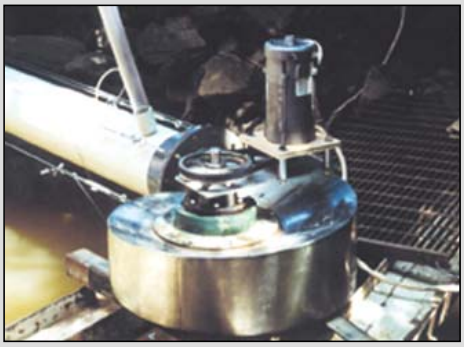
ABS Alaskan, Inc. introduces …

The Nautilus
Hydro Turbine

- **Produces over 3kW of power**
- **Operates efficiently on low head (4-18ft)**
- **High quality design with expected life of 50 years**

The Nautilus is a Francis-style turbine capable of tremendous power output in a compact design. It will power your home and shop for generations on as little as four feet of head. Water is channeled to the turbine via a 'Penstock', or large diameter pipe. The Nautilus is unique in that it uses both a 'closed' water diversion system prior to the turbine (providing substantial 'pressure head'), while also using a 'Draft Tube' from the turbine to the tail water (producing 'suction head').

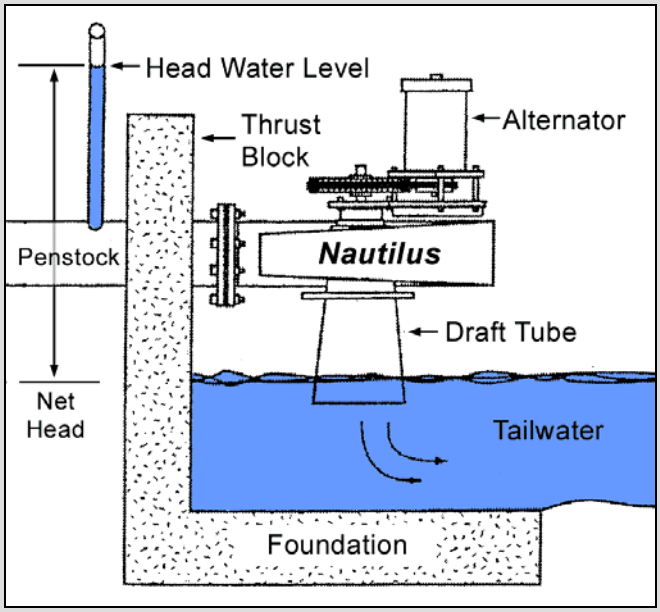


The Nautilus Turbine in action

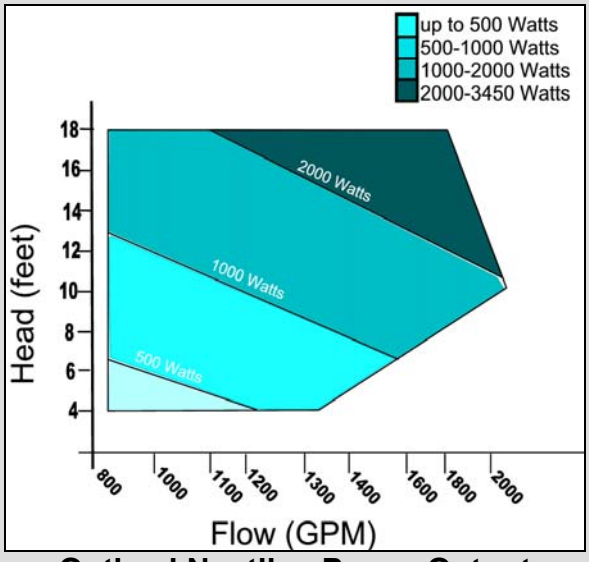
The Nautilus has an expected life of over 50 years. All components are made of laser-cut stainless steel to insure smooth water surfaces that will never rust. Massive taper roller bearings and carbon/ceramic face seals will last 7-10 years between refits.

The Nautilus can be disassembled and easily transported into the most remote areas as no single component weighs over 95 lbs. (44 kg.). The total assembled weight (without the alternator) is under 230 lbs. (105 kg.).

The Nautilus turbine is available with either an 8 inch (203 mm) or a 10 inch (254 mm) stainless steel runner. Using the 8" runner (shown in graph), 1800 GPM and 18 ft (5.5 m) of head will produce almost 3500 watts of power. With the 10" runner, 2100 GPM and 10 ft (3 m) of head will produce over 2200 watts of power.



Basic components of a Nautilus hydro system



Optimal Nautilus Power Output
With 8 inch runner option
(graph is in logarithmic scale)

Technical Specifications
Nautilus Turbine

Runner Type - Francis
Specific Speed - 46
Runaway Speed - 1.4 * optimum RPM
Number of Blades - 9
Runner Sizes Available - 8 inches (203 mm) and 10 inch (254 mm)
Runner Materials - 303 and 304 Stainless Steel
Runner Construction - Fabricated
Runner Weight - 10 inch - 25 lbs - 11.3 kg
Scroll Case - Trapezoidal Section
Scroll Material - 304 Stainless Steel
Inlet Size - 10 inch ID - 254 mm - Standard IPS - 10 inch Flange
Number of Guide Vanes - One - Adjustable Scroll Nose Vane
Scroll and Throat Assembly Weight - 115 lbs (52 kg)
Regulation - Optional Butterfly Valve
Draft Tube - 7.5° Inclusive - 15° Total Straight Cone 15 inches long - 380 mm
Draft Tube Clearance Required - 22 inches (558 mm)
Bearings -Tapered Roller
Lubrication - Light Oil
Seal - Carbon Faced Ceramic with Stainless Steel Construction
Shutdown - Optional Automatic
Total Weight Without Generator - 230 lbs (105 kg)
Efficiency - Estimated 77%
Head Range and Output:

Power Tables — 10" Nautilus: 4' thru 10' Head

NET HEAD	4'	4.5'	5'	5.5'	6'	6.5'	7'	7.5'	8'	8.5'	9'	9.5'	10'
WATTS	**550**	**674**	**790**	**910**	**1037**	**1169**	**1307**	**1450**	**1600**	**1750**	**1900**	**2066**	**2230**
KWH / Mo*	***396***	***485***	***568***	***655***	***746***	***891***	***941***	***1044***	***1152***	***1260***	***1368***	***1487***	***1650***
GPM	1337	1396	1495	1568	1638	1705	1769	1831	1891	1950	2006	2061	2115
HP	1	1.193	1.39	1.61	1.83	2.07	2.31	2.56	2.82	3.09	3.37	3.66	3.95
RPM	370	392	414	434	453	472	489	507	523	540	555	570	585
CFS	2.98	3.16	3.33	3.49	3.65	3.8	3.94	4.08	4.21	4.34	4.47	4.59	4.71
CFM	178.8	186.64	199.9	209.6	219	228	236.5	245	252.8	260.6	268	275.5	283
L / S	84.4	88.07	94.3	98.9	103.3	107.5	111.6	115.5	119.3	123	126.5	130	133.4
NET H / M	**1.219**	**1.37**	**1.52**	**1.676**	**1.82**	**1.98**	**2.13**	**2.28**	**2.43**	**2.59**	**2.74**	**2.89**	**3.05**

Power Tables — 8" Nautilus: 4' thru 11' Head

NET HEAD	4'	4.5'	5'	5.5'	6'	6.5'	7'	7.5'	8'	8.5'	9'	9.5'	10'	10.5'	11'
WATTS	**361**	**431**	**505**	**627**	**664**	**748**	**837**	**928**	**1022**	**1120**	**1220**	**1322**	**1428**	**1537**	**1648**
KWH / Mo*	***260***	***310***	***363.6***	***451***	***478***	***538***	***602***	***668***	***735***	***806***	***878***	***952***	***1028***	***1106***	***1186***
GPM	856	908	957	1004	1048	1091	1132	1172	1210	1248	1284	1319	1344	1387	1420
HP	.64	.76	.89	1.11	1.17	1.32	1.48	1.64	1.81	1.98	2.16	2.34	2.52	2.72	2.92
RPM	462	490	516	542	566	589	611	633	653	673	693	712	730	748	766
CFS	1.90	2.02	2.132	2.24	2.33	2.43	2.52	2.61	2.69	2.78	2.86	2.93	3,01	3.09	3.16
CFM	144.4	121	128	134	140	146	151	157	162	167	172	176	181	185	189
L / S	54	57.2	60.3	63.3	66	68.8	71.4	73.9	76.3	78.7	81	83.2	84.7	87.5	89.5
NET H / M	**1.21**	**1.37**	**1.52**	**1.67**	**1.82**	**1.98**	**2.13**	**2.28**	**2.438**	**2.59**	**2.74**	**2.89**	**3.05**	**3.2**	**3.35**

Power Tables — 8" Nautilus: 11.5' thru 18' Head

NET HEAD	11.5'	12'	12.5'	13'	13.5'	14'	14.5'	15'	15.5'	16'	16.5'	17'	17.5'	18'
WATTS	**1761**	**1878**	**2000**	**2120**	**2250**	**2366**	**2500**	**2625**	**2757**	**2891**	**3027**	**3166**	**3307**	**3449**
KWH / Mo*	***1340***	***1352***	***1440***	***1526***	***1620***	***1700***	***1800***	***1890***	***1985***	***2081***	***2180***	***2280***	***2381***	***2483***
GPM	1451	1482	1513	1543	1572	1601	1630	1657	1685	1712	1738	1765	1790	1815
HP	3.12	3.33	3.54	3.75	3.97	4.19	4.41	4.64	4.88	5.12	5.36	5.6	5.85	6.2
RPM	783	800	817	833	849	864	880	895	909	924	938	952	966	980
CFS	3.23	3.3	3.37	3.44	3.5	3.57	3.63	3.69	3.75	3.81	3.87	3.93	3.98	4.04
CFM	194	198	202	206	210	214	218	221	225	229	232	236	239	242
L / S	91.5	93.4	95.4	97.3	99.1	101	102.8	104.5	106.3	108	109.6	111.3	112.9	114.5
NET H / M	**3.5**	**3.65**	**3.81**	**3.96**	**4.11**	**4.26**	**4.42**	**4.57**	**4.72**	**4.87**	**5.02**	**5.18**	**5.33**	**5.48**

Power tables indicate 75% turbine efficiency, 5% mechanical power transmission losses, 80% alternator efficiency.
** Monthly output estimates assume appropriate intake design and cleaning.*

NOTE: Add 20% to the output specified in the table above when calculating wire sizes and specifying electrical components connected to turbine output.