

Air-cooled, Immersible Motor Pump

Features

A pump capable of operating even when the pump station is flooded and the equipment is submerged

◆ Main Applications

Facilities that use vertical shaft pumps for flood control and water utilization, such as stormwater drainage stations, sewage treatment plants, and river drainage stations.

Also applicable to industrial plant facilities including power plants and factories.

◆ Versatility and Scalability

Can be applied to pump facilities exposed to flooding risks as an adaptation measure for climate change.

◆ Weather Resistance and Durability

The pump and motor are integrated in a watertight structure. Since the motor is located in an air-filled chamber, concerns about insulation deterioration are minimized.

◆ Advancement

The integrated “watertight structure” combining the pump and immersible motor addresses the limitations of conventional technologies, enabling operation even under inundated conditions.

Overview & Principles

In recent years, pump stations have increasingly been flooded by rainfall exceeding design assumptions, causing conventional pump equipment to shut down.

The pump with integrated immersible motor fundamentally addresses this issue.

Its fully watertight structure, which combines the pump and immersible motor, allows the unit itself to withstand flooding.

As a result, the pump can continue operating even if the station is submerged, maintaining functionality of critical infrastructure and supporting early recovery of essential services.

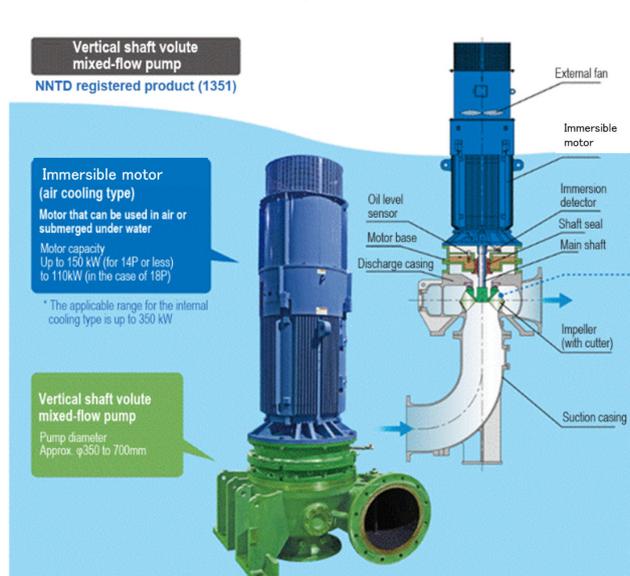
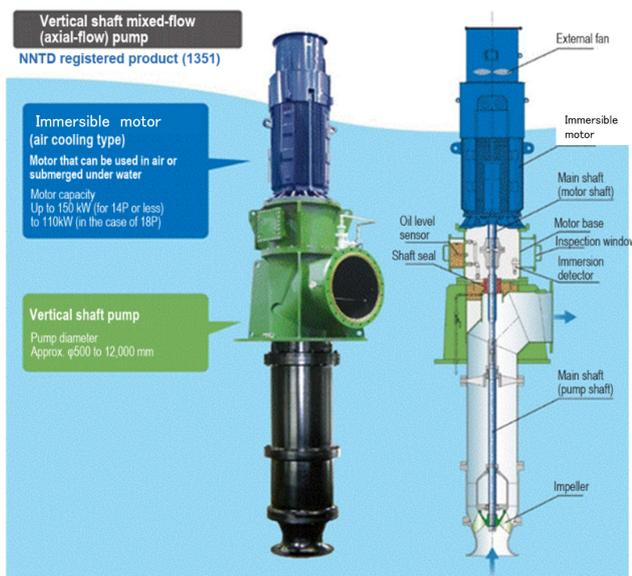
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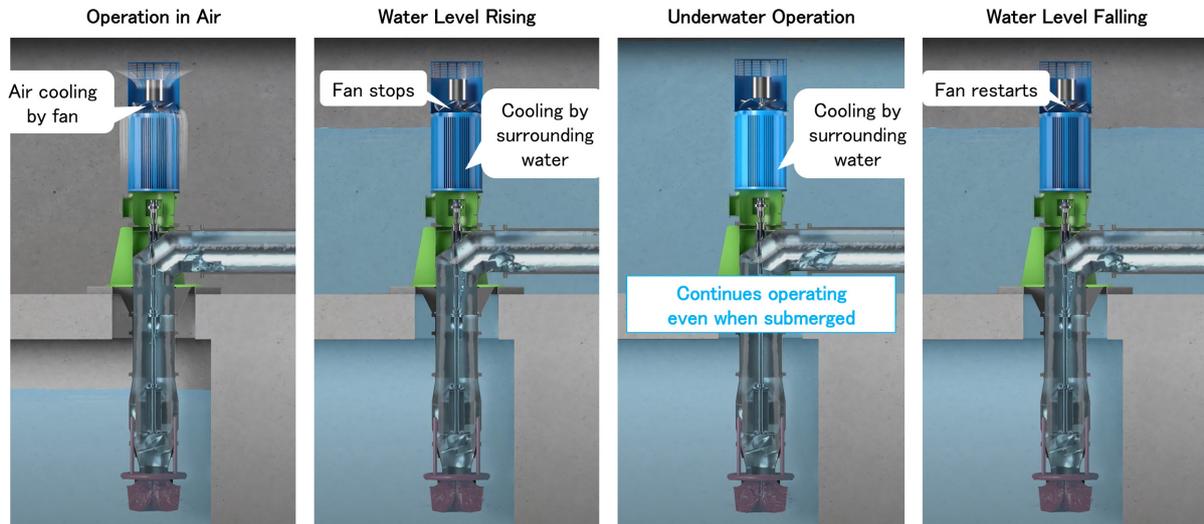
Vertical Mixed-Flow (Axial-Flow) Pumps

- Pump Diameter: approx. ϕ 500–1,200 mm
- Motor Output : up to 150 kW (14P),
up to 110 kW (18P)
- Cooling : Air-cooled

Vertical Mixed-Flow Volute Pumps

- Pump Diameter: approx. ϕ 350–700 mm
- Motor Output : up to 150 kW (14P),
up to 110 kW (18P)
- Cooling : Air-cooled





Cooling Mechanism of the Immersible Motor

Energy-Saving Effects & Additional Notes

◆ Energy-Saving Effect

This pump maintains the high efficiency inherent to vertical pumps.

When combined with the immersible motor, it can operate with higher energy efficiency compared to submersible pumps.

◆ Additional Features / Benefits

- The watertight integrated structure of the vertical pump and immersible motor enables operation even when submerged, contributing to early restoration of lifeline services.
- Since the immersible motor normally operates in air, there are no insulation resistance concerns unlike submersible motors.
- The integrated pump–motor structure provides excellent earthquake resistance.
- Its high water resistance allows installation outdoors.
- Because the immersible motor and upper part of the pump are installed above ground, maintenance is much easier than with submersible motor pumps.
- No intermediate shaft is required, reducing equipment complexity and cost.
- Consolidating equipment within the pump room simplifies overall maintenance and management.



Delivery Case 1



Delivery Case 2

Track Record

Domestic Number of units delivered: 69 units in Japanese market (as of August 2025, including units under production)

Breakdown

- Osaka Prefecture: 8 pump stations (14 units)
- Saga Prefecture: 3 pump stations (6 units)
- Okayama Prefecture: 2 pump stations (3 units)
- Others

Overseas Number of units delivered: 1 unit (as of August 2025)

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<https://www.torishima.co.jp/> (Japanese)
<https://www.torishima.co.jp/en/> (English)