

What is the largest unit capacity of turbine generator ?

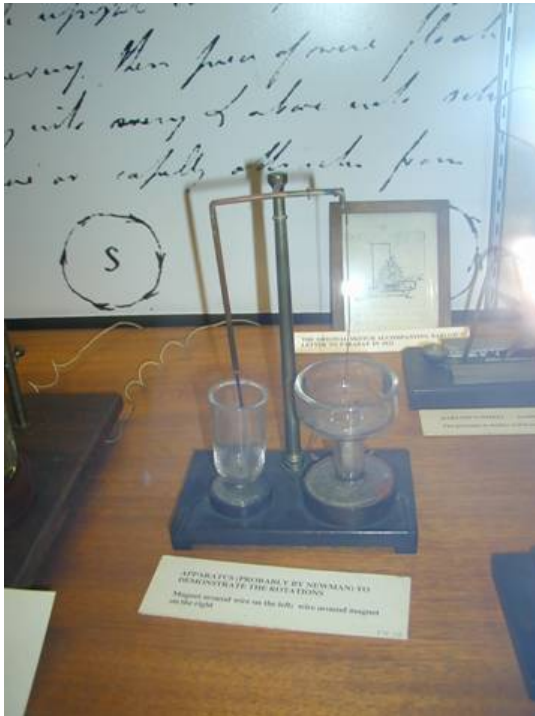


Makoto TARI
vonRoll

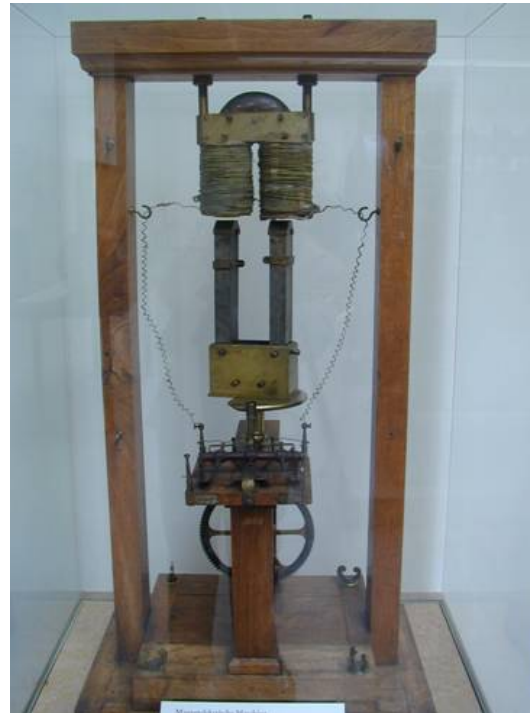
*Replica of Thomas Edison's First Incandescent Lamp
1879 (date of the original)*

CIGRE 2008 Group A1 Giga-Watt Generation Panel Session

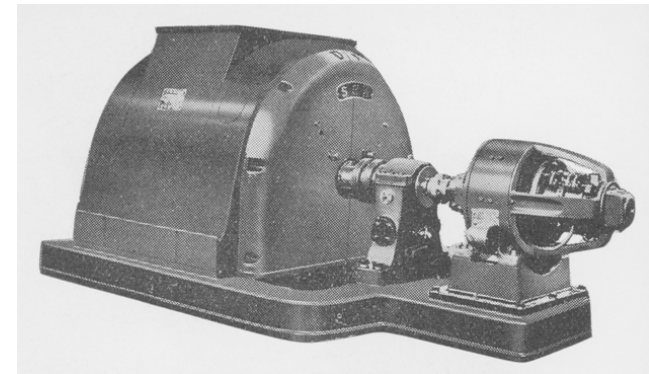
Origin of Generators



M. Faraday



A. H. Pixii 1832



1800's

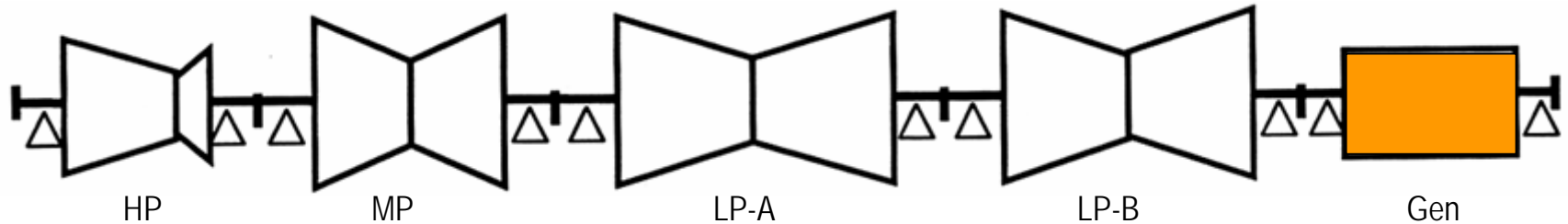
Now! 2 pole 1,000 ~1,200MW generators under manufacturing & operation



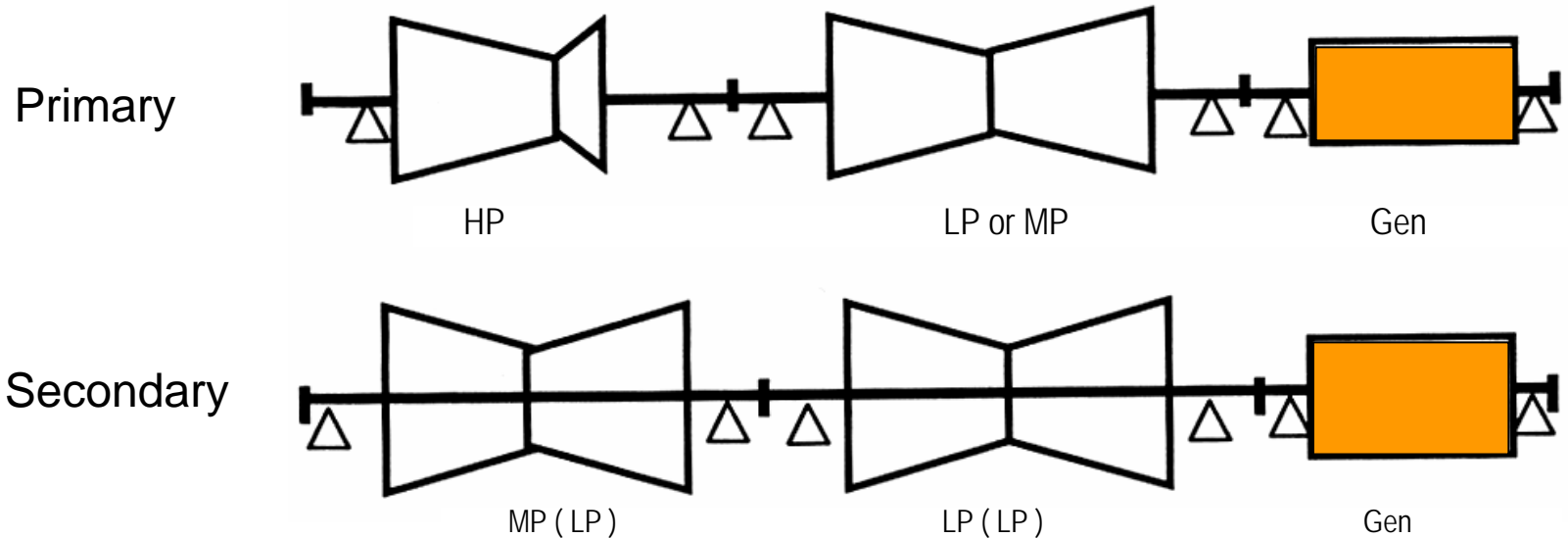
Under assembly of 1000MW gen
2 pole – 60Hz – 3,600min⁻¹

How to realize huge power plant ?

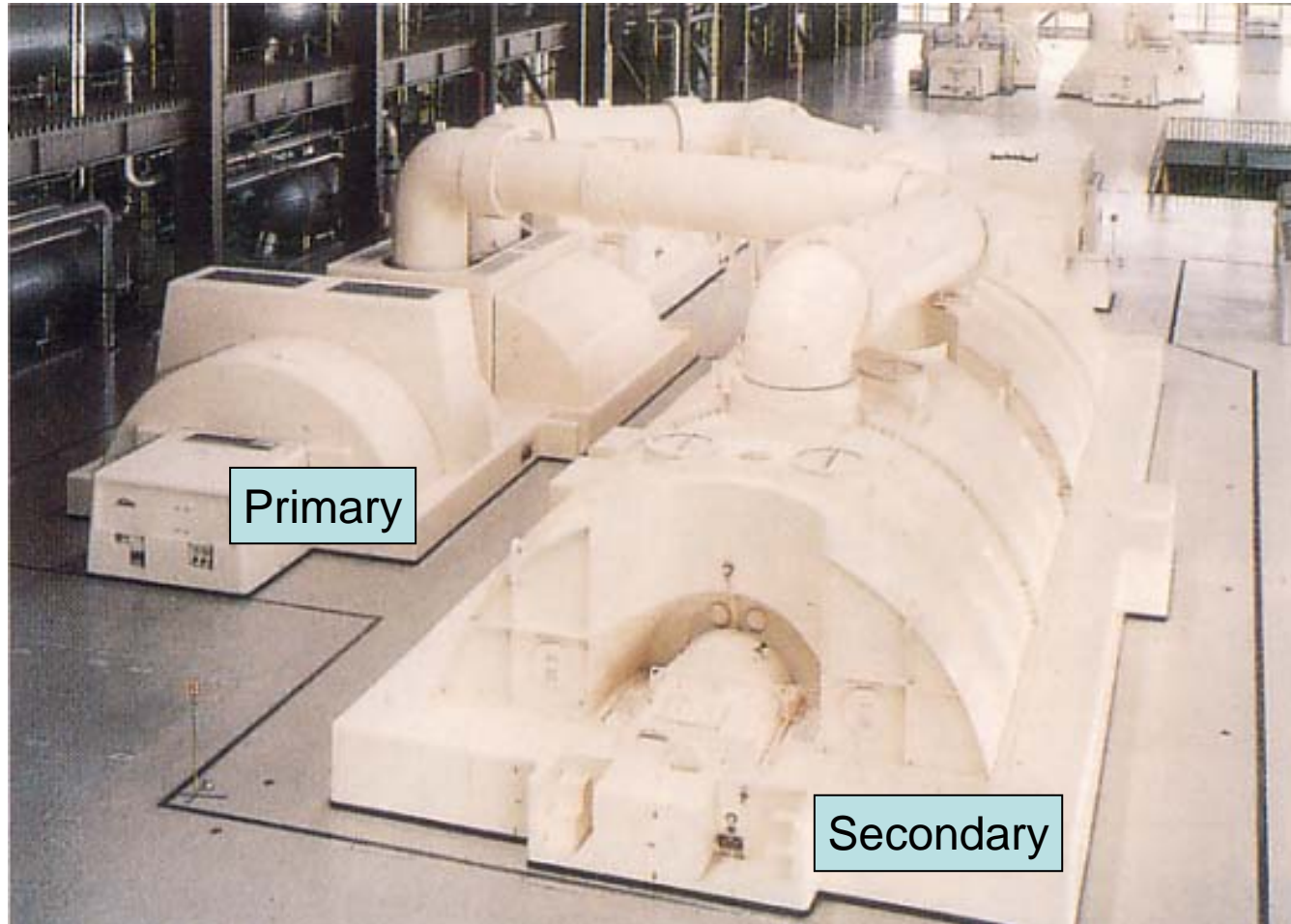
a) Tandem Compound type 3000min^{-1} & 3600min^{-1}



b) Cross Compound type $3000/3000\text{min}^{-1}$ or $3000/1500\text{min}^{-1}$ 、 $3600/1800\text{min}^{-1}$



50Hz - 1,000MW CC type plant



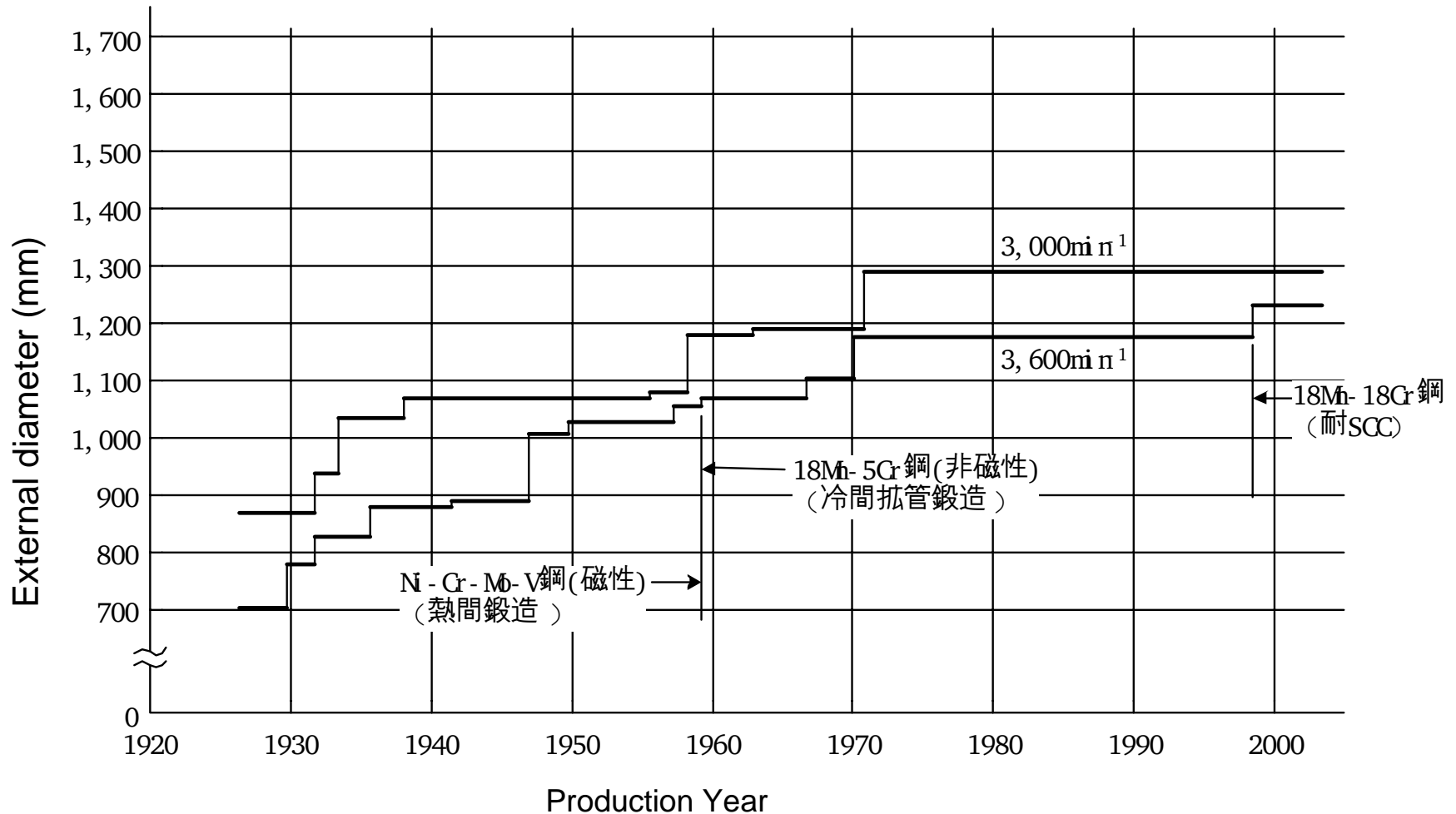
2p-60Hz-3,600min-1,000MW TC type plant



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What is Key component ?

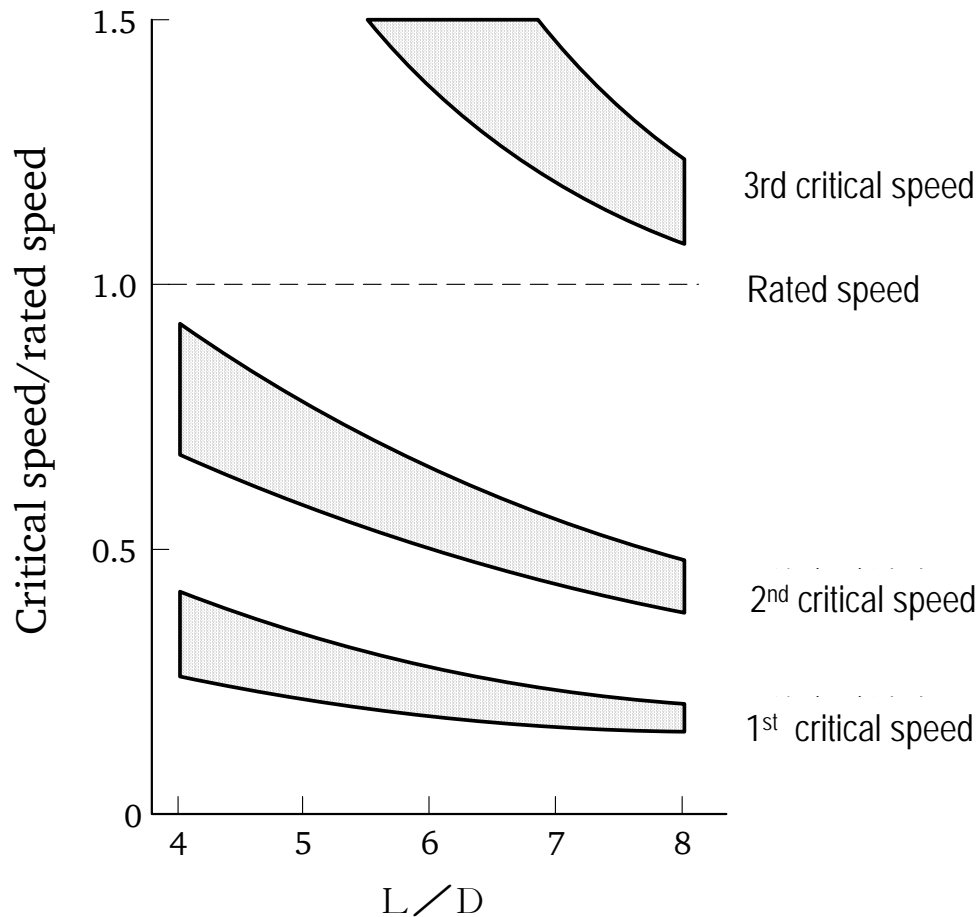
Large sized Retaining Ring !



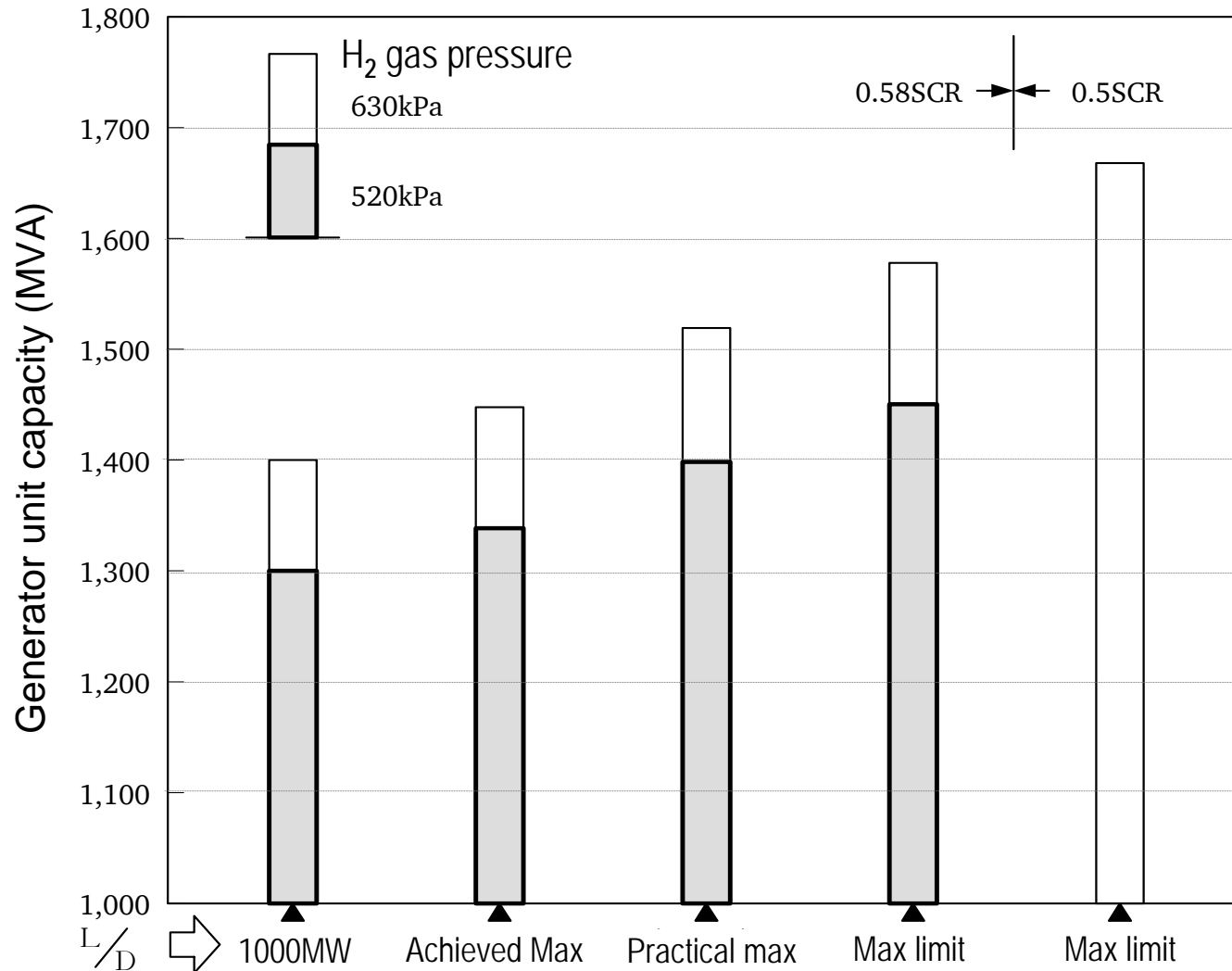
What is Key technology ?

Stable Rotor Running without vibration problem !

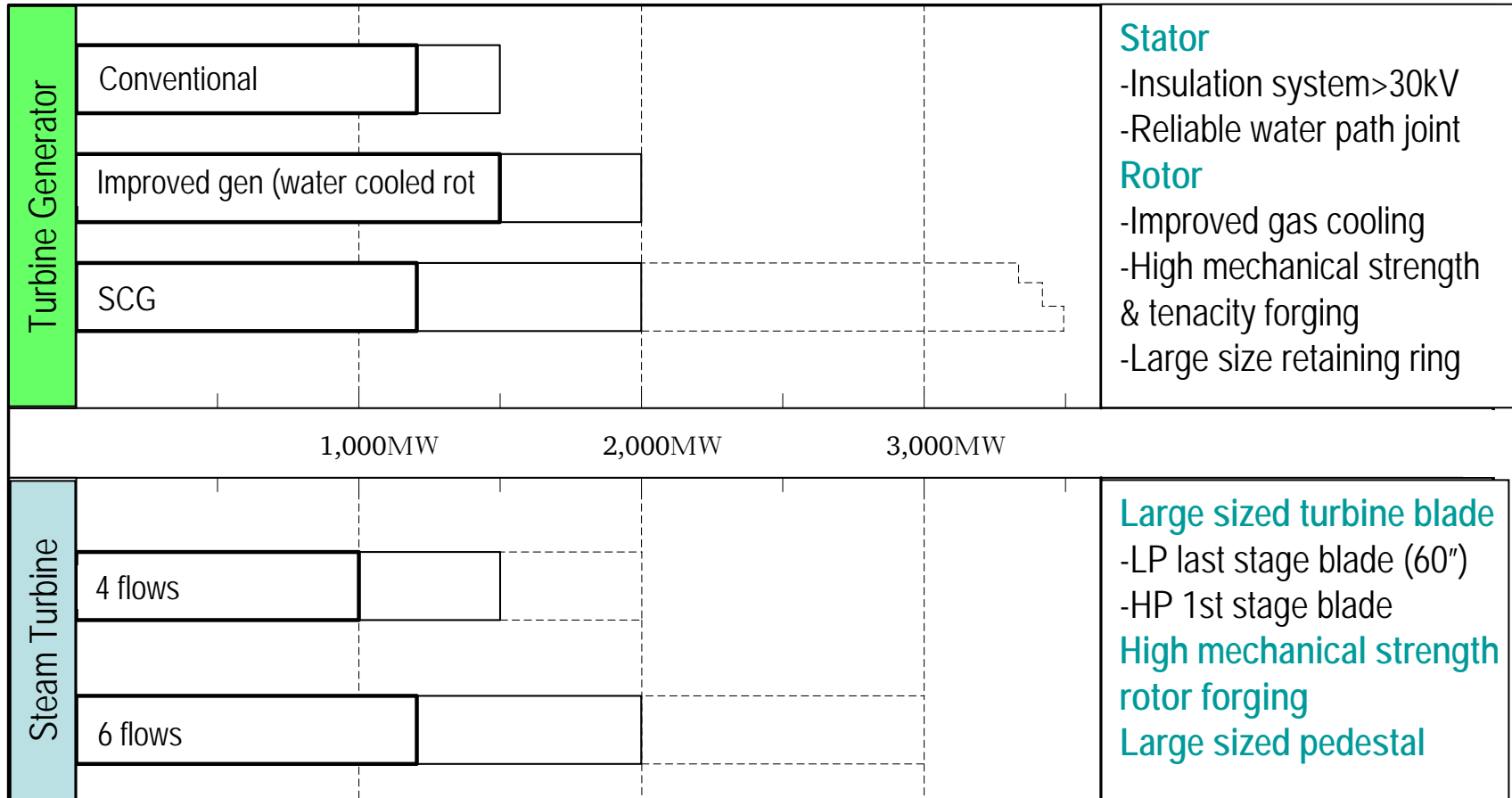
Critical Speed depending on Rot Diameter / Length (L/D)



Possible largest 2pole-60Hz generator?



Expected Max Turbine and Generator Unit Capacity, and Technical issues to be solved



- Stator**
- Insulation system >30kV
 - Reliable water path joint
- Rotor**
- Improved gas cooling
 - High mechanical strength & tenacity forging
 - Large size retaining ring

- Large sized turbine blade**
- LP last stage blade (60")
 - HP 1st stage blade
- High mechanical strength rotor forging**
- Large sized pedestal**

Existing technology Improved technology New/improved technology