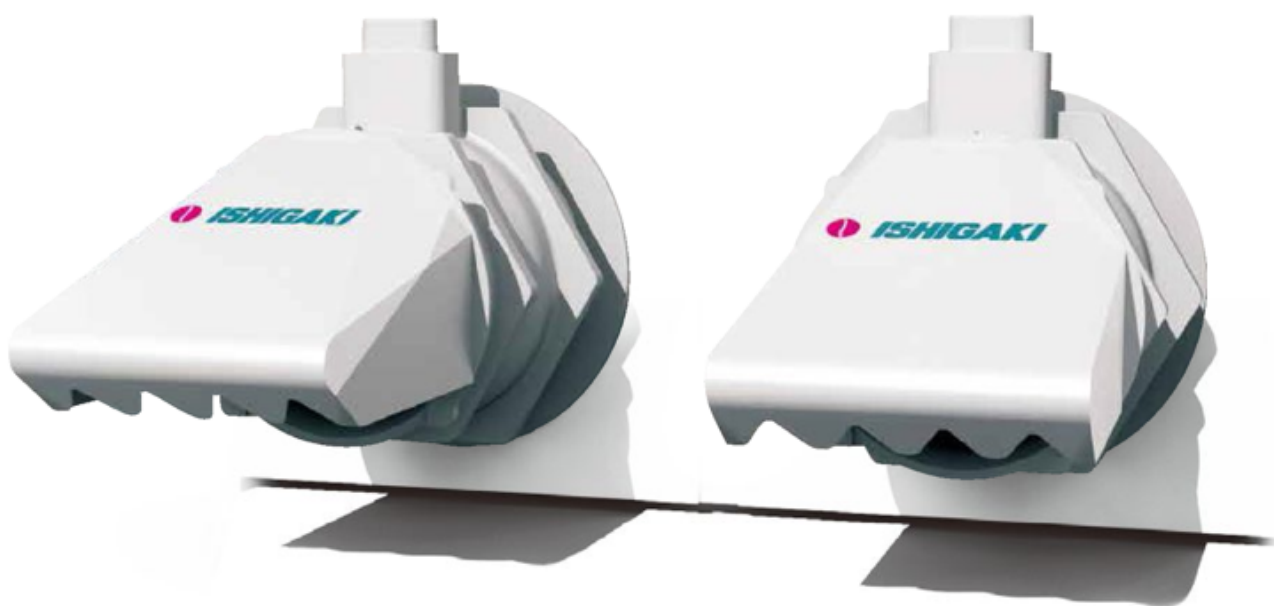


New Type Horizontal Submersible Pump "FLOOD BUSTER"

New Pump Gate System for Flood Control



Hazard

Cyclone Storm Surge Flood

Solution Purpose

Prevention & Mitigation Preparedness Response

Solution Theme

Infrastructure Technology Building Technology Products & Goods

Technology Subject

River & Basin Port Urban Facility for Disaster Prevention Emergency Base & Back-up Facility Machinery & Equipment

Advantages

"Full Speed at Any Water Level"

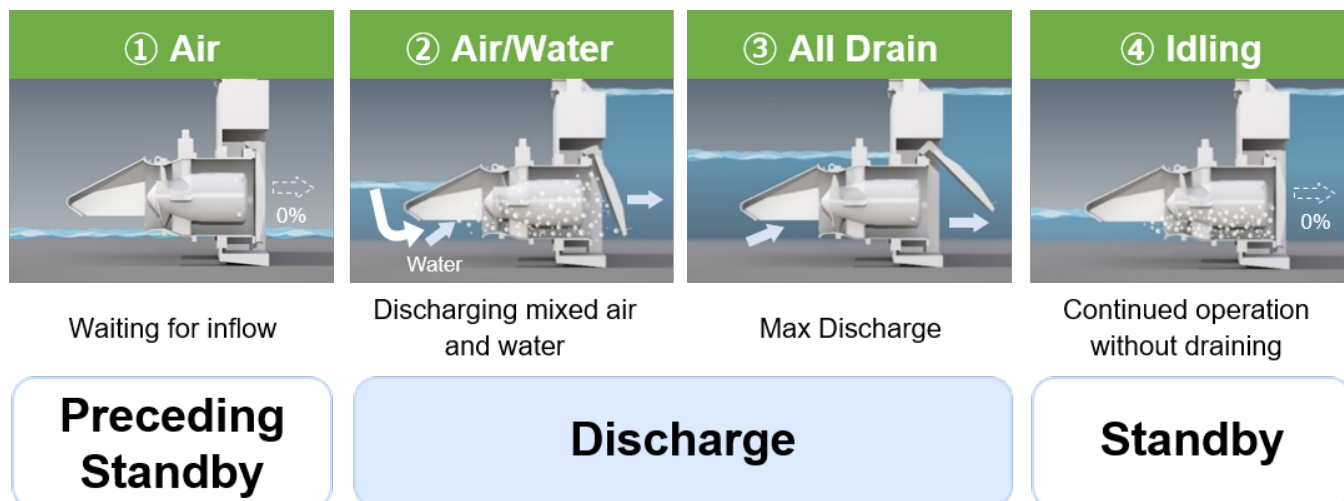
Conventional pump can NOT operate low water level which generate start and stop repeatedly. It can NOT handle with torrential rain. However, "FLOOD BUSTER" can operate with full speed at any water level. It has standby operation that can operate even there is no water. This operation mode can protect city from inundation damage. Also, "FLOOD BUSTER" can install to existing water way which does NOT

need a large construction site. So, you can keep the cost down.

Solution Illustrated

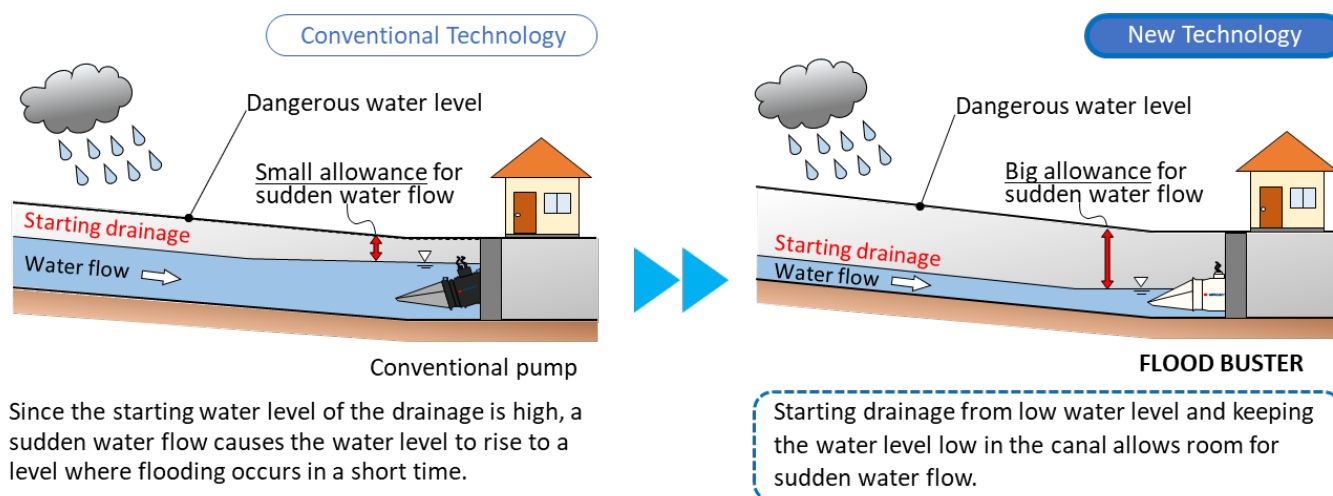
"Four Operation Modes of FLOOD BUSTER"

FLOOD BUSTER has four operation modes such as "Air", "Air/Water", "ALL Drain", "Idling" and can change operation modes by itself. The idling mode is possible to control power consumption low and the pump is waiting for the next inflow of water as a standby state.



"Reducing Inundation Damage"

The drainage in the canal will be started and continued from the low water level and keep the water level low to prepare for a sudden water flow during heavy rains.



Background

"Spreading a Pump Gate"

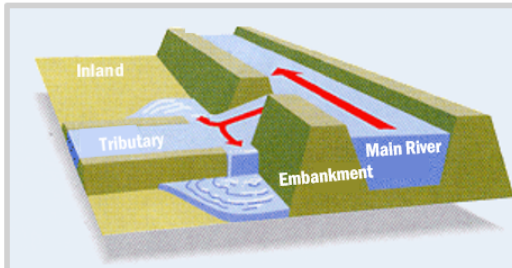
The tendency of torrential rain has been increasing due to climate change and has been becoming apparent. There is a concern that torrential rain will become more frequent and more severe in the future. As part of urban flood control measures, distributed installation of small-scale pump stations using pump gates is considered as one of the effective countermeasures. The pump gate has a submersible pump built into the gate. By installing it in the existing waterway, it is not necessary to acquire a large site such as conventional pumping station. It is a facility that can prevent backflow and discharge internal water using a pump. "Flood Buster" can respond to sudden inflow of rainwater

by operating full speed at any water level.

Exposition of the Solution

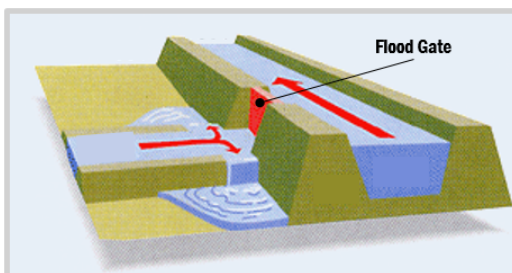
"Roll of a Pumping Station"

If it rains and the water level rises in main river, the water in the main river flows back to the tributary. Then if you install a gate, it will stop the backflow from the main river, but the water in the tributary will stop flowing and the tributary will overflow. Therefore, it is a role of the pumping station to forcibly discharge the water and prevent flooding.



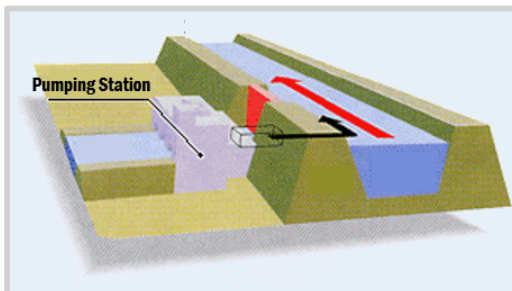
If the embankment of the river is cut off...

When the main river rises due to heavy rain and others, the water flows back into the tributary and flooding damage occurs.



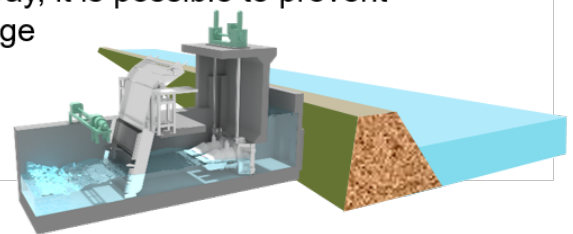
If closed with a flood gate...

Set up a flood gate so that the water in main river does not flow backward. However, when closing the flood gate, the water in the tributary does not flow, the accumulated water overflows and flooding damage occurs.



If there is a pumping station...

The water of the tributary water can be properly drained. In this way, it is possible to prevent inundation damage of the inland.

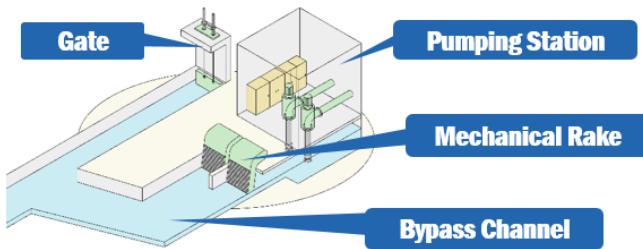


Quote: <http://www.hrr.mlit.go.jp/chikuma/jimusho/shisetsu/index.html>

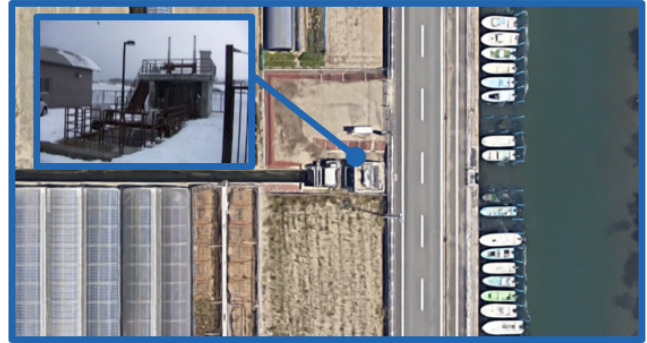
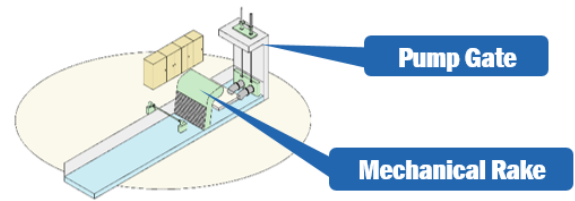
"Features of Pump Gate"

Pump gate has a number of advantages over existing pumping stations, including less construction site and lower cost.

Pumping Station



Pump Gate



Compared to the pumping station, the pump gate can achieve the following

- Utilization of existing waterways
- Small construction site
- Low construction cost
- Short construction period
- Low number of equipment
- High maintainability

Achievements of Examples

◆ SASAYAMA PUMPING STATION

Pump Gate Overview



Pump Gate Φ700



Electrical Facilities



Status

Location	Hyogo, Japan
Pump Spec	φ700mm, 63m ³ /min × 55kW
Delivery	June 2018

◆FUTAKO PUMPING STATION



Status	
Location	Miyagi, Japan
Pump Spec	φ1000mm, 127m ³ /min × 132kW
Delivery	June 2016

Corporate Profile

ISHIGAKI COMPANY, LTD.

1-6-5 Marunouchi, Chiyoda-ku, Tokyo, 100-0005, JAPAN

☎ Tel. : +81-3-6848-7831

✉ E-mail : masaaki.ito@ishigaki.co.jp

🌐 Website : <https://www.ishigaki.co.jp/floodbuster/en/>