

# **INTRODUCTION OF MITSUBISHI GENERATORS**

COMPANY PROPRI ETARY

NOT TO BE REPRODUCED OR DI SCLOSED W THOUT SPECI FI C  
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( TH I S I S A RED I NK STAMP)

**August 2008**

## CAPABILITY & EXPERIENCE

# SUPPLY LIST OF LARGE CAPACITY GENERATORS

Turbine generator over 800MVA For Thermal power station				
No.	MVA	kV	rpm	FOB/COD
TA	800	25	3600	1991/1993
TB	990	24	3000	1998/2000
TC	990	24	3000	1998/2000
TD	868	23	3600	1999/2001
TE	868	23	3600	1999/2002
TF	868	23	3600	2000/2002
TG	868	23	3600	2000/2003
TH	844	24	3000	2005/2006
TI	844	24	3000	2005/2007
TJ	1008	27	3600	2007/2009
TK	1045	27	3000	2010/2012

FOB:Free On Board

COD:Commercial Operation Date

Turbine generator over 1000MVA For Nuclear power station				
No.	MVA	kV	rpm	FOB/COD
NA	1300	24	1800	1976/1979
NB	1300	24	1800	1976/1979
NC	1300	24	1800	1985/1987
ND	1310	24	1800	1990/1991
NE	1310	24	1800	1990/1993
NF	1310	24	1800	1991/1994
NG	1310	24	1800	1995/1997
NH	1600	29	1800	2000/2009
NI	1600	29	1800	2003/2009
NJ	1020	21	1500	2007/2009
NK	1407	24	1500	2011/2013
NL	1407	24	1500	2012/2014
NM	1715	30	1800	2014/2016
NN	1715	30	1800	2014/2016

## RECENT NUCLEAR GENERATOR

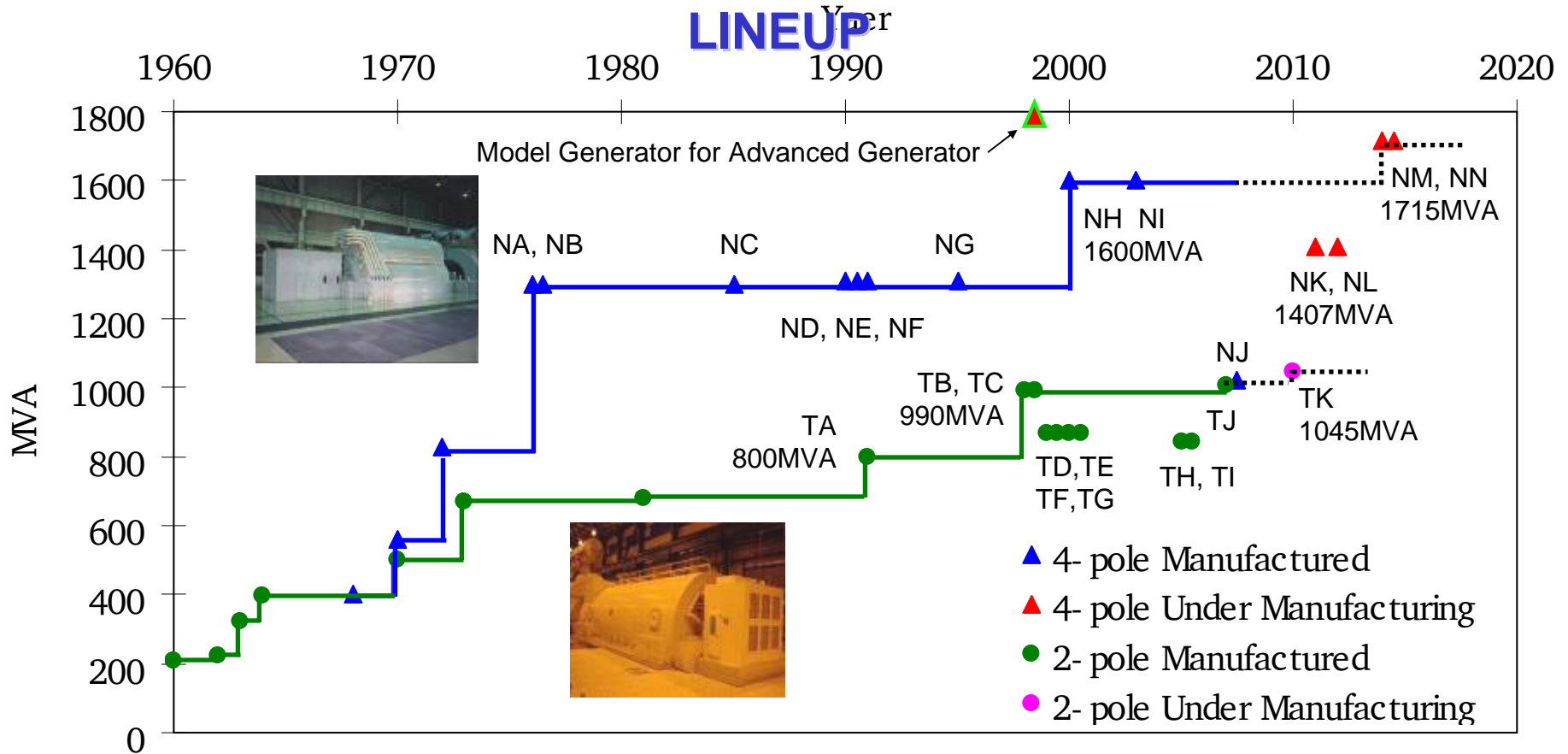
### RECENT TREND OF NUCLEAR GENERATOR

- **LARGER CAPACITY 1000MVA ~2000MVA**  
**For APWR、ABWR、AP1000、EPR,etc**

### MEASURES FOR HIGHER RELIABILITY

- **APPLICATION OF PROVEN TECHNOLOGY OF COOLING METHOD**
- **LONG TERM RELIABILITY VERIFICATION OF INSULATION**
- **APPLICATION OF ADVANCED TECHNOLOGY**
- **VERIFICATION WITH MODEL GENERATOR**

# 4 POLE GENERATOR DEVELOPMENT HISTORY AND LINEUP



Cooling type	Rotor : Hydrogen cooled	
	Stator : Hydrogen cooled	Stator : Water cooled

# TECHNICAL FEATURES OF LARGE CAPACITY 4POLE GENERATORS

COIL END SUPPORT WITH  
CONE STRUCTURE

LARGE DIAMETER ROTOR

STATOR COIL  
END

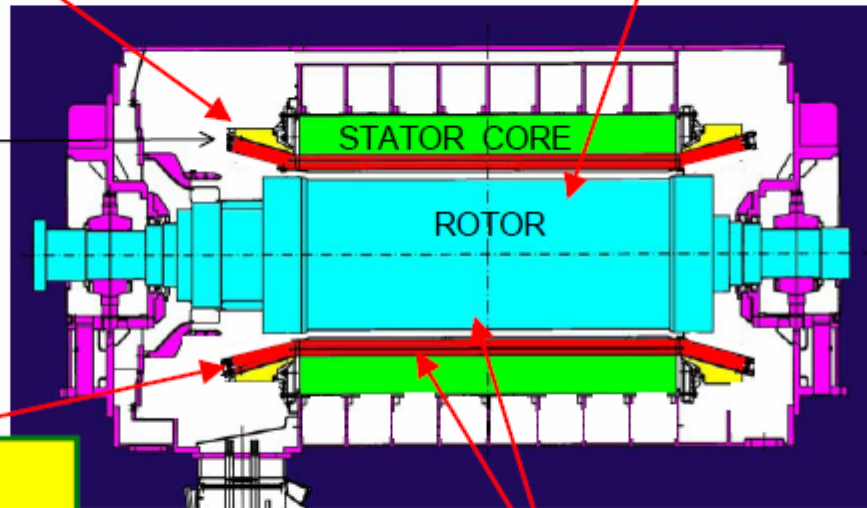
STATOR CORE

ROTOR

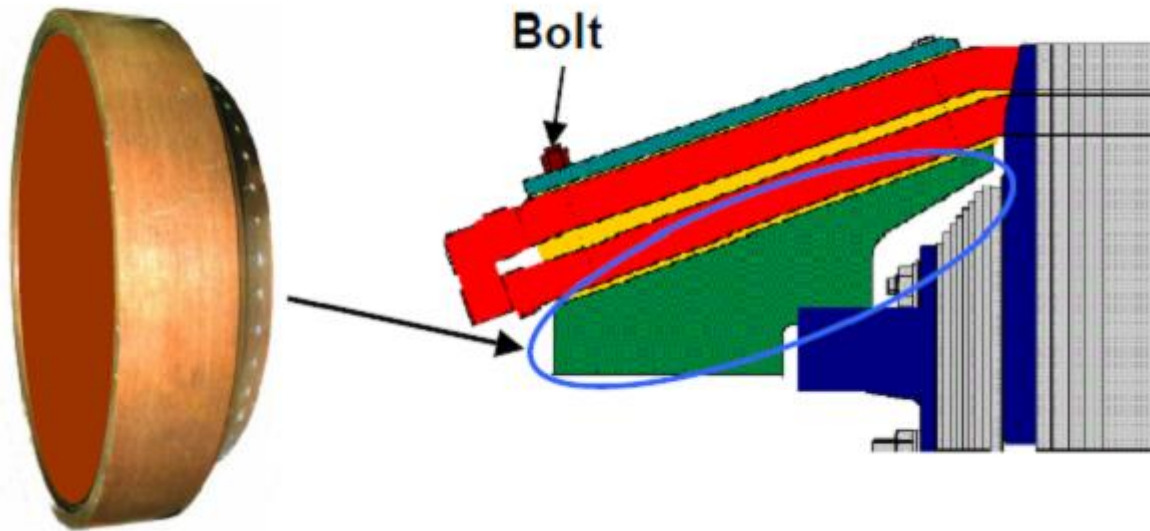
LEDA BOX

30kV CLASS  
HIGH VOLTAGE  
INSULATION SYSTEM

COIL COOLING SYSTEM  
STATOR : WATER COOLING  
ROTOR : HYDROGEN INNER COOLING



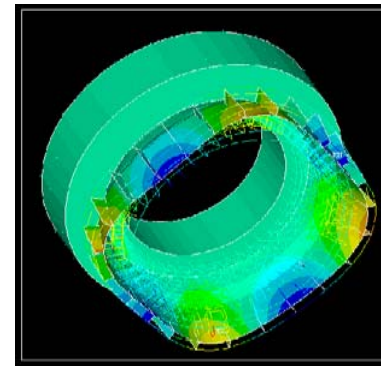
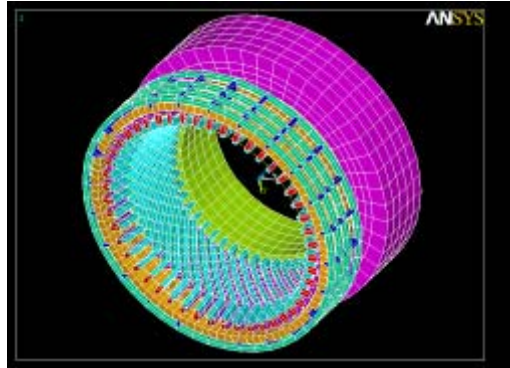
## TECHNICAL FEATURES OF LARGE CAPACITY 4POLE GENERATORS HIGHER RIGIDITY COIL END STRUCTURE



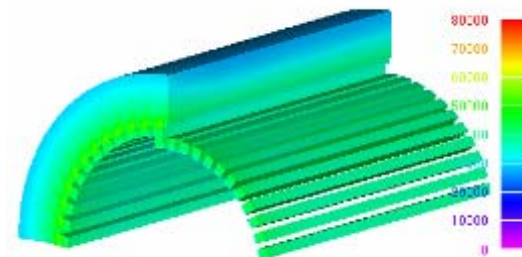
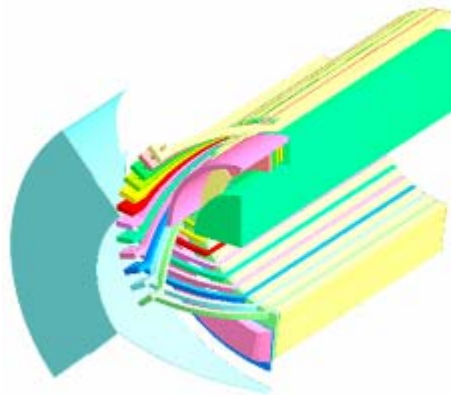
**Cone Support**

- High rigidity supported by Cone structure
- Stator Coil fixed by Bolts  
ensures high quality (Low Skill Dependent)

# TECHNICAL FEATURES OF LARGE CAPACITY 4POLE GENERATORS ADVANCED TECHNOLOGY FOR STRUCTURAL DESIGN & ELECTRICAL DESIGN



COIL END VIBRATION ANALYSIS



MAGNETIC FIELD ANALYSIS OF GENERATOR

# VERIFICATION WITH 4POLE MODEL GENERATOR

- PERFORMANCE UNDER RATED & FOLLOWING SEVERE CONDITIONS
  - THREE PHASE SUDDEN SHORT CIRCUIT TEST FROM RATED VOLTAGE
  - LINE TO LINE SHORT CIRCUIT TEST AT EXCESS  $I_2$  CONDITION
  - ROTATIONAL TEST AT 120% OVER SPEED
- INSULATION CHARACTERISTICS FOR 30kV CLASS
  - 30kV CLASS HIGH POTENTIAL TEST
  - V-T CHARACTERISTIC TEST

## SPEC. OF MODEL GENERATOR

- GEN. CROSS SEC. : SAME AS 1800MVA MACHINE
- STATOR COIL END : DITTO
- CORE LENGTH : 1/5 OF 1800MVA MACHINE

