1. 現地ワークショップ資料

1.5 ㈱グーン 発表資料（英）

Plastic and Residual Waste Recycling Facility in Tayud, Consolacion, Cebu, Philippines

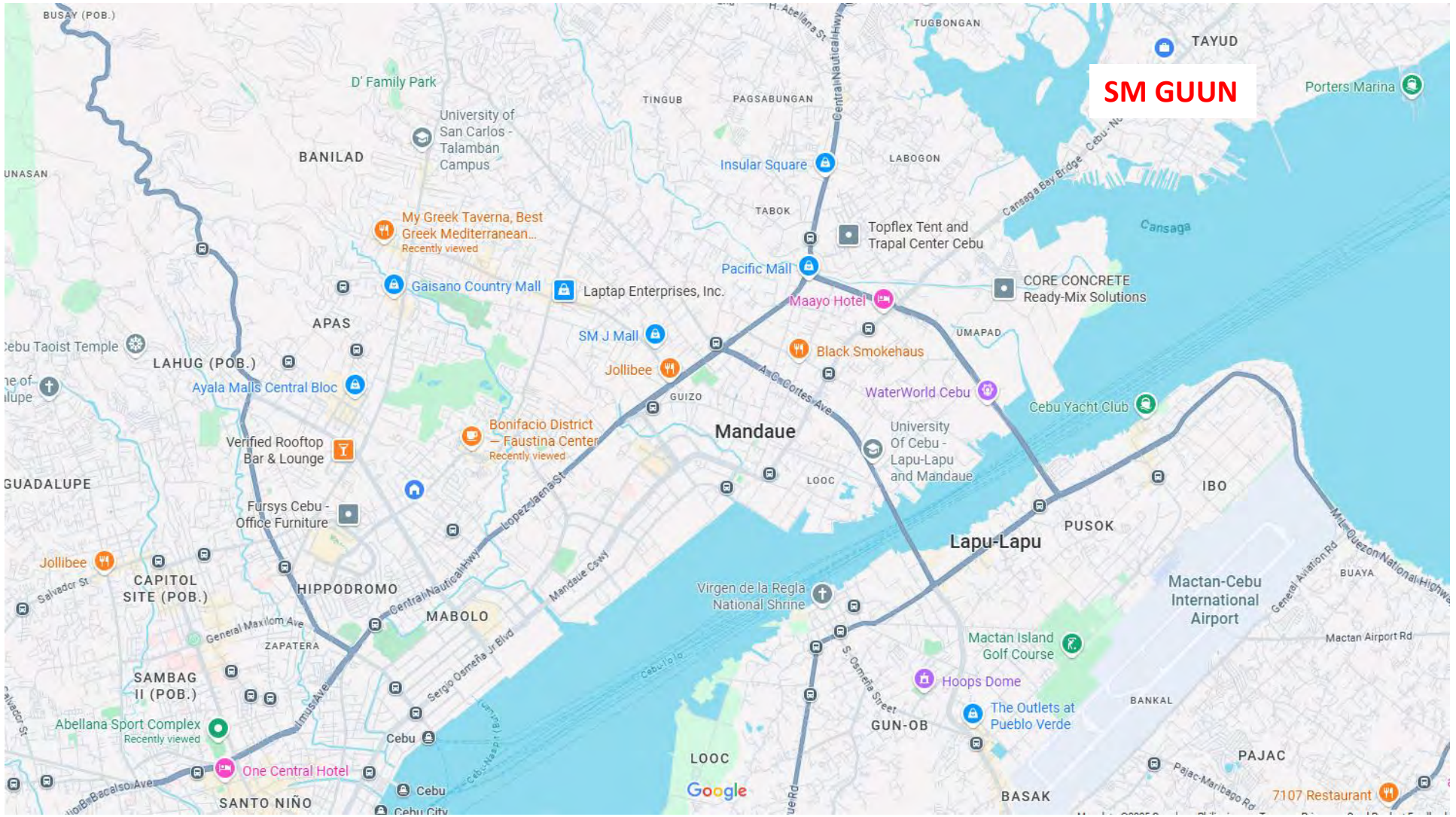
Company overview

Company overview of GUUN

- Foundation: Mar. 14, 2001
- HQ: Yokohama, Japan
- Capital: JPY 55,000,000
  (USD 366,667 at JPY 150/US$)
- No. of employees：
  54 (as of April 1st , 2025)
- Business line:
  1. Production of “Fluff Fuel” from waste plastic
  2. Production of recycled pellets from waste plastic
  3. Production of wood chips for biomass fuel & Ind. raw material from wood waste
  4. Waste management consultation
- ISO Registration　ISO14001 (JSAE1247)

Location of the recycling facility

Sitio, Sun-ok, Tayud, Consolacion, Cebu, Philippines



Our history in Cebu

Milestone of our activities

2012 | 2013 | 2014～2015 | 2016 | 2017

Business Matching, Y-PORT, Yokohama City

Research on Inayawan landfill and waste characteristics

Groundwork

Pilot Project:
Set up a pilot plant in Inayawan landfill to produce Fluff Fuel

Groundwork

Adopted as “Low carbon innovation technology for developing countries” by MOEJ

Commercial plant in Consolacion, Cebu, up and running since July, 2017

Supported by

City of Yokohama, MOFA(JICA)

JICA, City of Yokohama

MOEJ(GEC), City of Yokohama

Joint venture company

SM Prime has entered a joint venture with GUUN Co. Ltd (GUUN),
with SM Prime holding 70% of the equity of the Philippine joint venture company
In July, 2024

Recycling in GUUN

Facility

Lot area: approx. 6,300m^2
Building: approx. 2,400m^2

Processing capacity:
50-75 tons/day

Facility

Segregation

Process

Segregation

Shredding

Pressing & Packing

Fluff Fuel

Final output: Fluff Fuel (RDF)

Factors	Fluff Fuel vs. Coal
CO_2 Emission	17% reduction
Calorific value	Same level, > 5,000 kcal/kg
Moisture	< 20%
Price	Cheaper

Working with LGUs

What we are now accepting residual waste from LGU

BIODEGRADABLE

(For Composting)

Martes, Huwebes ug Sabado


Agricultural Waste


Animal Carcasses


Yard Waste


Fruit & Vegetable Waste


Fish Waste


Food& Kitchen

RECYCLABLES

(For Recycling)

Care of Barangay


Plastic Cups & Straw


Plastic Twine (Straw)


Old Tires


Old Newspaper


Aluminum Cans


Pet Bottles


Broken Plastics


Broken Glass

RESIDUALS

(For Residual Containment)

Lunes, Miyerkules ug Biyernes

For Diversion


Plastic Sando Bags (Dried)


Worn out Shoes


Used Styrofoam


Biscuit & Candy Wrappers


Textile Trimmings


Shampoo Sachets

HAZARDOUS/ SPECIAL WASTE

Every 30th of the Month


Wet Cell Batteries

Containers from Engine Oils, Grease Cement Roof, Contact Cement, Paint/Thinner & Disinfectant


Worn out Appliance


Busted Bulbs


Used Glass Bottles

INFECTIOUS/ MEDICAL WASTE

3rd party collection


Health Care Wastes


Expired Medicines


Used Face Masks & Medical Gloves


Bandages

Penalties base on City Ordinance No. 26-17, Section 159. Penalties for violations of Ecological Solid Waste Management

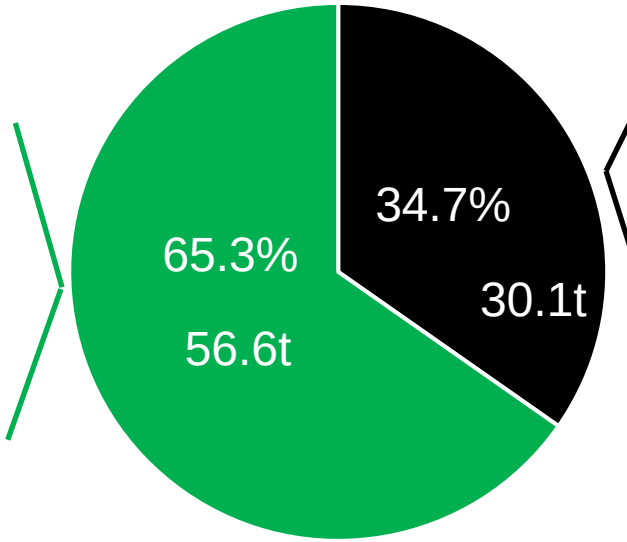
What we are now accepting residual waste from LGU

"Residual for Disposal"
Segregating
at
households, companies

"Residual for Fuel"
Shifting from landfilling to "Processing" for RDF ("Fluff Fuel") alternative to coal

Mandaue City's quality of plastic waste as of Sep. 2018

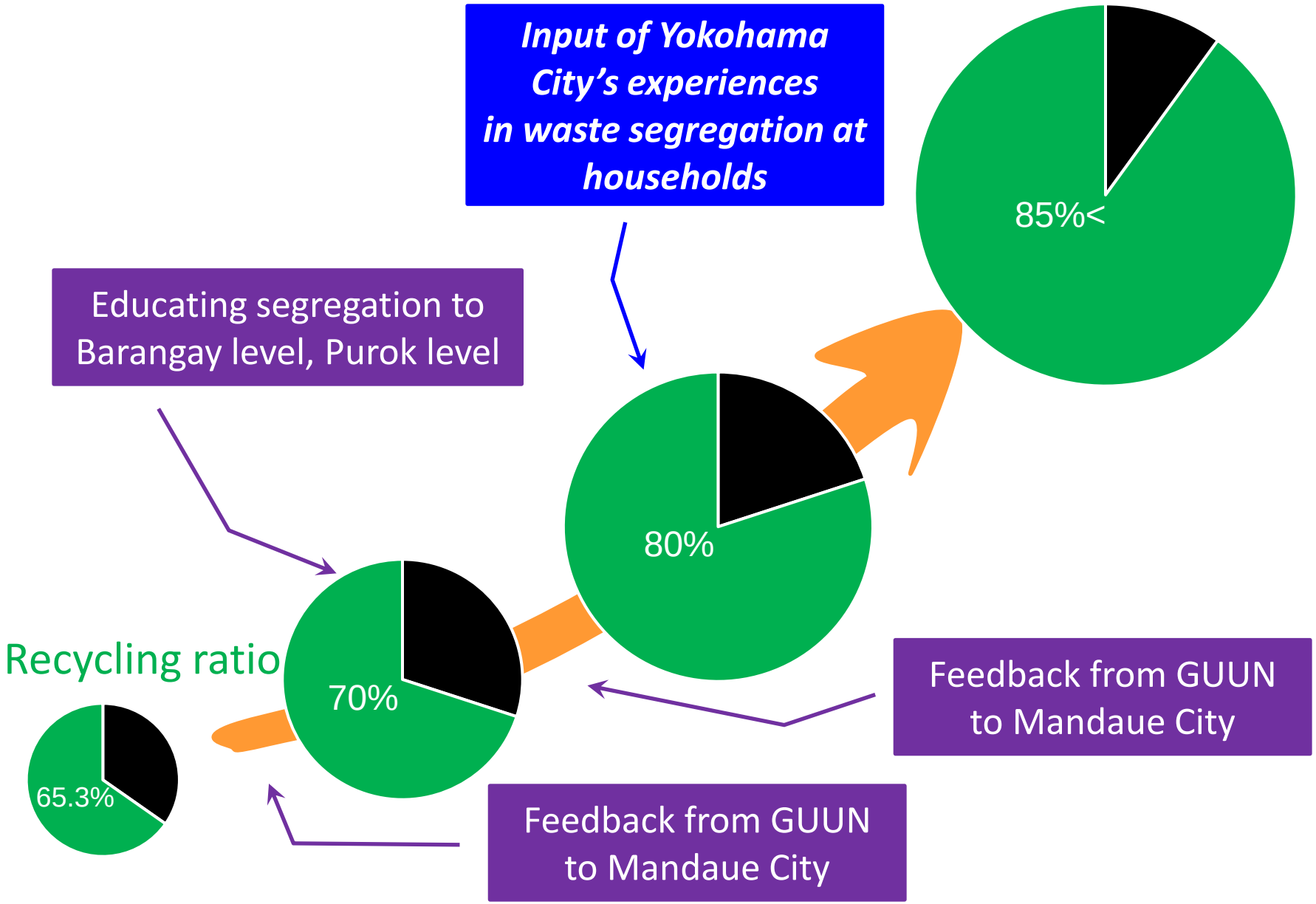
Typical household plastic waste



Food waste

Soil

What we did to enhance recycling



IEC (Information, Education Campaign) in Danao City

May 22nd ,2023 then 1st delivery was done in July

IEC in Danao City

July 26th, 2024 at Barangay hall and MRF

IEC for EcoWarriors
in Barangay Luz, Cebu City

May 14-15, 2025 at Diamond Suites & Residences

IEC in Barangay Luz, Cebu City

May 18, 2025 Garbage Sorting Seminar by JCI Japan and JCI Cebu
at Kalinao Gym in Barangay Luz, Cebu City

Eco Station at Bon Odori 2025

May 24-25, 2025 at PURE GOLD OPEN LOT, North Recramation Area, Mandaue City

Case Studies

Case study : Mandaue City

Carbon Dioxide Emission Reduction/

Landfilling Reduction

January 2024- December 2024

4,305,100 kg

Recycled Residual Wastes/

Landfilling Reduction

2,677,772.2 kg

CO2 Reduction

What we are now accepting residual waste from LGU

"Residual for Disposal"
Segregating
at
households, companies

"Residual for Fuel"
Shifting from landfilling to "Processing" for RDF ("Fluff Fuel") alternative to coal

Case study : Private sectors

LANDFILL AVOIDANCE RECOGNITION

this confirms that:

TIMEX PHILIPPINES INC.

Had the following waste avoided from a landfill for the period of July 2025 by processing at **SM GUUN Environmental Company, Inc. (SGECI), Sitio Sun-ok, Tayud, Consolacion, Cebu**

No.	Date	Clients Truck No.	Net Wt. (kg)
1	07/07/2025	CAO 6662	1,310
2	07/10/2025	CAO 6662	1,580
3	07/11/2025	CAO 6662	1,810
4	07/17/2025	CAO 6662	2,530
5	07/18/2025	CAO 6662	1,110
6	07/22/2025	CBR 4977	1,420
7	07/25/2025	CBR 4977	1,330
8	07/31/2025	CAO 6662	1,310
		Total Quantity	12,400
		Total Contribution of CO2 Emission Reduction	7,712.8

Method of avoidance: Conversion into RDF Fluff Fuel for cement co-processing.

Thank you for your contribution to a waste-free future.

Advantage and positive impact to SDGs

Sustainable Development Goals

Shift to sustainable waste management

Preventing flood

Mitigation of global warming

CO_2 reduction： 11,299 tonsCO_2/a ≒ A-type heavy oil consumed *209 units* of 20Kl Truck lorry

Creating job opportunities, enhancing education

Thank you for your kind attention!

Any question or further information, please feel free to contact:

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General Manager
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Tel: (032) 424-0224

Ms. PRETTIE ACOP-JALANG
Assistant General Manager
Email: prettie.jalang@smguun.com
Mobile: 0910-872-6835
Tel: (032) 424-0224

1. 現地ワークショップ資料

1.6 アイフォーコム㈱ 発表資料（英）

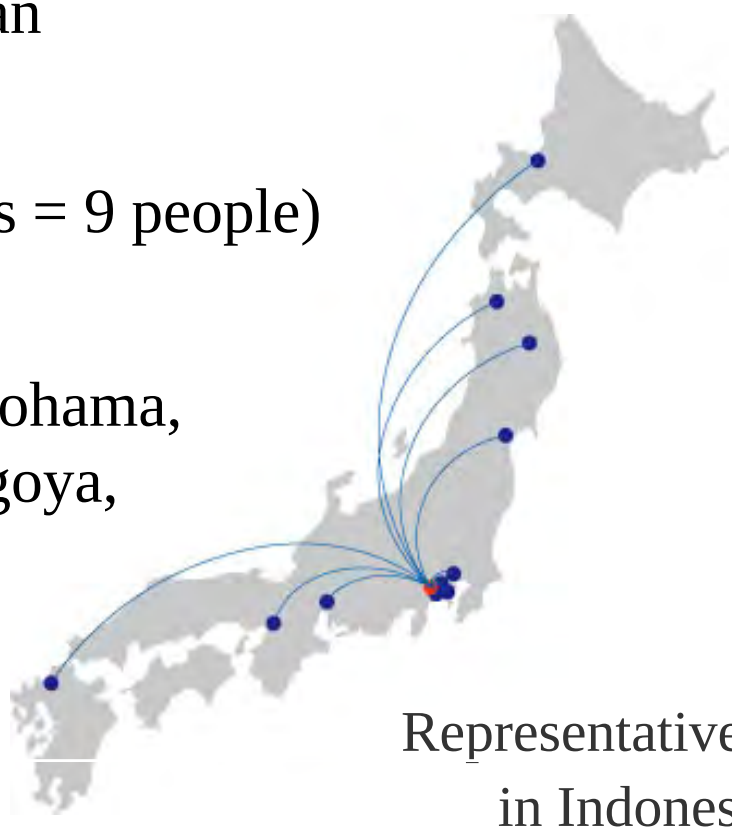
Energy Management System
by iFORCOM

アイフォーコム®
iFORCOM

Company Profile

笑顔創造®
Tech for smiles

Company Name	iFORCOM Co.,Ltd.
Established	December 1993
Address	Yokohama-shi, Kanagawa, Japan
Capital	100 million yen
Employees	280 people (Foreign employees = 9 people)
CEO	Kagawa Hiroshi
Base	Sapporo, Sendai, Morioka, Yokohama, Sagamihara, Tokyo, Chiba, Nagoya, Osaka, Hiroshima, Fukuoka, Jakarta



Representative office in Indonesia

Digitalization of the Entire City (Energy DX Platform)

Understanding (IoT)

Energy Data


Electricity


Gas


Water

Measurement equipment


Solar

エネルギーの"見える化"ツール eco pro 21

Environmental Data

Temperature and Humidity

CO_2
CO2 Concentration


Illuminance

Sensor

External Data Linkage

作業者みまもりサービス


Weather Data

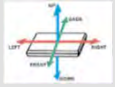
WBGT

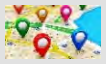

Electricity company

Biometric (personal) Data

作業者みまもりサービス


Pulse


Acceleration (body movement)


GPS (location information)

Sensor

Optimization (AI)

Cloud/Big Data

Learning, Classification, Prediction, and Estimation

AI/optimization technology

(deep learning, etc.)

需要予測サービス

発電予測サービス

eco-kaizen

Control (built-in)

Visualization

エネルギーの"見える化"ツール eco pro 21

Various Interfaces


PC


Tablet PC Smartphone


Smart speaker


Digital signage

iclops アイクロプス

eco-kaizen

Effective Control Methods

Instruction

Operation

EMS Controller

BEMS・HEMS

- Remote control
- Cyclic control
- Inverter
- Demand control

Control

- ECHONET Lite
- Modbus
- Bacnet
- Infrared remote control

etc

サイクリック制御システム

Energy Load Equipment


Air conditioner

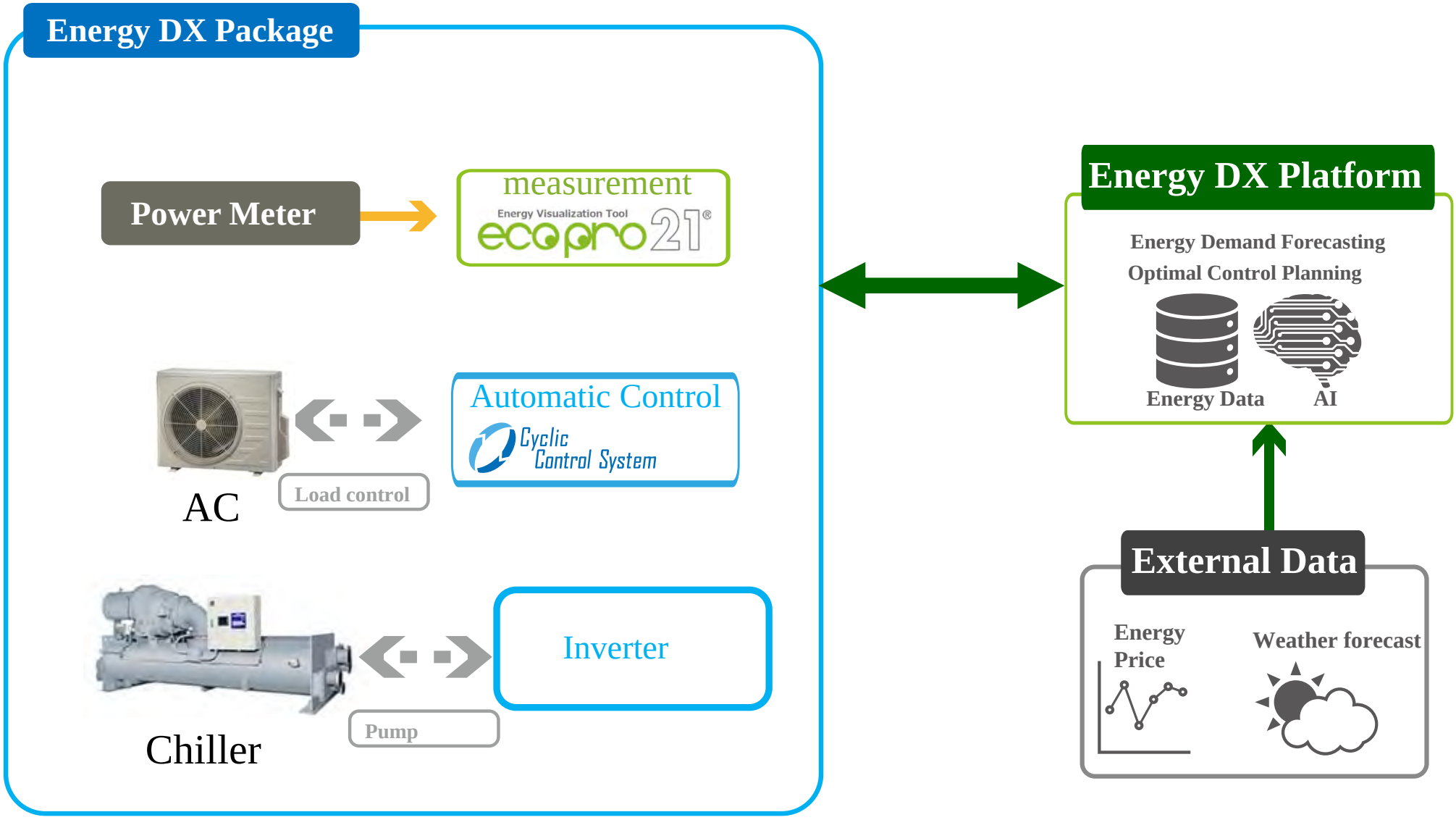

Heat source


Pump


Storage battery

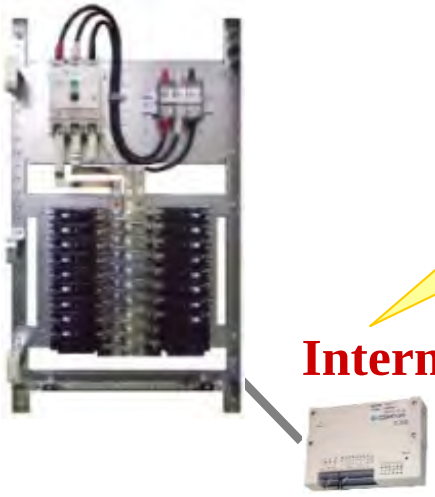
etc

Energy Saving Solution



① Energy Visualization Tool ecopro21® Realtime Monitoring

Facility subject



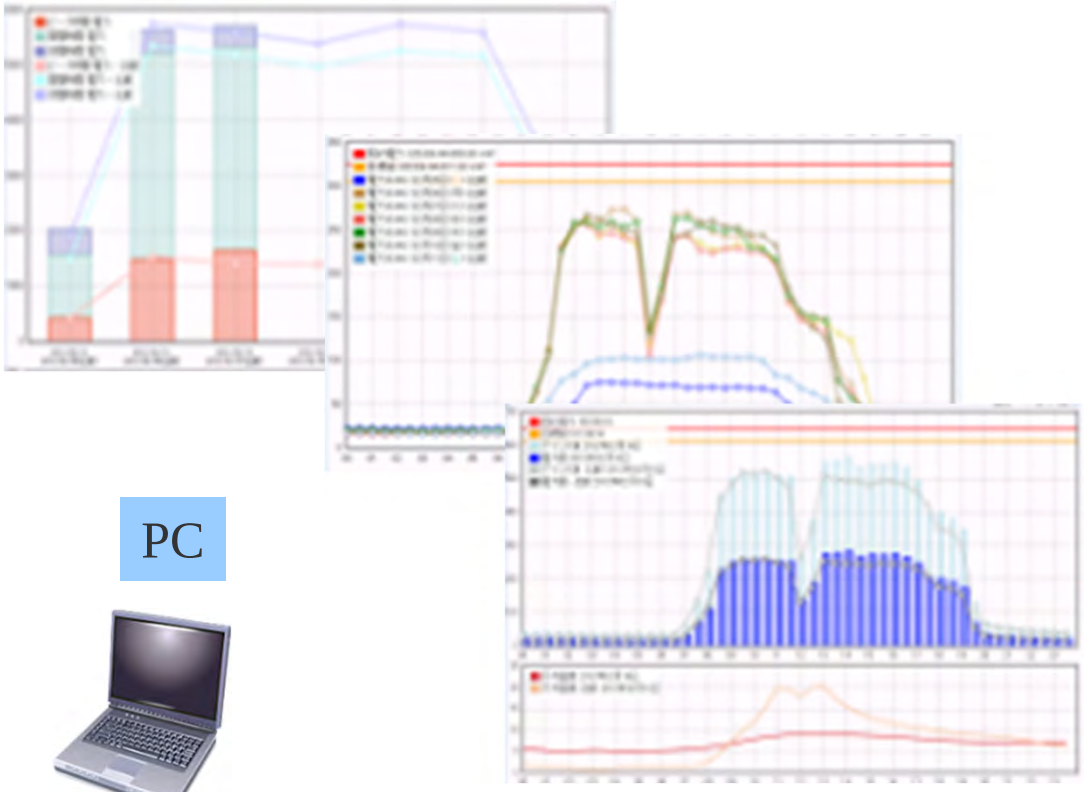
Distribution board

Internet

Cloud

Energy Visualization Tool ecopro21®

Real-time “Monitoring System"



PC

Various analysis graph

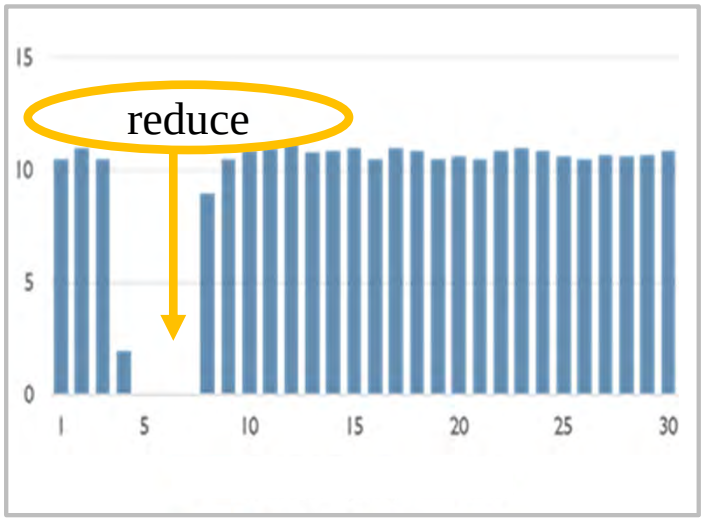
② Cyclic Control System Automatic Control (Split Air Conditioning)

Monitor the compressor of the outdoor unit and stop the compressor once every 30 minutes at a safe timing.

Since the indoor unit does not stop, no one notices the change in the indoor environment.

Reduction mechanism

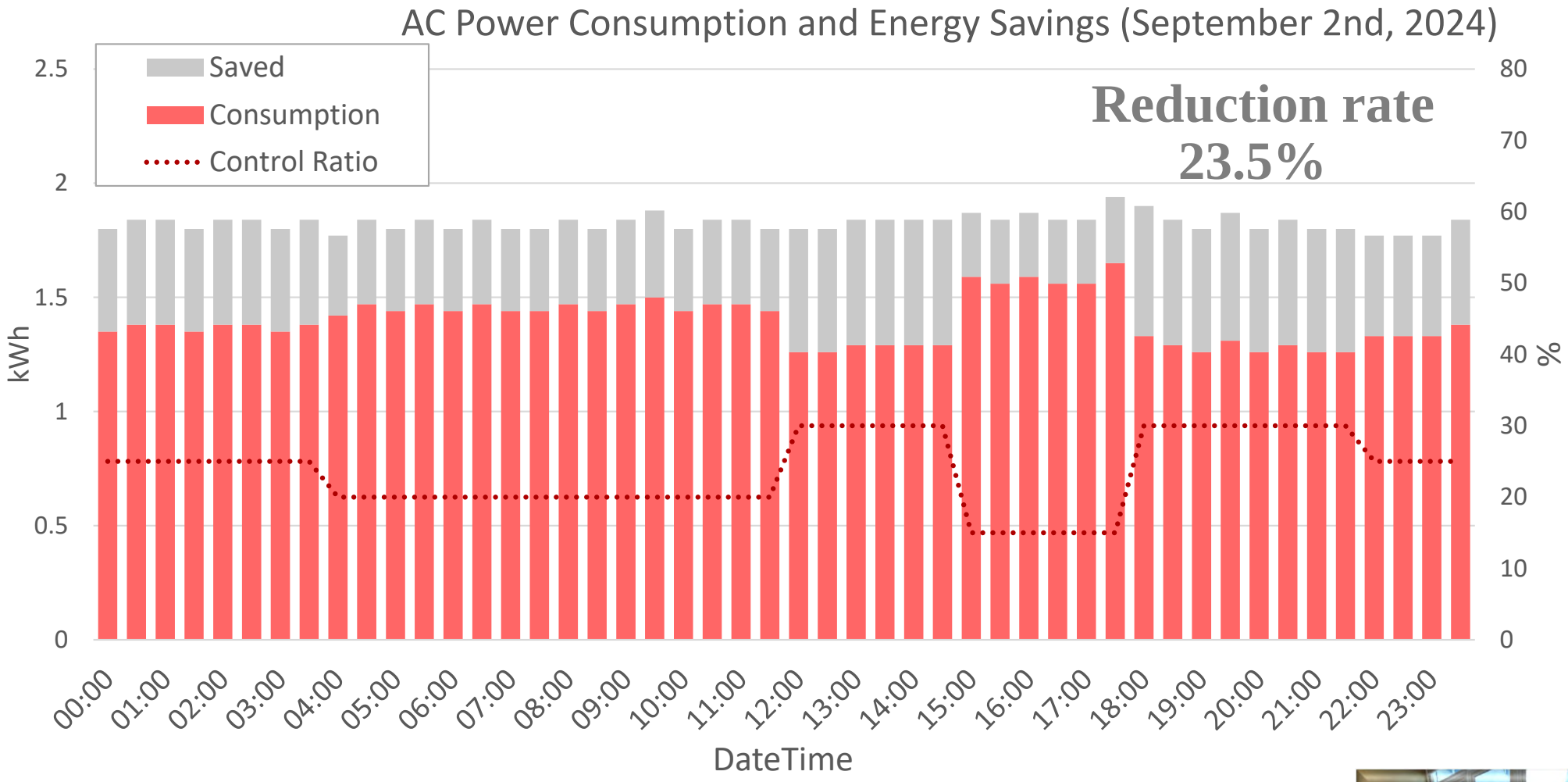
Simplified compressor control reduces compressor power consumption.



The outdoor unit with cyclic control

② Controllable Device (Packaged AC)

② Cyclic Control System Track Record as a Result



Location :

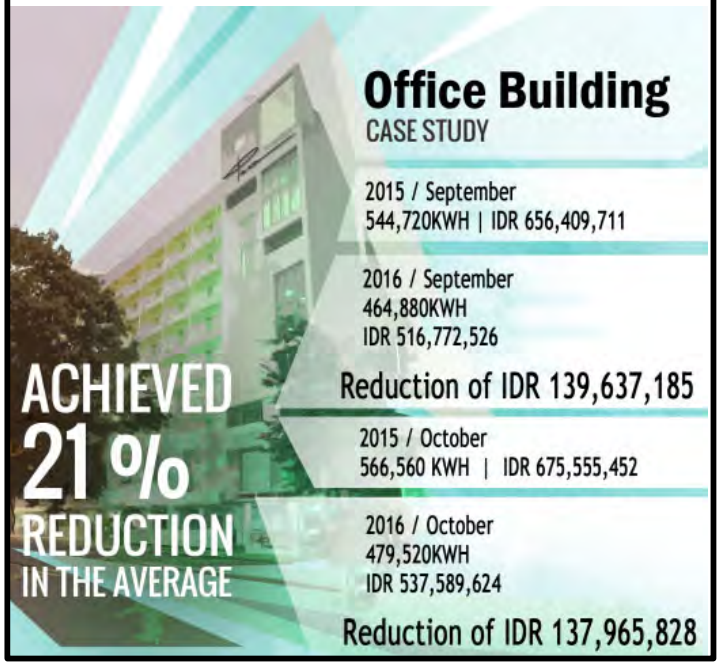
Pinetree Marina Resort 710, Johor Bahru

AC for main bedroom

Capacity 1kW

③ Track Record

Indonesia



Japan

Philippines

2500+

installed

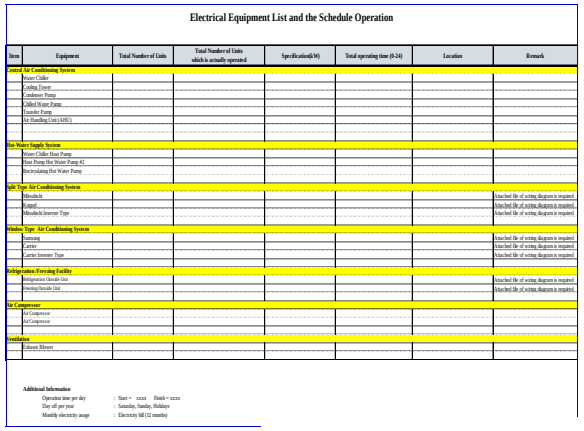
Japan
Indonesia
Malaysia
Philippines
Thailand
Vietnam

Hotel
Factory
Office Building
Mall
School

④Materials for Free Diagnosis

1. Equipment List

- The number of machines
- The number of actual operation
- Specification(kW)
- Total operating time (0-24)
- Location



Electrical Equipment List and the Schedule Operation

Item	Equipment	Total Number of Units	Total Number of Units which is actually operated	Specification(kW)	Total operating time (0-24)	Location	Remark
Central Air Conditioning System							
	Water Chiller						
	Cooling Tower						
	Condenser Pump						
	Chilled Water Pump						
	Transfer Pump						
	Air Handling Unit (AHU)						
Hot Water Supply System							
	Water Chiller Heat Pump						
	Heat Pump Hot Water Pump #2						
	Recirculating Hot Water Pump						
Split Type Air Conditioning System							
	Mitsubishi						Attached file of wiring diagram is required
	Kinpol						Attached file of wiring diagram is required
	Mitsubishi Inverter Type						Attached file of wiring diagram is required
Window Type Air Conditioning System							
	Samsung						Attached file of wiring diagram is required
	Carrier						Attached file of wiring diagram is required
	Carrier Inverter Type						Attached file of wiring diagram is required
Refrigeration Freezing Facility							
	Refrigeration Outside Unit						Attached file of wiring diagram is required
	Freezing Outside Unit						Attached file of wiring diagram is required
Air Compressor							
	Air Compressor						
	Air Compressor						
Ventilation							
	Exhaust Blower						

Additional Information

Operation time per day : Start = xxxx Finish = xxxx

Day off per year : Saturday, Sunday, Holidays

Monthly electricity usage : Electricity bill (12 months)

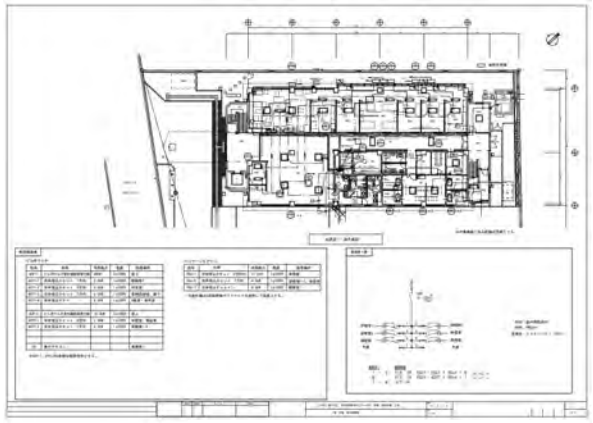
Equipment List

2. Electricity bill

- 12months

3. Location of outdoor unit of air conditioning

- Drawing



Drawing

Contact us iFORCOM

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1. 現地ワークショップ資料

1.7 東邦レオ㈱ 発表資料（英）

TOHO LÉO

J-MIX FLOOD MITIGATION EXPERIMENT IN QUEZON CITY

6 November 2025

EXPERIMENT SITE

N.S. AMORANTO SR. AVENUE AND DON JOSE STREET, BRGY. SIENNA, QUEZON CITY

Flooding

Review of Memorandum of Agreement (MOA)

Investigating in site with stakeholders

Reason:

- **1.2 m flood depth observed — classified as a high flooding area**
- **City provides CCTV footage, daily rainfall, and ambient temperature data**

Objective:

- **Verify the real impact and effectiveness of J-Mix during actual flood events**
- **Use real data to develop simulation software for flood visualization, mitigation, and groundwater recharge assessment**

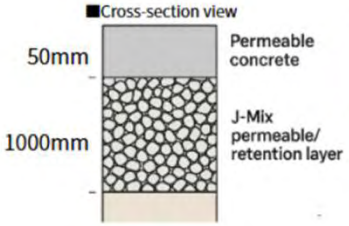
CONSTRUCTION PLAN

Left side

Right Side

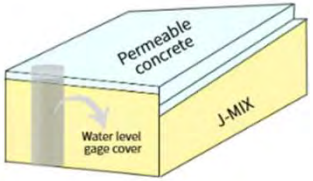
Catchment Area 60㎡

Permeable Area 30㎡



【Controller】

【Install Location】



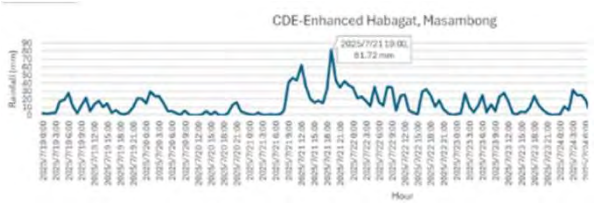
【Install Location】

【Tree pit size image】

Blue line: rainfall catchment area

Red line: installation zone of 1 m-deep J-Mix with permeable top layer

TARGET MITIGATING VOLUME



Masambong2 Heavy Rainfall Report

Date	Duration (h)	Total Rainfall (mm)	Avg Intensity (mm/h)	Remarks
2025/7/21 18:00–24:00	7	306.6	43.8	Main storm event
2025/7/21 09:00–13:00	5	230.6	46.1	Secondary peak

■CONDITION

Flood formation condition

$H = 1.2\ \text{m}, \quad T = 4\ \text{hr}$

Required mitigation rate:

$q = \frac{H}{T} = \frac{1.2}{4} = 0.3\ \text{m/hr} = 300\ \text{mm/hr}$

Catchment area = 2× permeable area

$q' = 2 \times 300 = 600\ \text{mm/hr}$

Different infiltration

■Different Infiltration Scenario

Infiltration speed	4mm/hr	15mm/hr	50mm/hr
Flooding(rain fall)	300	300	300
Catchment Area	600	600	600
J-mix(@1.0m)	410	410	410
Under layer	40	150	500
Overflow	150	30	-110

Incoming @ 300mm/hr

Retained

Infiltrate to ground
@40 ～500mm/hr

1.2 m flood depth reduced to between 0 - 600 mm, infiltration rate 40mm/hr - 500 mm/hr

J-MIX COMPARISION

【About J-mix】

【Comparison table】

	J-mix with permeable concrete	Existing pavement (impermeable)	Underground storage tank
Initial Cost/㎡ PHP Labour + Material	※7,400	1,800	25,000
Maintenance Cost Per ㎡	150	0	300
Run-off Retention Litter Per ㎡	450～910 @1.0m depth	0	1,000
Advantage	Function as soil for trees Cooling tempurature	Least costly method	Most efficient way of collecting run-off
Disadvantage	Four times the cost of the exsitinng payvement	No flood-reduction effect	High cost

J-mix is most cost-effective solution, offering additional benefits

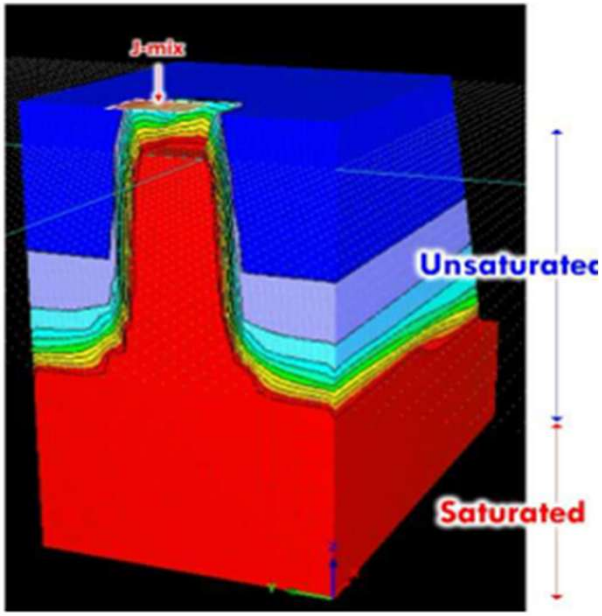
SIMULATION SOFTWARE

【Satellite based system】

Identify/mitigation of flooding in city scale

【HYDRUS 2D/3D】

Impact of recharge to ground water



Based on the value gained from real experience, the simulation provides realistic forecasts, enabling us to make cost-effective decisions.

CONCLUSION

- Obtaining real-world data on the value of mitigation measures
- Software provides Cost-Effective proposition for flood / water management in city scale

Enable us to propose realistic and practical solution for flooding, aligned with concreate waste recycle in Metro Cebu

Public–Private–Academic Collaboration Project