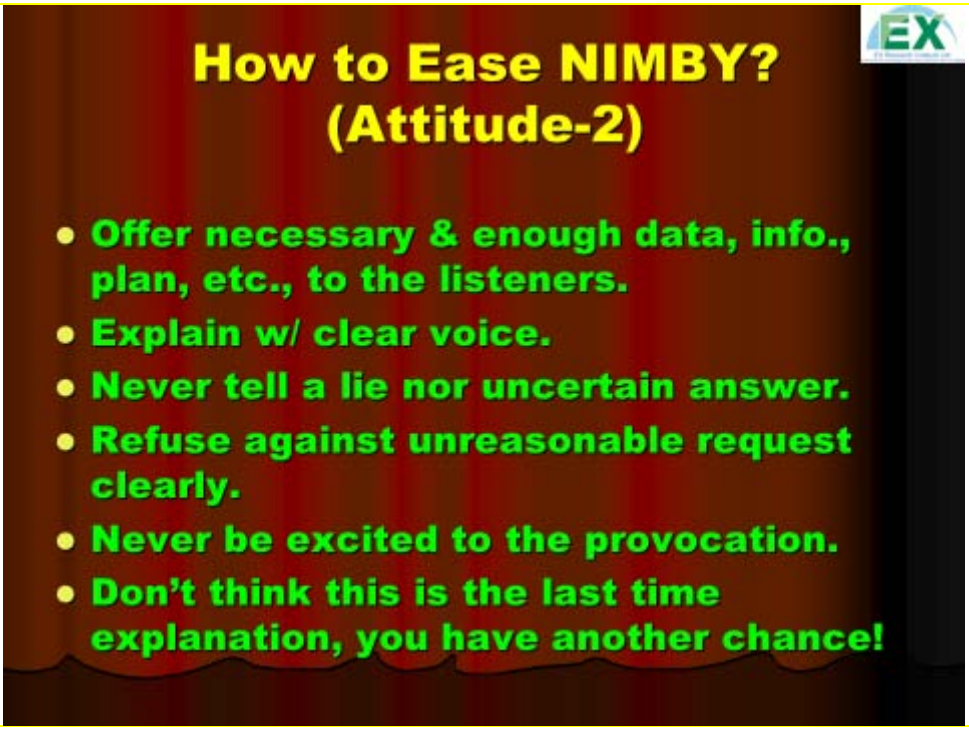
How to Ease NIMBY? (Strategies / Mind)

- Mind that Opposition is very Natural
- 100% Agreement/Consensus cannot be obtained
- Never Change Plan by opposition
- Preparatory Work for Land Acquisition should be done carefully
- Avoid to Disclose Several Candidate Lands in case of private lands
- Find Key-Persons in the community
- Explain to Key-Persons prior to Public Explanation, and the result of Public Explanation should be reported to them also.
- Public Explanation should be done continuously until be supported/given up by a large majority
- The Project can be started after getting Consensus by Majority
- The project is not started by inhabitants agreement, but it is started by our own Responsibility.

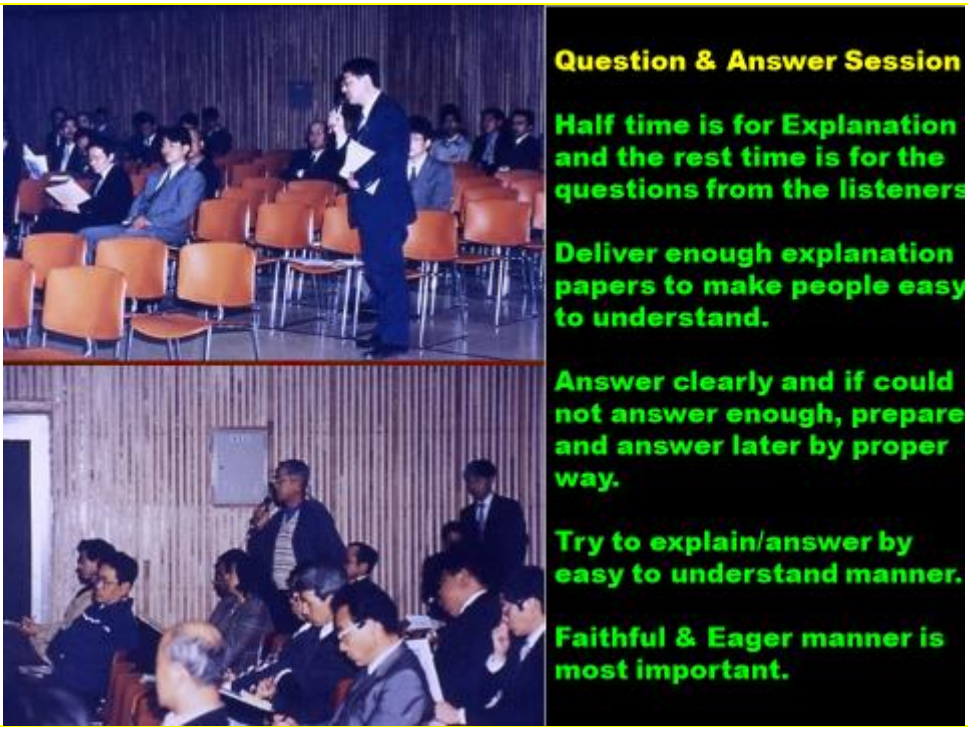

How to Ease NIMBY?
(Explanation-1)
• Items to Explain about the Project
• Necessity
• Scale
• Location
• Schedule
• Outline of the Project
• Others
• Expected Facility for Vicinity as compensation


How to Ease NIMBY?
(Explanation-2)
• Prepare Enough Q/A
• Explain to Relevant Bodies & Key-Persons prior to Public Explanation
• Explain by Easy-to-Understand Manner
• Technical Terms Should be Translated into Easy Words
• Take Half Time for Q & A Session


How to Ease NIMBY?
(Attitude-1)
EX
• Explain w/ Polite & Faithful Manner
• Explain by Easy-to-Understand Words
• Listen Carefully to Citizen's Claim
• Never
  • Make Unfair Dealings
  • Say "No" immediately to Citizen's Request
  • Threaten Citizen
  • Negotiate alone w/ Stakeholders
• Don't
  • Be afraid of threat
  • Have to answer soon in case of difficult requests
  • Negotiate to Individuals, but to the Representatives of the community
• Do
  • Make Memo/Minute During Negotiation
  • Make Repetition of Explanation


How to Ease NIMBY?
(Attitude-2)
EX
• Offer necessary & enough data, info., plan, etc., to the listeners.
• Explain w/ clear voice.
• Never tell a lie nor uncertain answer.
• Refuse against unreasonable request clearly.
• Never be excited to the provocation.
• Don't think this is the last time explanation, you have another chance!


Public Explanation by Author about EIA Preparatory Work Of Incineration Project
Sign-Language Caster (lady) Explains for handicapped Listeners.
•Prepare a big room to accommodate enough number of listeners.
•Select best day & time for vicinity people to attend.
•Use OHP to make it easy to let listeners understand.


Question & Answer Session
Half time is for Explanation and the rest time is for the questions from the listeners
Deliver enough explanation papers to make people easy to understand.
Answer clearly and if could not answer enough, prepare and answer later by proper way.
Try to explain/answer by easy to understand manner.
Faithful & Eager manner is most important.


For your challenge
Best Planning of the Project
Ideas for Compensation
Faithful Manner for Explanation
Thank you for your kind attention and
Good Luck!


Thank you
for your kind attention