

Torishima Pump Global Network



East Asia

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South East Asia
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South Asia

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■ Manufacturing ■ Service Center

Pumps for Power Plant



Innovative Pumping Solutions to Power Industry

The demand for energy continues to increase around the globe with particularly high growth rates and rapid economic expansion in the Indian subcontinent and many parts of Asia. As a result, the number of new and refurbished power plants will increase to meet this demand.

Torishima is well placed to provide a full range of pumps designed for the applications needed within the power industry from small combined cycle to large super critical thermal stations. We are able to supply boiler feed pumps, boiler circulation pumps, circulating water pumps and condensate extraction pumps as well as a range of auxiliary duties. Torishima pumps have been installed globally in this market.

Research & Development

Energy demand continues to increase globally, however taking into account the need to also conserve power, Torishima's objective is to produce high efficiency pumping equipment. Torishima continues to invest in R & D to meet such objectives, developing high technology equipment with high reliability whilst keeping our environmental commitments.

Service Solutions

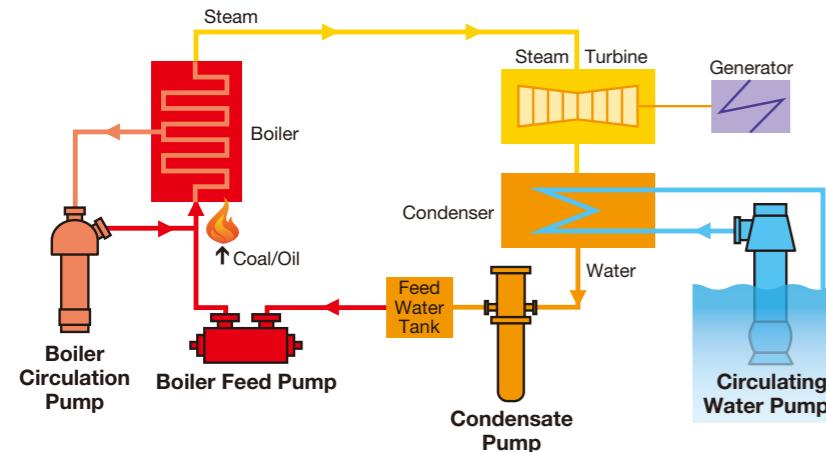
Torishima has an large installed base with pumps located throughout the world. We are conscious that we must provide a reliable service support for our clients, to this end we have a network of service facilities located in key areas providing access to both spare parts and innovative service solutions.



750MW combined cycle power plant,
Muara Karang, Indonesia

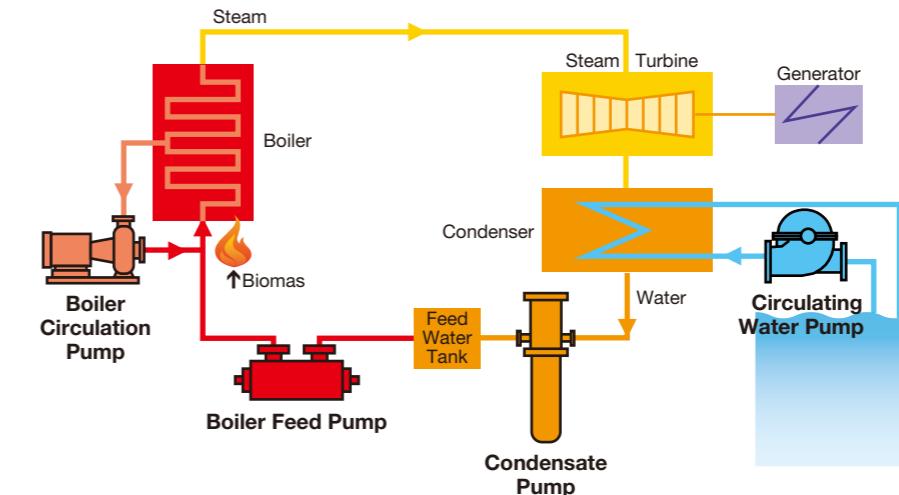
Power Generation Systems and Main Pumps

Steam Power Generation

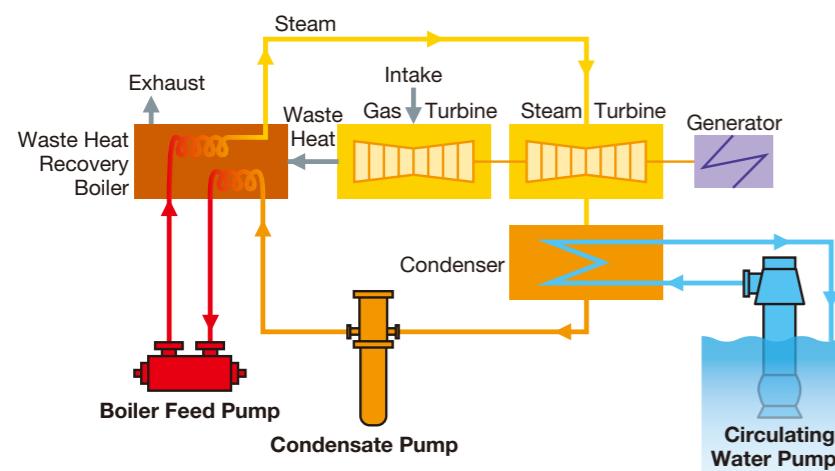


Balance of Plant (BOP) for the pumping facility of power plants

Biomass Power Generation

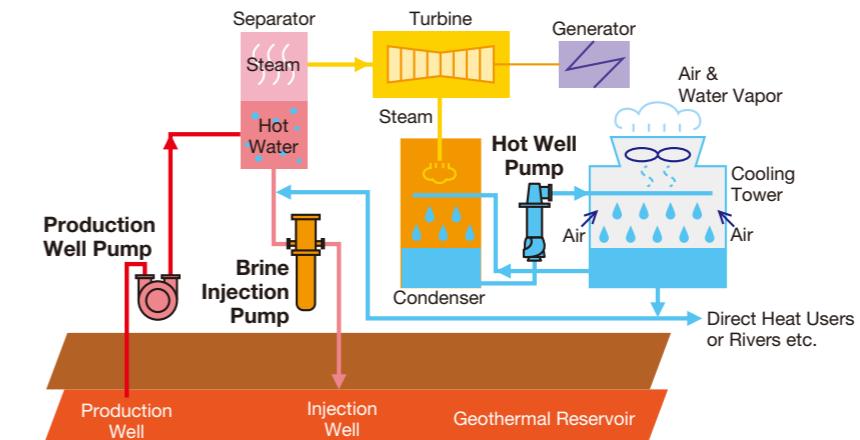


Combined Cycle Power Generation



Shin-Nagoya Combined Cycle Power Plant, Japan

Geothermal Power Generation



Hatchobaru Geothermal Power Plant, Japan

Application Chart (Steam, Combined Cycle, and Biomass Power Plants)

| Products | MHG-A / MHG / MHB / MHD / MHA / MMK / MML | HLV / HLAV / CPR / CPW / CHR | MMTV | CDM | CDKY | CDMV / SPV |
|--------------------------|---|------------------------------|------|-----|------|------------|
| Applications | | | | | | |
| Boiler Feed Pump | ● | | | | | |
| Boiler Circulation Pump | | ● | | | | |
| Condensate Pump | | | ● | | | |
| Boiler Feed Booster Pump | | | | ● | ● | |
| Cooling Water Pump | | | | ● | | ● |

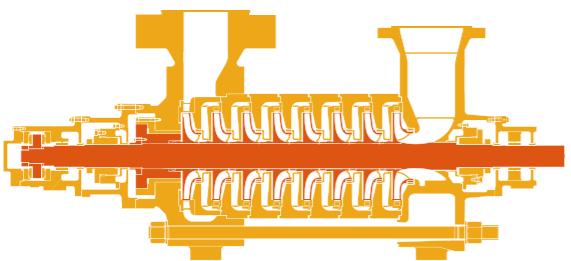
Application Chart (Geothermal Power Plant)

| Products | CDKS / MMTV | CDKTV / SPTV |
|--|-------------|--------------|
| Applications | | |
| Brine Injection Pump / Production Well Pump / Circulating Pump | ● | |
| Hot Well Pump | | ● |

MHG-A

Horizontal multistage ring section pump

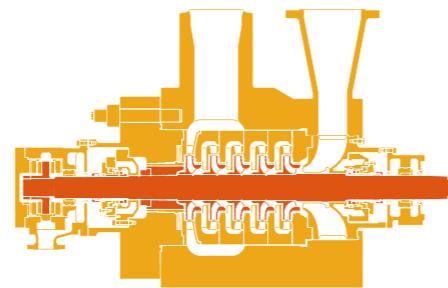
Capacity : up to 900m³/h (3,960USgpm)
Total Head : up to 2,500m (8,200ft)
Operating Temp. : up to 200°C (390°F)
Operating Pres. : up to 40.5MPa (405bar, 5,870psi)
Speed : up to 3,600min⁻¹
Size : up to 300mm (12in)



MHB

Radially split multistage barrel casing pump

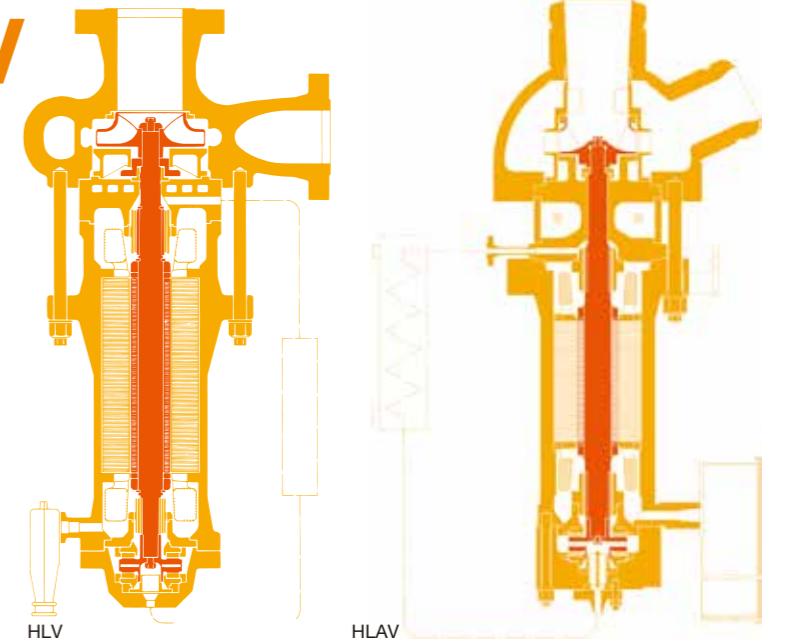
Capacity : up to 2,000m³/h (8,800USgpm)
Total Head : up to 4,200m (13,800ft)
Operating Temp. : up to 200°C (390°F)
Operating Pres. : up to 42MPa (420bar, 6,090psi)
Speed : up to 7,000min⁻¹
Size : 80 to 200mm (3 1/5 to 8in)



HLV / HLAV

Glandless (sealless) pump motor unit

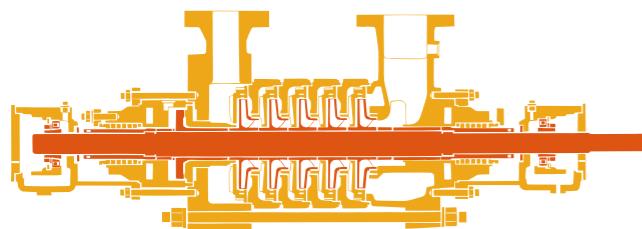
Capacity : up to 6,840m³/h (30,110USgpm)
Total Head : up to 320m (1,000ft)
Operating Temp. : -10 to 420°C (-40 to 788°F)
Operating Pres. : up to 33MPa (330bar, 4,790psi)
Speed : up to 3,600min⁻¹
Motor Rating : up to 1,500kW
Voltage : 400V to 11kV
Size : 40 to 400mm (1 2/3 to 16in)



MHG

Horizontal multistage ring section pump

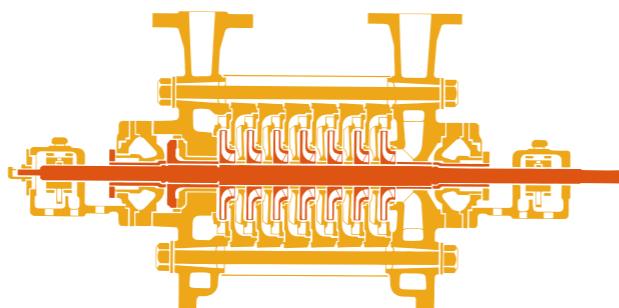
Capacity : up to 1,400m³/h (6,100USgpm)
Total Head : up to 4,200m (13,780ft)
Operating Temp. : up to 200°C (390°F)
Operating Pres. : up to 36MPa (360bar, 5,220psi)
Speed : 7,000min⁻¹
Size : 40 to 250mm (1 2/3 to 10in)



MHD

Horizontal, end suction, multistage ring section pump

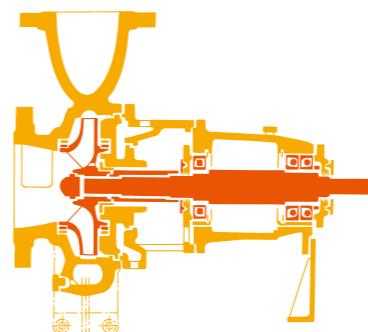
Capacity : up to 300m³/h (1,320USgpm)
Total Head : up to 1,200m (3,940ft)
Operating Temp. : up to 180°C (356°F)
Operating Pres. : up to 14MPa (140bar, 2,045psi)
Speed : up to 3,600min⁻¹
Size : 80 to 200mm (3 to 8in)



CPR

End-suction volute pump

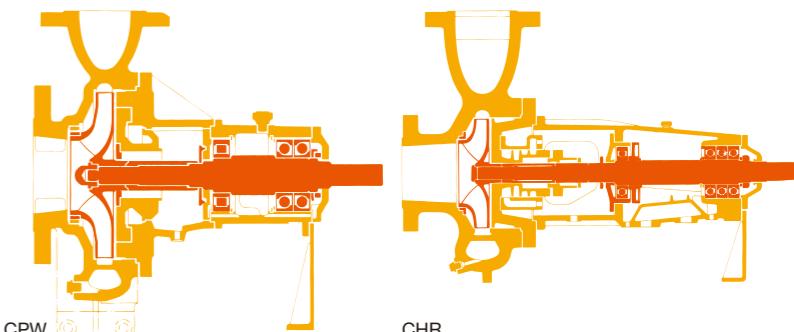
Capacity : up to 2,400m³/h (10,560USgpm)
Total Head : up to 270m (885ft)
Operating Temp. : -70 to 400°C (-158 to 752°F)
Operating Pres. : up to 4MPa (40bar, 580psi)
Speed : up to 3,600min⁻¹
Size : 25 to 400mm (1 to 16in)



CPW / CHR

End-suction volute pump

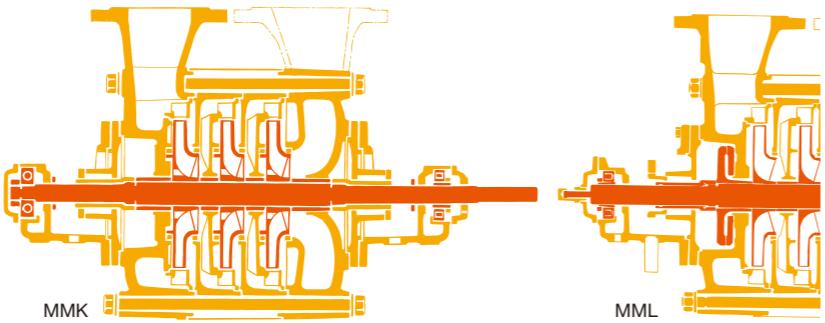
Capacity : up to 1,940m³/h (8,549USgpm)
Total Head : up to 200m (670ft)
Operating Temp. : up to 325°C (615°F)
Operating Pres. : up to 10.8MPa (108bar, 1,560psi)
Speed : up to 3,600min⁻¹
Size : 40 to 300mm (1 1/2 to 12in)



MMK / MML

Horizontal multistage ring section pump

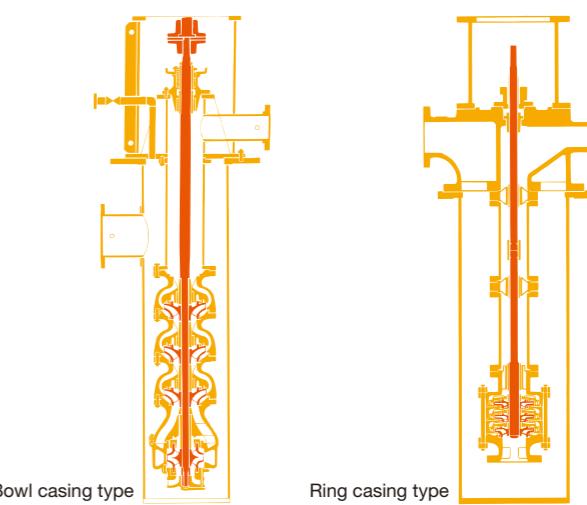
Capacity : up to 1,000m³/h (4,400USgpm)
Total Head : up to 500m (1,640ft)
Operating Temp. : -10 to 230°C (-18 to 446°F)
Operating Pres. : up to 6.3MPa (63bar, 914psi)
Speed : up to 4,500min⁻¹
Size : 40 to 350mm (1 2/3 to 14in)



MMTV

Vertical mixed-flow multistage pump with canister

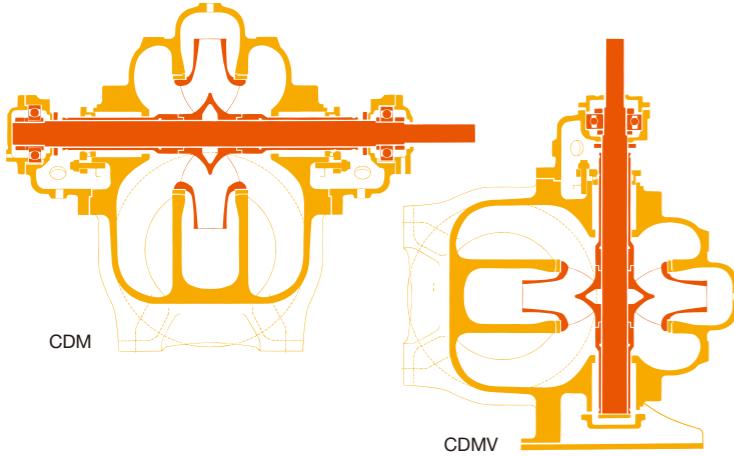
Capacity : up to 2,900m³/h (12,770USgpm)
Total Head : up to 390m (1,280ft)
Operating Temp. : up to 200°C (392°F)
Operating Pres. : up to 3.9MPa (39bar, 565psi)
Speed : up to 1,800min⁻¹
Size : 40 to 400mm (1 1/2 to 16in)



| CDM

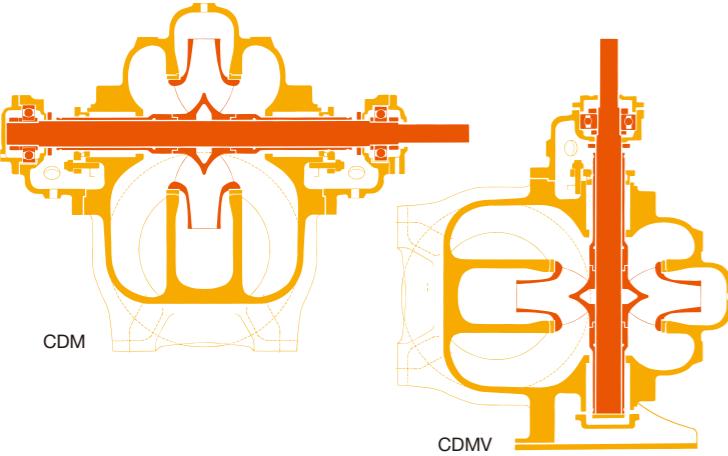
Horizontal axially split double-suction pump

Capacity : up to 33,000m³/h (145,200USgpm)
Total Head : up to 300m (980ft)
Operating Temp. : up to 80°C (176°F)
Speed : up to 3,600min⁻¹
Size : 200 to 1,400mm (8 to 55in)



| CDMV

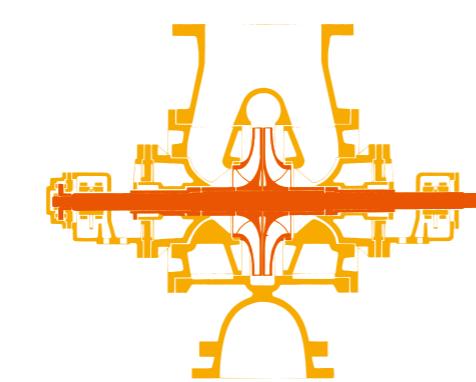
Vertical axially split double-suction pump



| CDKY / CDKS

Horizontal radially split double-suction pump

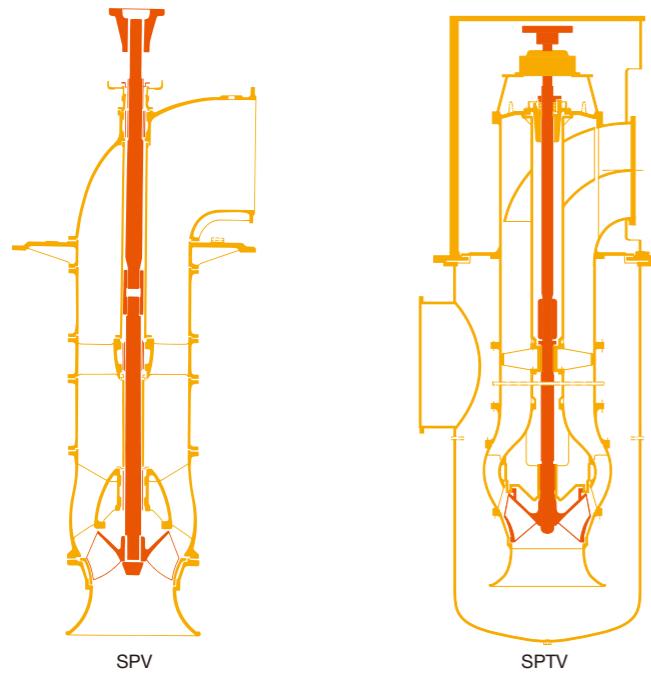
Capacity : up to 2,800m³/h (12,300USgpm)
Total Head : up to 300m (980ft)
Operating Temp. : up to 200°C (390°F)
Operating Pres. : up to 5MPa (50bar, 725psi)
Speed : up to 3,600min⁻¹
Size : 200 to 450mm (8 to 18in)



| SPV

Vertical mixed-flow pump

Capacity : up to 81,600m³/h (360,000USgpm)
Total Head : up to 100m (328ft)
Operating Temp. : up to 80°C (176°F)
Operating Pres. : up to 1MPa (10bar, 145psi)
Speed : up to 1,800min⁻¹
Size : 300 to 2,800mm (12 to 110in)



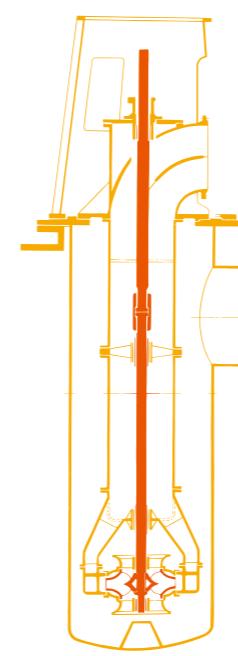
| SPTV

Vertical mixed-flow pump with canister

| CDKTV

Vertical double-suction pump with canister

Capacity : up to 20,000m³/h (87,180USgpm)
Total Head : up to 100m (328ft)
Operating Temp. : up to 100°C (210°F)
Speed : up to 1,800min⁻¹
Size : 500 to 1,500mm (20 to 60in)



References



Chhabra Supercritical Coal Fired Power Plant
2 x 660MW, India
MHB barrel type boiler feed pump [15MW drive, 50% duty]



Elbistan B Coal Fired Power Plant
4 x 360MW, Turkey
MHB barrel type boiler feed pump [12.6MW drive, 100% duty]



Fujairah Combined Cycle Power Plant, 3 x 660MW, U.A.E.
MHG ring section boiler feed pump



Keys Energy Center Combined Cycle Power Plant, 1 x 755MW, U.S.A.
MHG ring section boiler feed pump



Vung Ang Coal Fired Power Plant
2 x 600MW, Vietnam
SPV cooling water pump



Altamira II Combined Cycle Power Plant
1 x 495MW, Mexico
MMTV condensate pump



KSK Coal Fired Power Plant
6 x 660MW, India
HLAV spherical casing boiler circulation pump



Germencik Geothermal Power Plant
45MW, Turkey
CDKTV hot well pump

| Europe | | |
|--|---|--|
| Ireland <ul style="list-style-type: none">• Huntstown• Tynagh• Great Island• Kilroot• Whitegate | Latvia <ul style="list-style-type: none">• Riga | Turkey <ul style="list-style-type: none">• Elbistan• Kangal• IC Anadolu• Cayirhan• Denizli• Zetes• Samsun• Bekirli• Kizildere *• Germencik * |
| England <ul style="list-style-type: none">• RWE npower• Isle of Grain• Staythrope | Greece <ul style="list-style-type: none">• Thiva• Megalopolis | |

| Russia, Central & South Asia | |
|---|--|
| Russia <ul style="list-style-type: none">• Shatura• Sugres• Novocherkasskaya | India <ul style="list-style-type: none">• Auraiya• Gandhar• Mundra• Aravalli• KSK• Samalkot• Maithon• Unchahar• Suratgarh• Chhabra |
| Uzbekistan <ul style="list-style-type: none">• Navoi"• Tashkent" | |
| Pakistan <ul style="list-style-type: none">• Bin Qasim"• Kot-Addu" | |
| | Georgia <ul style="list-style-type: none">• Gardabani |

| Americas | | | | |
|--|--|--|---|---|
| USA <ul style="list-style-type: none">• Elm Road• Longview• Soutncentral• Duke• Mojave• Newark• Georgia• Woodbridge• Council Bluffs | Canada <ul style="list-style-type: none">• Halton Hills• Queen Elizabeth• Napanee• Greater Toronto• Portlands | Mexico <ul style="list-style-type: none">• Pacifico• Petacalco• Tuxpan• Altamira• Chihuahua• Cherro Pieto• Intergen | Argentina <ul style="list-style-type: none">• Vuelta De Obligado | Peru <ul style="list-style-type: none">• Fenix |
| | | | Dominican <ul style="list-style-type: none">• Los Mina | Chile <ul style="list-style-type: none">• Guacolda• Endesa• Angamos• Cochrane |
| | | | Colombia <ul style="list-style-type: none">• Tasajero | |
| | | | Nicaragua <ul style="list-style-type: none">• Polaris * | |

* Geothermal Power Plant

Torishima has been providing pumps for power plants around the world for 50 years.

| Middle East & Africa | |
|---|---|
| Algeria <ul style="list-style-type: none">• Hadjret En Nouss | Kuwait <ul style="list-style-type: none">• Sabiya• Doha |
| Iran <ul style="list-style-type: none">• Mapna• Gharb | |
| Iraq <ul style="list-style-type: none">• Erbil• Suleymaniyah• Duhouk | Saudi Arabia <ul style="list-style-type: none">• Rabigh• Zhuhai• Qurayyah• Shuqaiq• Shoaiba• Ras Al Khair |
| Syria <ul style="list-style-type: none">• Al-Zara• Jandar• Deir Ali | Jordan <ul style="list-style-type: none">• Samra |
| Qatar <ul style="list-style-type: none">• Mesaieed• Ras Abu Fontas A2• Umm Al Houl | UAE <ul style="list-style-type: none">• Fujairah |
| | Oman <ul style="list-style-type: none">• Baraka |

| South East Asia & Oceania | | | |
|--|--|---|---|
| Philippines <ul style="list-style-type: none">• Mindanao• Limay Battan• Batangas• Toledo• Iloilo• Southern Mindanao• Therma South• Pagbilao• APEC | Thailand <ul style="list-style-type: none">• Ratchaburi (SPP)• Bangpa-in (SPP)• Amata Bangkadi (SPP)• Gulf JP (SPP)• EGAT | Indonesia <ul style="list-style-type: none">• Muara Karang• Kendari• Tanjung Puriok• North Molucca• PLN Paiton• Perak• Chevron * | Viet Nam <ul style="list-style-type: none">• Ca Mau• Nhon Trach1&2• Vung Ang1• Omon• Phu My1• Vung Ang1• Mong Dong |
| Singapore <ul style="list-style-type: none">• Tuas | Malaysia <ul style="list-style-type: none">• Prai• Sultan Ismail• Jimah• Pasir Gudang• Port Dickson | Brunei <ul style="list-style-type: none">• Tutong | Australia <ul style="list-style-type: none">• Bluewater• Kogan Creek• Tamar Valley |

| East Asia | |
|--|---|
| Japan <ul style="list-style-type: none">• Hokkaido Electric• Tohoku Electric• Tokyo Electric• Chubu Electric• Hokuriku Electric• Kansai Electric• Chugoku Electric• Shikoku Electric• Kyushu Electric | China <ul style="list-style-type: none">• Dailian• Fuzhou• Shenzhen East• Beijing Thermal• Sidongkou• Xiamen East• Zhijin• Shenhua Shendong |
| Korea <ul style="list-style-type: none">• Pusan• Puchon• Ulsan• Yonghung• Tangjin• Sejong• Peyon Taek• Incheon | |
| Taiwan <ul style="list-style-type: none">• Dha-Tan• Linkou• Talin• Hsinta• Tunghsiao | |
| | Hong Kong <ul style="list-style-type: none">• Lamma |