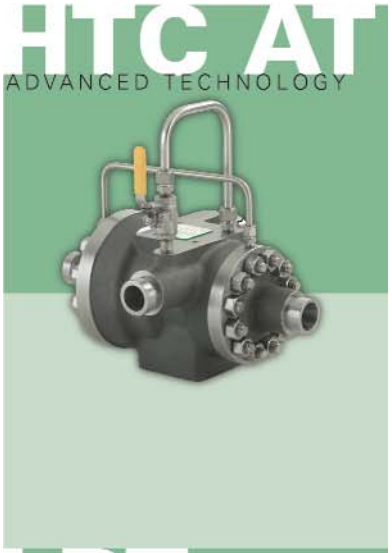
PUMPENGINEERING INC.
Harnessing the Power of Liquid Energy

HARNESSING THE POWER OF LIQUID ENERGY



HTC AT-1800 Advanced Technology TurboCharger

The AT TurboCharger is equipped with a rotor consiting of highly complex "twisted vane" 3D design impellers known as the AT3D Rotor. Each rotor is individually designed and manufactured to the customer's specific conditions. The efficiency levels achieved by the AT Turbos make them the most efficient energy recovery devices of any type for RO trains sized above 1,000 gpm (250 m3/h). The AT Turbo's are more efficient than any impulse turbine/centrifugal pump combination. Given the Turbo's clear cut advantages of low initial cost, low installation cost, ease of operation and reliability, their new higher efficiency makes them the best choice for Reverse Osmosis energy recovery.

Capacity

1500 gpm to 2100 gpm @ 1000 psi
340.6 m3/h to 477 m3/h @ 69 bar

Delivery

Fourteen to sixteen (14-16) weeks standard delivery.
Priority delivery service also available.

Materials of Construction

Rotor:	AL6XN
Bearings:	Graphitar 39
Casings:	Duplex Stainless Steel Alloy 2205

Design Features

Casings Patent Pending design uses an outer barrel for pressure containment to 1500 psi and inner vertically split volute inserts. The volute inserts are completely machined to custom CFD generated design. The water way surfaces are then super finished for minimum friction and maximum efficiency. Units AT 450 and smaller have horizontal orientated pipe connections, while AT 600 and larger have vertical pipe connections.

Dynamically Balanced Impellers individually machined impellers incorporating AT3D rotor technology for maximum efficiency.

Product lubricated journal bearings eliminate shaft seals and oil/grease lubrication and provide years of maintenance free operation.

Hydrostatic Thrust Bearing - Product lubricated thrust bearing allows turbine to run with 98% volumetric efficiency.

Multiple Turbine Nozzles - The Turbo is equipped with two nozzles and a control valve that allows brine flow and pressure to be regulated without energy wasting throttling or bypassing.