Demonstration Project on Operable at Any Water Level Type Horizontal Submersible Pump Applied to Pump Gate Facilities

Japan Sewage Works Agency / Nihon Techno Co., Ltd. /
Ishigaki Co., Ltd. / Joint Research Consortium

1. Demonstration Test Overview

2. Demonstration Test & Seminar

3. Independent Activities

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1. Demonstration Test Overview

Research Title	Demonstration Project on Operable at Any Water Level Type Horizontal Submersible Pump Applied to Pump Gate Facilities
Public-Solicitation Theme	Construction of a pumping station with a short construction period and low cost that requires no large site, by utilizing operable at any water level type horizontal submersible pumps
Implementation Period	Demonstration test period: Sep 9 2020 - Mar 18 2022 Independent activity period: Apr 1 2022 - Mar 31 2023
Implementers	Japan Sewage Works Agency, Nihon Techno Co., Ltd., Ishigaki Co., Ltd.
Demonstration Site	Vinh City(at the time), Nghe An Province, Vietnam
Demonstration Technology	Operable at any water level type horizontal submersible pump applied to pump gate facilities
Verification Items	The facility was designed so that the pump could be observed smoothly changing states among “all drain operation”, “air-water mixed operation”, and “standby operation” according to the water level on the suction side.

1. Demonstration Test Overview

Need 1

Can be built quickly and that can be built

Need 2

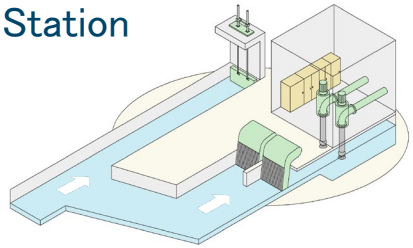
With minimal land that can be built

Need 3

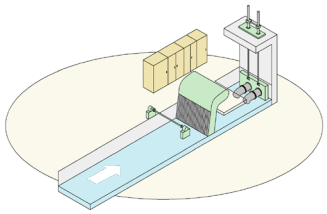
Solves past problems and issues, a technology with confirmed effectiveness

Solved by the pump gate

Conventional Pumping Station



Pump Gate



Features of the Pump Gate

- Building for pump gate : Not required
- Use of existing stock : Possible
- Number of equipment items : Small

Features of the Pump Gate

- Construction period
- Acquisition of new land
- Construction and maintenance costs

Solved by full speed at any water level operation

All Drain	Air/Water	Standby
		
Discharge rate 100%	Discharge rate 0～100%	Discharge rate 0%

Operable from low water level thanks to full speed at any water level operation

[Domestic delivery record] more than 200 units

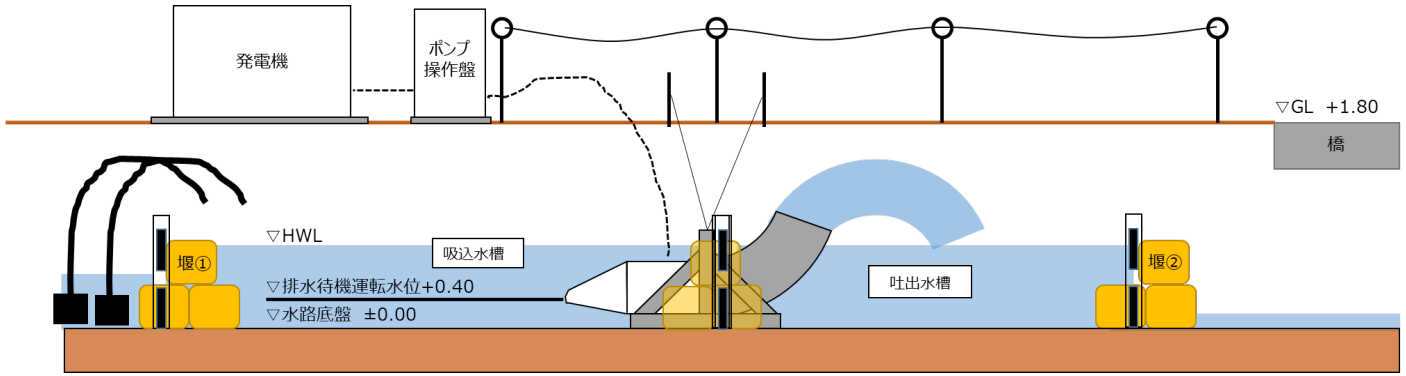
Case Study of Tamba-Sasayama City

1. Demonstration Test Overview

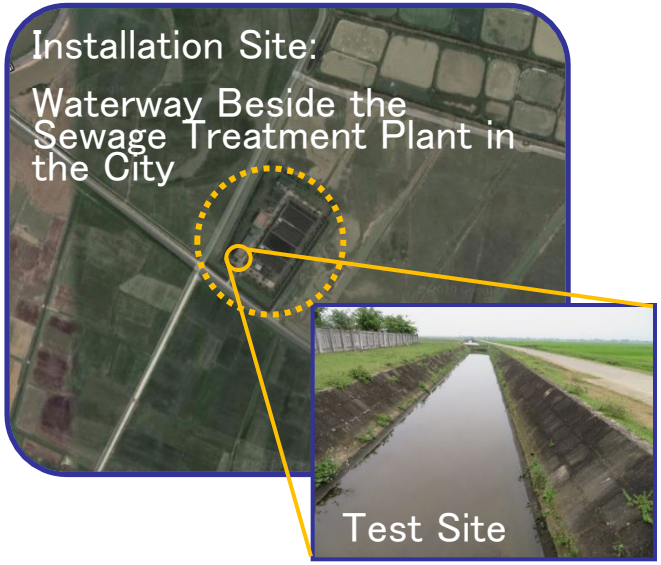
Objective: Demonstrate flood-control effectiveness, operability, dispelling of concerns about maintainability such as debris and failures, and suitability

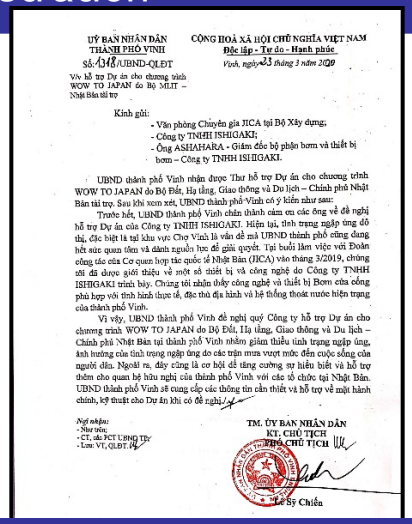
Implementation Details

· Verification of operating states · Foreign-object (debris, etc.) passage test · Operation and maintenance training · Maintainability



Selection of the Candidate Site for the Demonstration





ỦY BAN NHÂN DÂN
THÀNH PHỐ VINH
Số: 318/UBND-QLĐT

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc
Vinh, ngày 23 tháng 3 năm 2019

V/v hỗ trợ Dự án cho chương trình WOW TO JAPAN do Bộ MLIT – Nhật Bản tài trợ

Kính gửi:
- Văn phòng Chuyên gia JICA tại Bộ Xây dựng;
- Công ty TNHH ISHIGAKI;
- Ông ASHAHARA - Giám đốc bộ phận bơm và thiết bị bơm – Công ty TNHH ISHIGAKI.

UBND thành phố Vinh nhận được Thư hỗ trợ Dự án cho chương trình WOW TO JAPAN do Bộ Đất, Hạ tầng, Giao thông và Du lịch – Chính phủ Nhật Bản tài trợ. Sau khi xem xét, UBND thành phố Vinh có ý kiến như sau:

Trước hết, UBND thành phố Vinh chân thành cảm ơn các ông về đề nghị hỗ trợ Dự án của Công ty TNHH ISHIGAKI. Hiện tại, tình trạng ngập úng đô thị, đặc biệt là tại khu vực Chợ Vinh là vấn đề mà UBND thành phố cũng đang hết sức quan tâm và dành nguồn lực để giải quyết. Tại buổi làm việc với Đoàn công tác của Cơ quan hợp tác quốc tế Nhật Bản (JICA) vào tháng 3/2019, chúng tôi đã được giới thiệu về một số thiết bị và công nghệ do Công ty TNHH ISHIGAKI trình bày. Chúng tôi nhận thấy công nghệ và thiết bị Bơm của cống phù hợp với tình hình thực tế, đặc thù địa hình và hệ thống thoát nước hiện trạng của thành phố Vinh.

Vì vậy, UBND thành phố Vinh đề nghị quý Công ty hỗ trợ Dự án cho chương trình WOW TO JAPAN do Bộ Đất, Hạ tầng, Giao thông và Du lịch – Chính phủ Nhật Bản tại thành phố Vinh nhằm giảm thiểu tình trạng ngập úng, ảnh hưởng của tình trạng ngập úng do các trận mưa vượt mức đến cuộc sống của người dân. Ngoài ra, đây cũng là cơ hội để tăng cường sự hiểu biết và hỗ trợ thêm cho quan hệ hữu nghị của thành phố Vinh với các tổ chức tại Nhật Bản. UBND thành phố Vinh sẽ cung cấp các thông tin cần thiết và hỗ trợ về mặt hành chính, kỹ thuật cho Dự án khi có đề nghị./.

Nơi nhận:
- Như trên;
- CT, các PCT UBND Thị;
- Lưu: VT, QLĐT.

TM. ỦY BAN NHÂN DÂN
KT. CHỦ TỊCH
PHÓ CHỦ TỊCH

Lê Sỹ Chiến

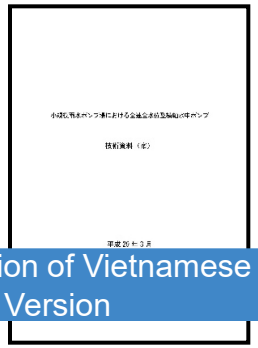
Letter from the Vice Chairman of the Vinh City People's Committee

1. Demonstration Test Overview

Dissemination Activities Carried Out in This Project

Pump Gate Preparation of the Technical Manual

Translation



Preparation of Vietnamese Version

Holding Seminars Horizontal-Deployment Activities

<Holding Seminars>
- At project start
- During the demonstration test
- At project completion

Conduct Multiple Times

Conducting Case Studies Needs Survey

- Set a target area
- Prepare case studies
- Confirm technical suitability

Confirmation of Horizontal Deployment Potential

Content of Independent Activities

- Horizontal deployment; consideration of business partnerships with local companies
- PR to the local government, consultants, and contractors
- Deepening understanding of the product and project through a study tour to Japan

1. Demonstration Test Overview

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2. Demonstration Test & Seminar

Demonstration Test Details

- Verification of operating states - Foreign-object (debris) pass-through test

1. All Drain Operation

2. Air/Water Mixed Operation

3. Standby Operation

Test Observation Scene

2. Demonstration Test and Seminar

Demonstration Test Details

- Verification of operating states **- Foreign-object (debris) pass-through test**

1. Install Collection Net

2. Debris Feeding

3. Stop Operation

4. Confirm Pass-Through

2. Demonstration Test and Seminar

Dissemination Activities and Strategy

- Conduct technical seminar - Prepare technical manual - Conduct case study

No.	Theme	Presenter
1.	Japan's policy and experience on urban flood control	Ministry of Construction, Vietnam Mr. Tamoto, JICA expert
2.	Introduction of the pump gate "Flood Buster"	Ishigaki Co., Ltd. Masaaki Ito
3.	Case study in Vinh City	Nihon Techno Co., Ltd. Yakuro Inoue
4.	Pump gate manual	Ishigaki Co., Ltd. Yu Kurita
5.	Flood control in Japan's sewerage systems	Japan Sewage Works Agency Hirokazu Iwasaki

2. Demonstration Test and Seminar

Dissemination Activities and Strategy

- Conduct technical seminar - Prepare technical manual - Conduct case study

Meeting Room (Japan Side)

Meeting Room (Vietnam Side)

Discussion

Local News Footage

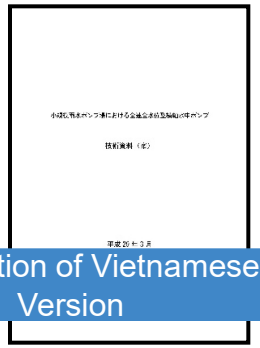
2. Demonstration Test & Seminar

Dissemination Activities and Strategy

- Conduct technical seminar - Prepare technical manual, conduct case study

Pump-Gate Prepare Technical

Translation

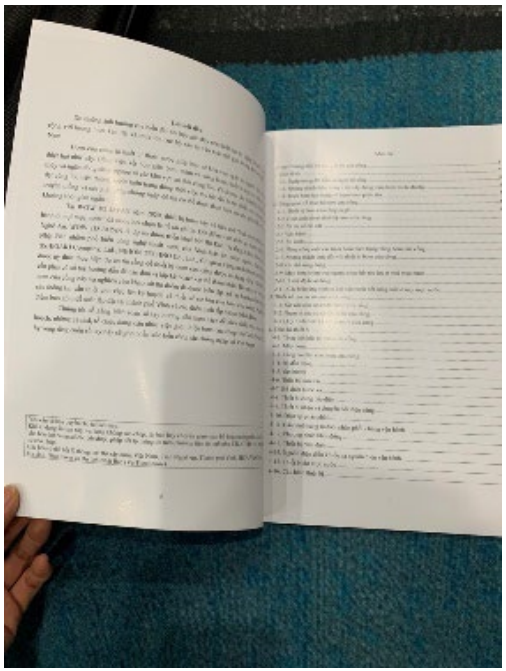


Preparation of Vietnamese Version

Conduct Case Study Needs Survey

- Set a target area
- Prepare case study
- Confirm technical suitability

Confirmation of Horizontal Deployment Potential



1. Demonstration Test Overview

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3. Independent Activities

Details of Independent Activities

- Horizontal deployment and study of local business-partner candidates
- PR to local government, consultants, and contractors
- **Deepen understanding of the product and project via a study tour to Japan**

1. Visit to Vietnam

- Visit to MOC
Meeting with director-general level
- Vinh City
Submit proposal

2. Hold Study Tour

- Factory tour
Deepen understanding of the company
- Pumping station tour
Deepen understanding of the product

3. Visit to Vietnam (Detailed Meetings)

- Presentations to relevant departments
- Study of specific areas
- Budget considerations
- Dialogue with MOC

1. Visit to Vietnam

- MOC's cooperation appreciated + announcement of the study tour
- PR to local government, consultants, and contractors PR
- **Submission of a detailed proposal for the Vinh market**

MOC Visit

Submit Proposal

ISHIGAKI

Proposal for pumping station at Vinh Market

July/2022
ISHIGAKI COMPANY, LTD.

1)Characteristics of inundation

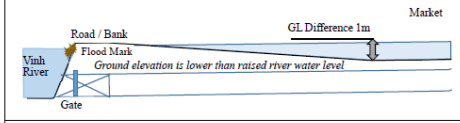
(i) Habitual inundations due to low land areas with damages to agricultural foods and industrial products.
(ii) Pumping is required to prevent inundations caused by raised river water levels.


Carrying out merchandise


Inundation situation


Flood mark

View to embankment road



Inundation Mechanism at Vinh Market

3) Plan for Pumping Station

① Proposal of Pump Station Site

Alternatives of Pump Station Site

Option	Plan-A	Plan-B
Type	Pump Gate type	Wall Mounted type
Location	Installed in existing waterways	Constructed on river side
Required Space	Small	Large
Equipment Cost	High (Pump, Gate, Actuator, Trash rake)	Low (Pump, Stand, Flap valve, Trash rake)
Civil Engineering Cost	Low	High
Land cost	Low	High
Existing Gate	Open during pump operation	Close during pump operation
Temporary waterway under construction	necessary	unnecessary

Note)
1) The pump is our Flood Buster.
2) The Flood Buster is different from conventional horizontal submersible pumps. The Flood Buster can continue to operate at any water level.
3) It is not anticipated that conventional horizontal submersible pumps will be used.

2. Holding the Study Tour

- Deepen understanding of the product's features and capabilities
- Tour actual pumping stations so they can better envision the installation method and on-site setup
- Enhance corporate credibility

Participants

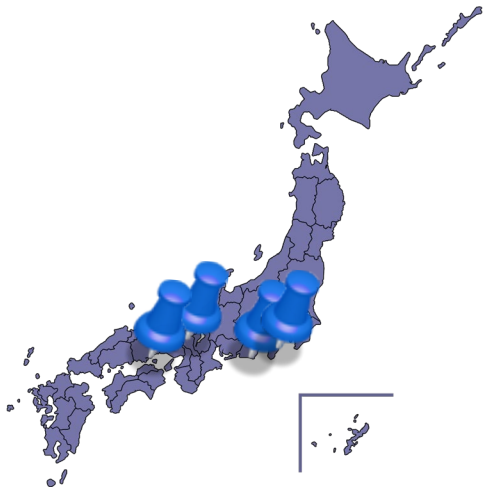
Last Name / Middle Name	First Name	Organization	Position
Lê Sỹ	Chiến	Vinh City (at the time)	Vice Mayor
Trần Trung	Quân	Vinh City Infrastructure Management Department	Deputy Director
Nguyễn Thế	Anh	Vinh City Project Management Board	Deputy Director
Hoàng Hồng	Khánh	Vinh City Sewerage Company (Infravi)	Chief Executive Officer (CEO)
Pham Trung	DUNG	Hai Phong Sewerage and Drainage Company (SADCO)	Head of Economic & Technical Department
Do Thi	Gà		WOW TO JAPAN Project Coordinator & Interpreter

2. Holding the Study Tour

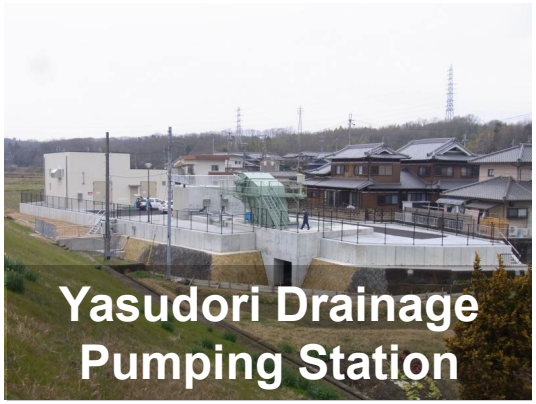
- Schedule and tour sites

Schedule

Nov 14 (Mon) – Nov 19 (Sat) 2022



Tour Sites



2. Holding the Study Tour

- Factory tour - Pump-station tour

Discussion Inside the Factory

Group Photo at the Factory

Pump-Station Tour

Discussion at the Pumping Station

2. Holding the Study Tour

- Factory tour - Pumping station tour

Discussion Inside the Factory

Feedback After the Tour

- Efficient production system
- Confirmation of production capacity
- Performance testing in a large water tank

Pump-Station Tour

Feedback After the Tour

- Applicable to Vinh City as well
- Ideal for space saving
- Easy to operate and manage

3. Visit to Vietnam (Detailed Meetings)

- December 15 – 21, 2022: Visit to Vietnam planned
- PR to the local government, consultants, and contractors
- Horizontal deployment and consideration of business partnerships with local companies

Vinh City

Presentations to design staff and local consultants
Detailed discussions including budget

Hai Phong City

Haiphong City Sewerage Company
To Hai Phong City stakeholders
Proactive presentations

MOC

Aiming for top-down project formulation

Based on the findings from our activities in Vinh City, we aim to roll out this technology to other regions.