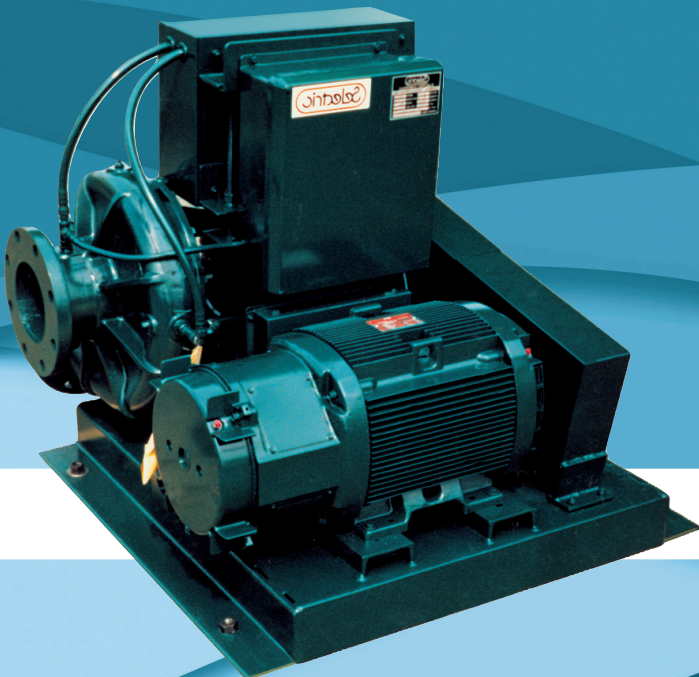
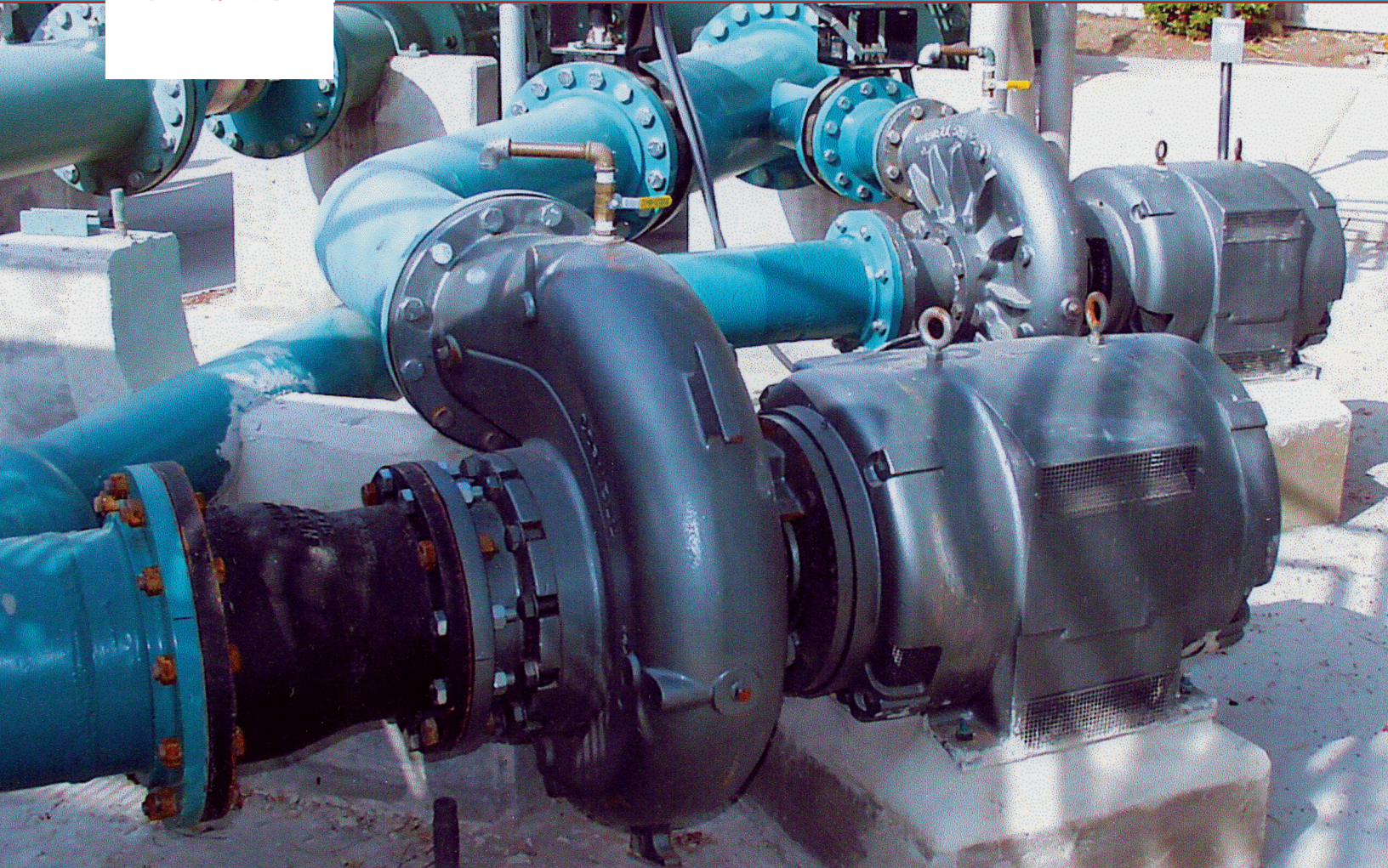


YUNIQTECH INC



# HYDRO TURBINES

GENERATE POWER FROM EXCESS HEAD

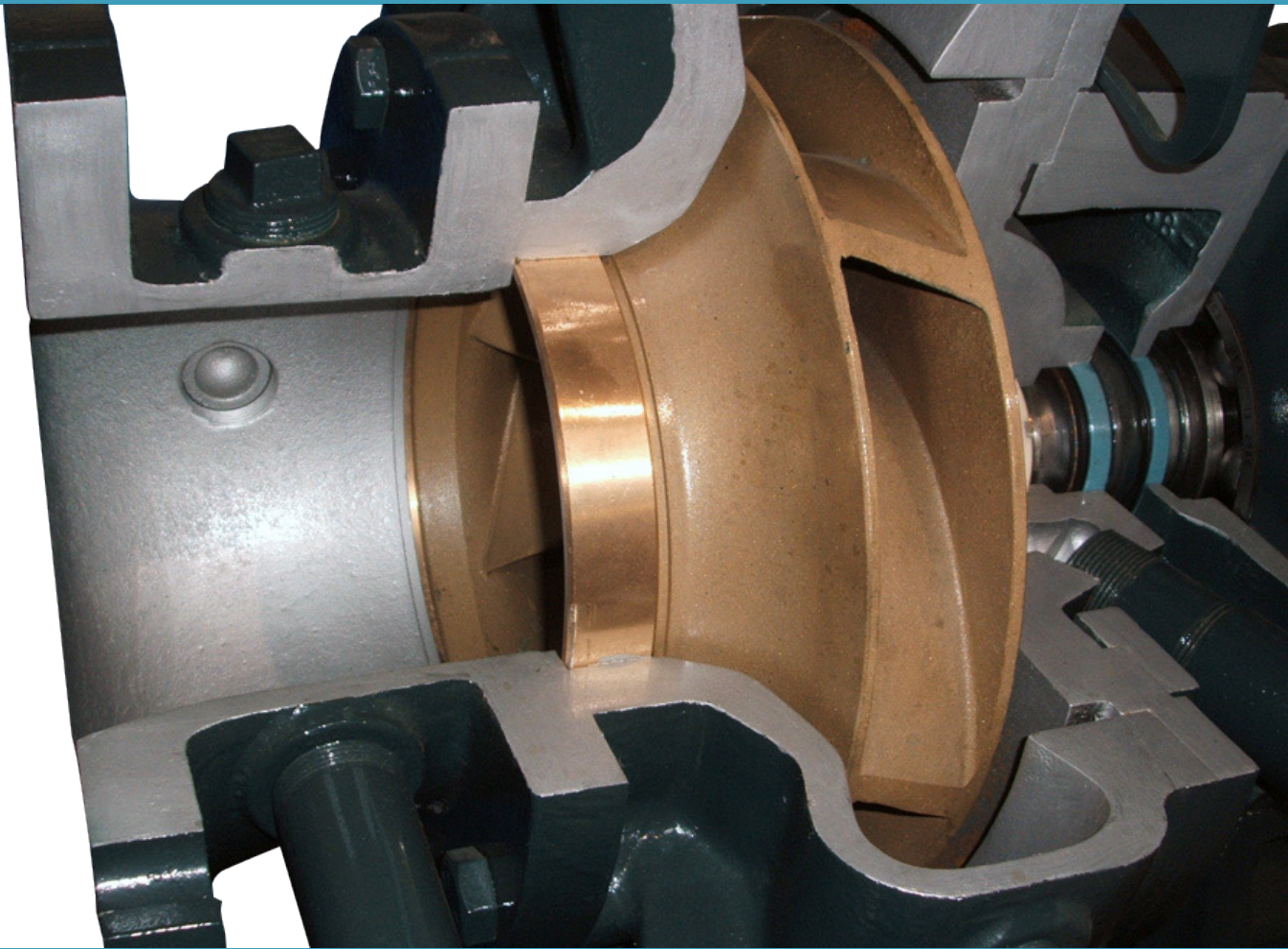


EFFICIENT BY DESIGN





# HYDRO TURBINES



## PUT EXCESS HEAD TO WORK FOR YOU

Industrial plants, municipalities, HVAC installations, and farms are tapping potential hydraulic energy sources to produce electric power as a revenue source, or as a means to reduce overall energy demands. The key to the system is the use of excess head to drive a turbine. The turbine may be used to drive a pump, a generator, or other power-requiring device. This technology makes it feasible for cities, farmers, resort managers, industrial plants and building managers to consider hydro turbines in their plant power needs. Studies show that a turbine, driven by water from a natural stream or process stream, can generate enough electric power to pay for itself in a short time.

## LOW-MAINTENANCE, HIGH EFFICIENCY DESIGNS

You don't need a raging river to take advantage of the energy savings a YUNIQTECH INC hydro turbine can provide. Heads as low as 50 feet, and flows as low as 90 gallons

per minute can produce useable energy. YUNIQTECH INC's high turbine efficiency is often found to be comparable with specially-built imported turbines. They are less complex, easier to install and require less maintenance. YUNIQTECH INC turbines are available in a wide range of configurations and mounting styles. YUNIQTECH INC's approach to turbine applications has generated many new and innovative design features, resulting in unexpectedly high performance.

## YUNIQTECH INC SUPPORT FROM THE START

This high performance can be documented by actual performance tests on ordered units, conducted in YUNIQTECH INC's modern hydraulic lab under controlled conditions, by professional engineers. Let YUNIQTECH INC staff engineers and sales staff provide specialty application and selections assistance. Whether your needs are demanding, requiring turbines in series or parallel, or utilize a single unit, YUNIQTECH will assist in your selection of a hydro turbine.

## GENERATOR TYPES

### INDUCTION

The generator must be connected to an existing power grid. The speed is controlled by virtue of being connected to the grid, the same way motor speed is maintained. It requires an automatic disconnect from the grid for when grid power fails.

### SYNCHRONOUS

The generator is stand alone. It can be used where there is no electrical grid nearby. It requires a load controller (not provided by YUNIQTECH INC) to maintain standard speed, voltage and phase.

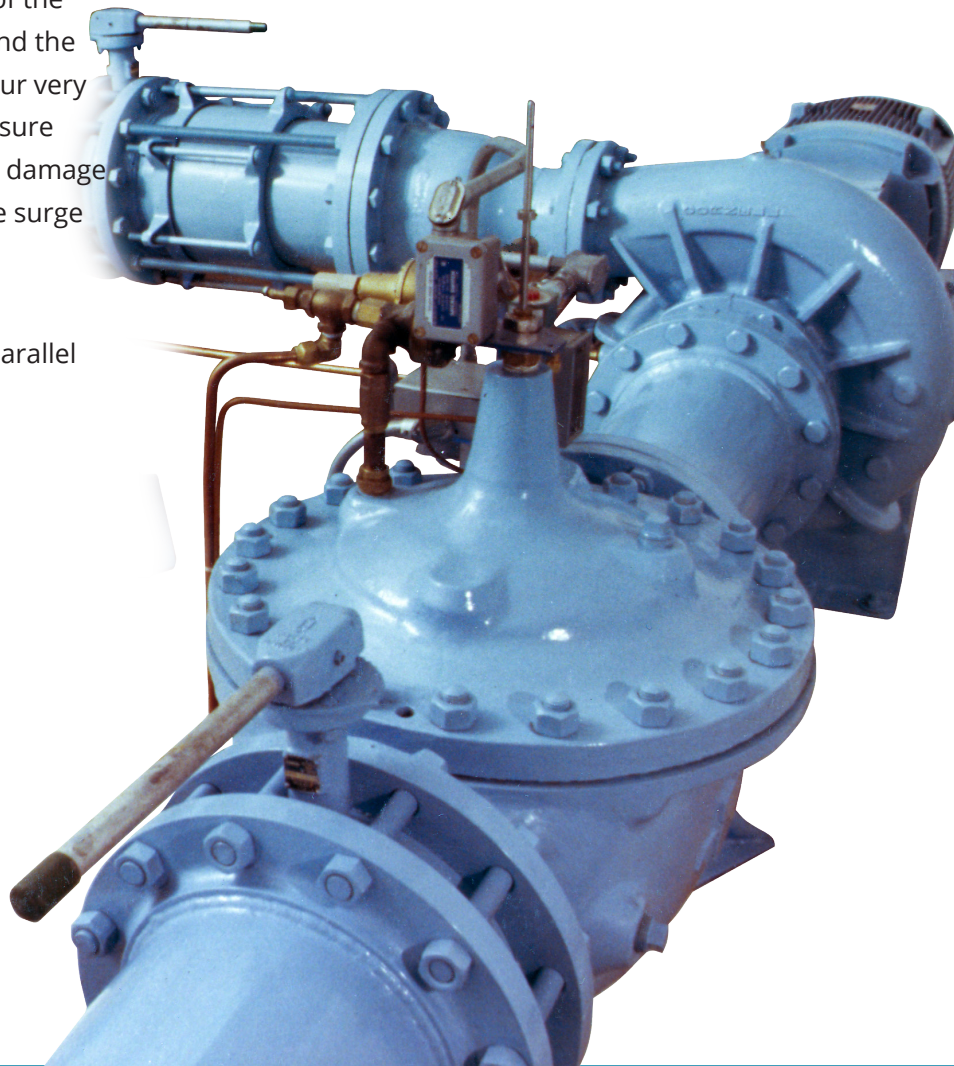
### PRESSURE SURGE (WATER HAMMER) PROTECTION

During grid power loss, a reaction turbine speeds up and the flow through it drops. The magnitude of the flow change depends on the turbine's design and the operating conditions. The flow change may occur very rapidly (in a few seconds) and can cause a pressure surge (water hammer) that is strong enough to damage or destroy the turbine and piping. The pressure surge can be reduced by:

- Adding mass in the form of a flywheel
- Installing a quick opening bypass valve in parallel with the turbine

## CONTROLS

Hydro turbines need to be equipped with a control valve at the inlet of the turbine. This valve serves as an isolation device and can be used to control the head and flow through the turbine. The controls should include speed measuring devices. The control system should be designed so that during normal operation electrical contact is made or broken at or near the generator nominal (no load) speed. When power fails, the control system must break the electrical contact and close the inlet valve. It is advisable to contact your utility to determine if there are any special requirements.



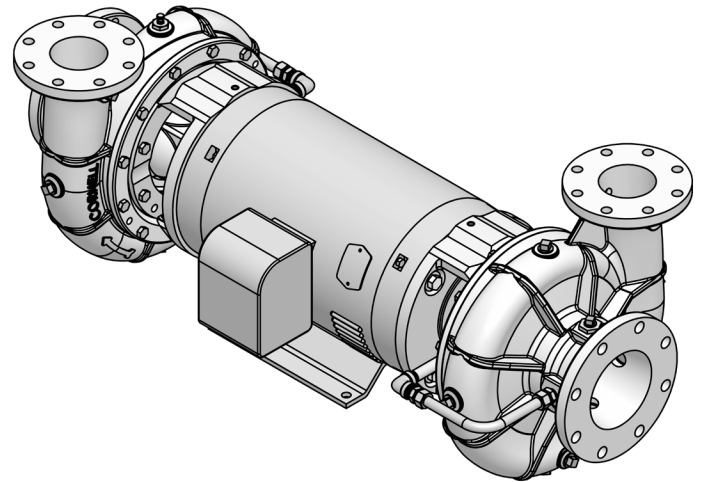
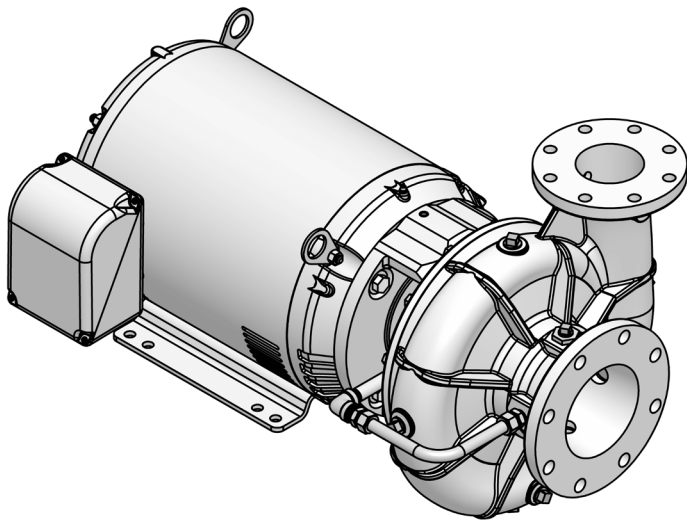
*A municipal installation of a 6TR2 using control valves on the turbine lines to throttle the water pressure and regulate power generation.*



# HYDRO TURBINES

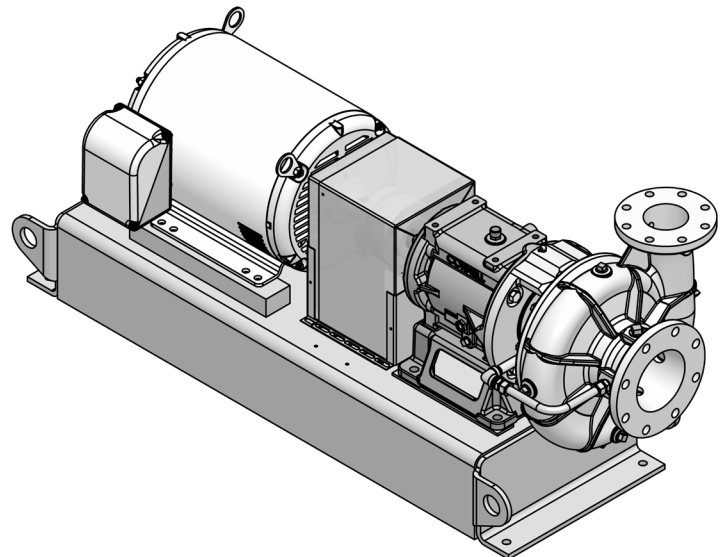
## STANDARD TURBINE CONSTRUCTION

<b>Turbine Body</b>	Cast Iron, Bronze fitted is standard. Ductile Iron, Steel, Bronze, or Stainless Steel models also available.
<b>Seal</b>	Mechanical shaft seal is standard, packing is optional.
<b>Generator</b>	Standard ODP generator-optional TEFC.



## CLOSE-COUPLED, DOUBLE ENDED

This assembly allows the turbine to reduce a pumping load. The pump and turbine share a common motor, with the turbine on one end and the pump on the other. Both are close-coupled, with all the features to suit a special installation. Especially suited to HVAC installations.



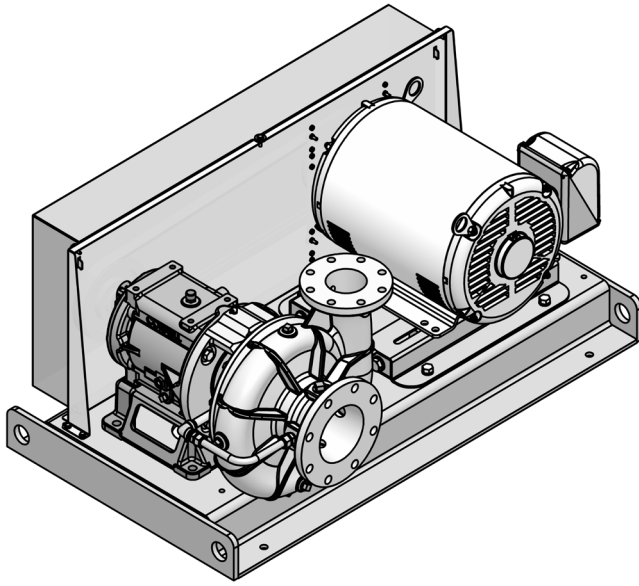
## CLOSE-COUPLED

A close-coupled design is the simplest of assemblies. There is no coupling to align and it saves space. Available only with induction generators.

## FRAME-MOUNTED WITH GENERATOR

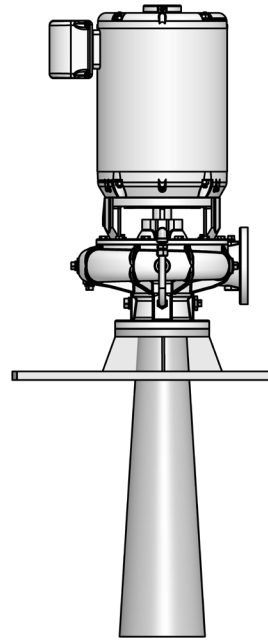
A frame-mounted turbine can be coupled to a generator and assembled on a fabricated steel base.





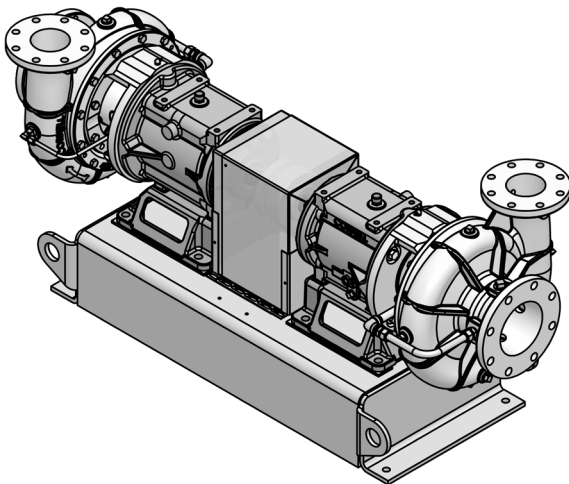
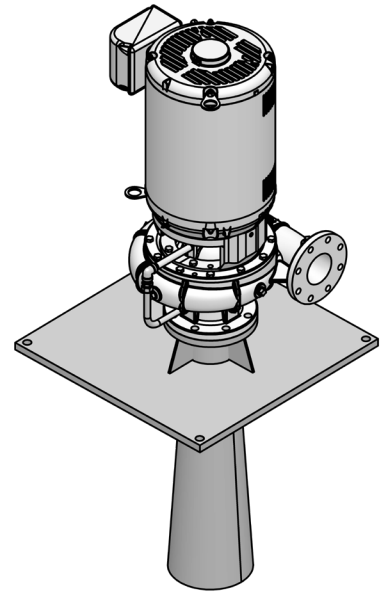
## SIDE-BY-SIDE BELT DRIVE

When space does not allow for a standard frame mount unit, it may be possible to belt drive the generator.



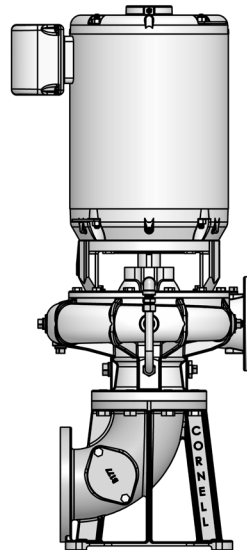
## CLOSE-COUPLED VERTICAL WITH CUSTOM DRAFT TUBE

For added space saving or simplicity of manifolding, close-coupled, vertical mount with custom draft tube (available less draft tube for discharge manifold mounting).



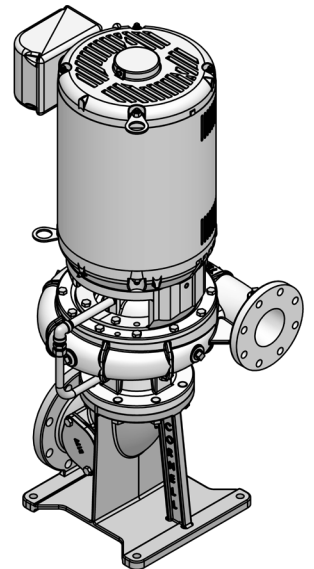
## FRAME MOUNT DRIVING A PUMP

Especially useful when a low head, high flow water source is available to provide power for a pump moving water to a higher elevation.



## CLOSE-COUPLED VERTICAL WITH BASE ELBOW

When floor space is at a premium, a vertical unit may be the best option.





# HYDRO TURBINES

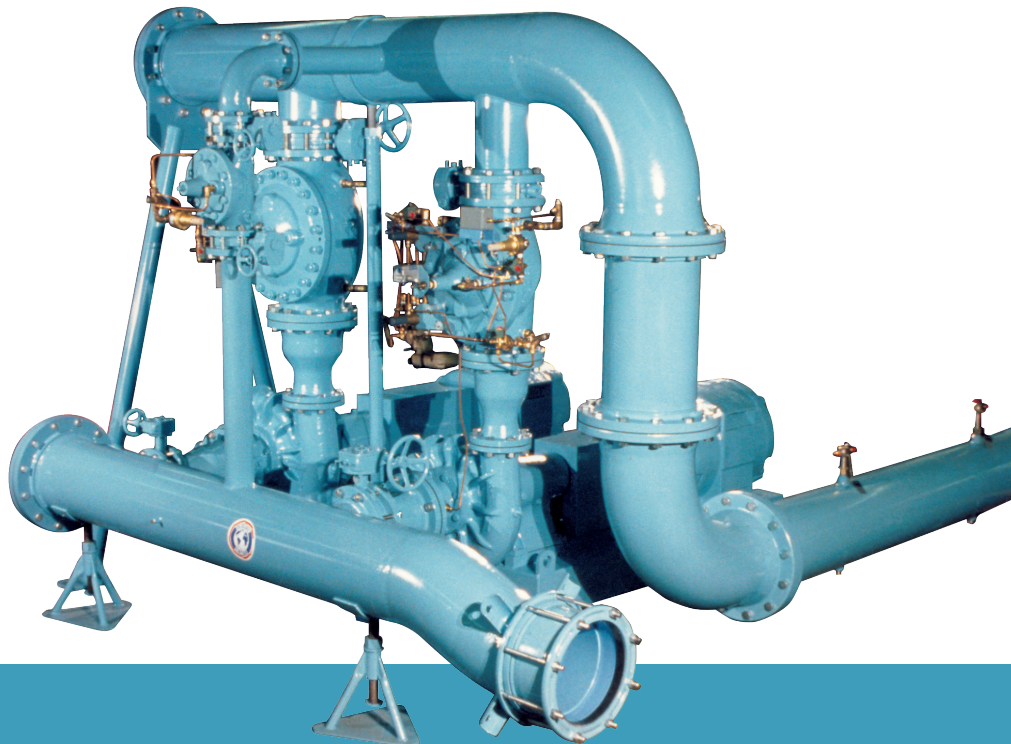
## HYDRO TURBINE DATA WORKSHEET

(for Preliminary Evaluation)

PROJECT NAME					
CONTACT NAME					
ADDRESS					
PHONE					
EMAIL					
SITE INFORMATION					
WATER SOURCE	<input type="checkbox"/> STREAM <input type="checkbox"/> RESERVOIR (USES ENTIRE SYSTEM HEAD)				
GROSS HEAD (STATIC)		NET HEAD (INCLUDES FRICTION LOSS)		AVAILABLE FLOW	
PENSTOCK DIAMETER		PENSTOCK LENGTH			
PRESSURIZED SYSTEM (PRESSURE REDUCTION)					
INLET PRESSURE		OUTLET PRESSURE REQUIRED		DESIGN FLOW	
ELECTRICAL CHARACTERISTICS					
MOTOR TYPE	<input type="checkbox"/> INDUCTION (GRID INTERFACE) <input type="checkbox"/> SYNCHRONOUS (STAND-ALONE)			<input type="checkbox"/> ODP <input type="checkbox"/> TEFC	
VOLTAGE		PHASE	<input type="checkbox"/> THREE <input type="checkbox"/> SINGLE	CYCLES (HERTZ)	<input type="checkbox"/> 60 HZ <input type="checkbox"/> 50HZ

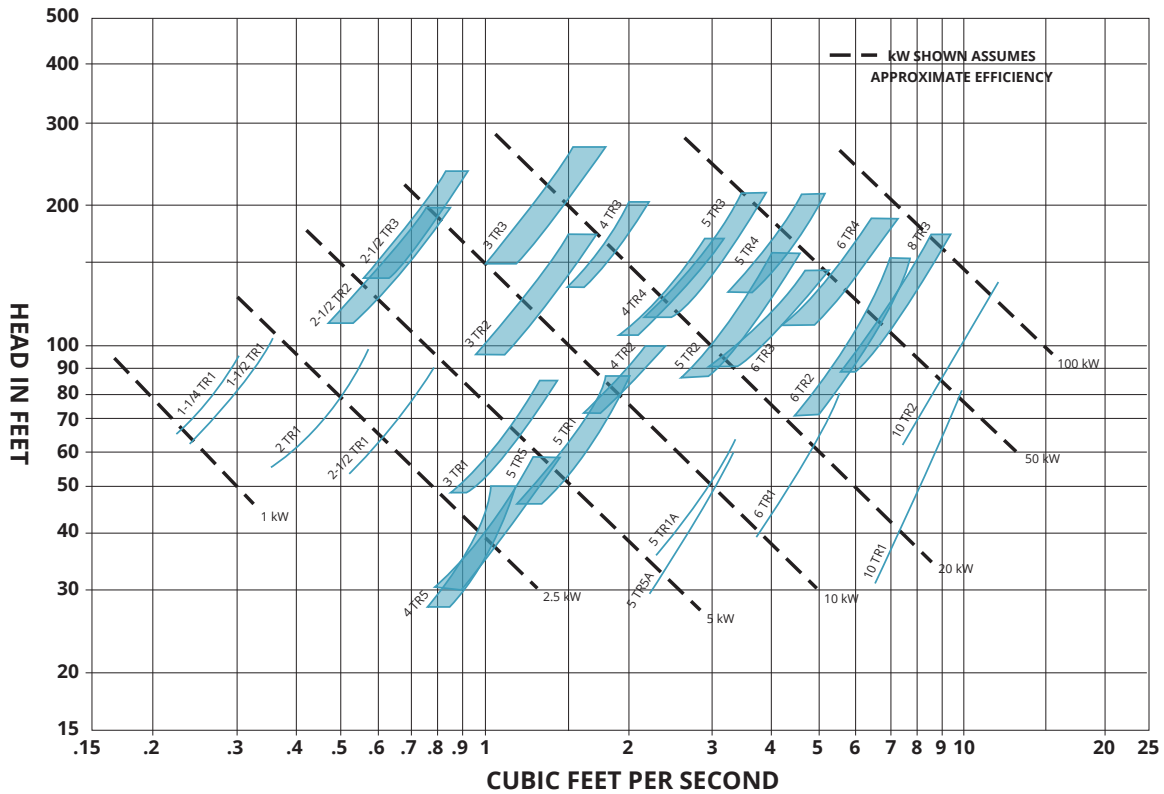
Complete this form online at  
[www.ginuxtech-inc.com/](http://www.ginuxtech-inc.com/)  
 for evaluation by YUNIQTECH INC staff.

*Two units in parallel between an inlet manifold above and outlet manifold below.*





## TURBINE SELECTION CHART - 1200 RPM



## TURBINE SELECTION CHART - 1800 RPM

