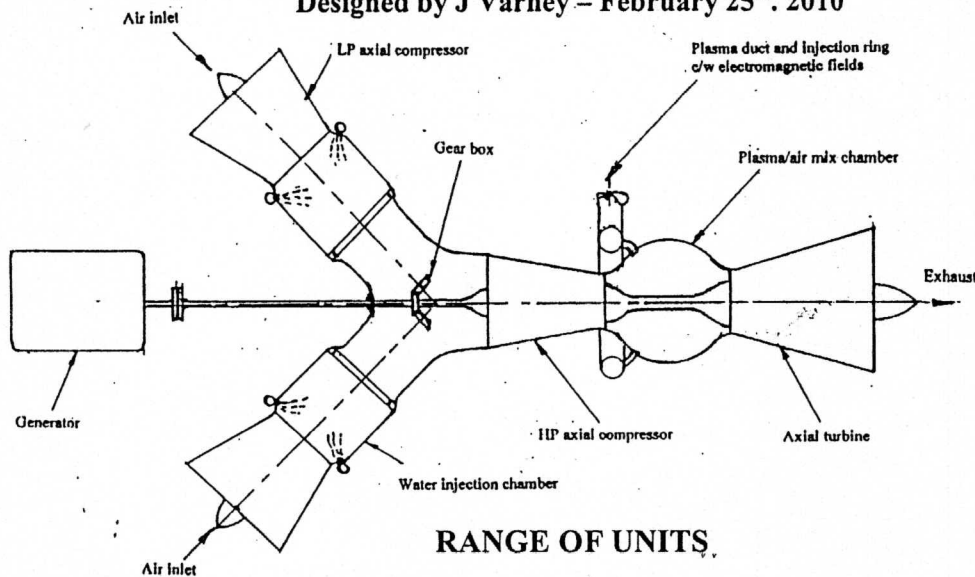# THE PLASMA GAS TURBINE
[for land and sea power generation]
Designed by J Varney – February 25th. 2010

RANGE OF UNITS

Power generated MW	25	50	100	200	400	600	800	1000	1200
Shafts r.p.m.	7200	7200	3600	3600	1800	1800	1800	1800	1800
Air intake rate lbs/sec.	132	264	529	1058	2116	3174	4231	5289	6347
Water inject. rate lbs/sec.	----	----	----	----	----	----	----	----	----
Exh. rate lbs/sec.	132	264	529	1058	2116	3174	4231	5289	6347
Plasma rate lbs/sec.	0.006	0.012	0.024	0.048	0.097	0.145	0.193	0.242	0.290

System Heat Rate btu/kwh = 8713 for all of above units. – [waste heat recovery systems optional]
The HP compressor, the plasma/air mix chamber and the turbine casings will be water cooled.
LP axial compressors are 6 stage with a PR of 4 – HP axial compressor is 12 stage with a PR of 15.
All rotating thermal machines are assumed to have a 90% isentropic efficiency.
Gearing losses are allowed as 4% of LP compressor work demand.
Bearing losses are allowed as 2% of Turbine work output.
Water injection system [on LP compressor outlet ducts] will commence when ambient temperature rises above 60 deg.F and will maintain HP compressor outlet temperature below 1200 deg. F.
The plasma/air mix chamber, between the HP compressor and the turbine, replaces the traditional combustor.
The single axial turbine [mounted on the main shaft] has 7 stages and exhausts to atmosphere.
The Generator is mounted on the cold end of the main shaft [efficiency of generator = 90%].

ENGINE PATHWAY PRESSURE/TEMPERATURE PROFILES

	LP compressors		HP compressor		Turbine	
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Total Pressure Psia.	14.6	58.4	58.1	871.5	862.8	15.2
Total Temperature deg. R	520	773	773	1660	3260	1278

Note- heat in the pure hydrino plasma is assumed @ ten million btu/lb.[200 times LHV of hydrogen]