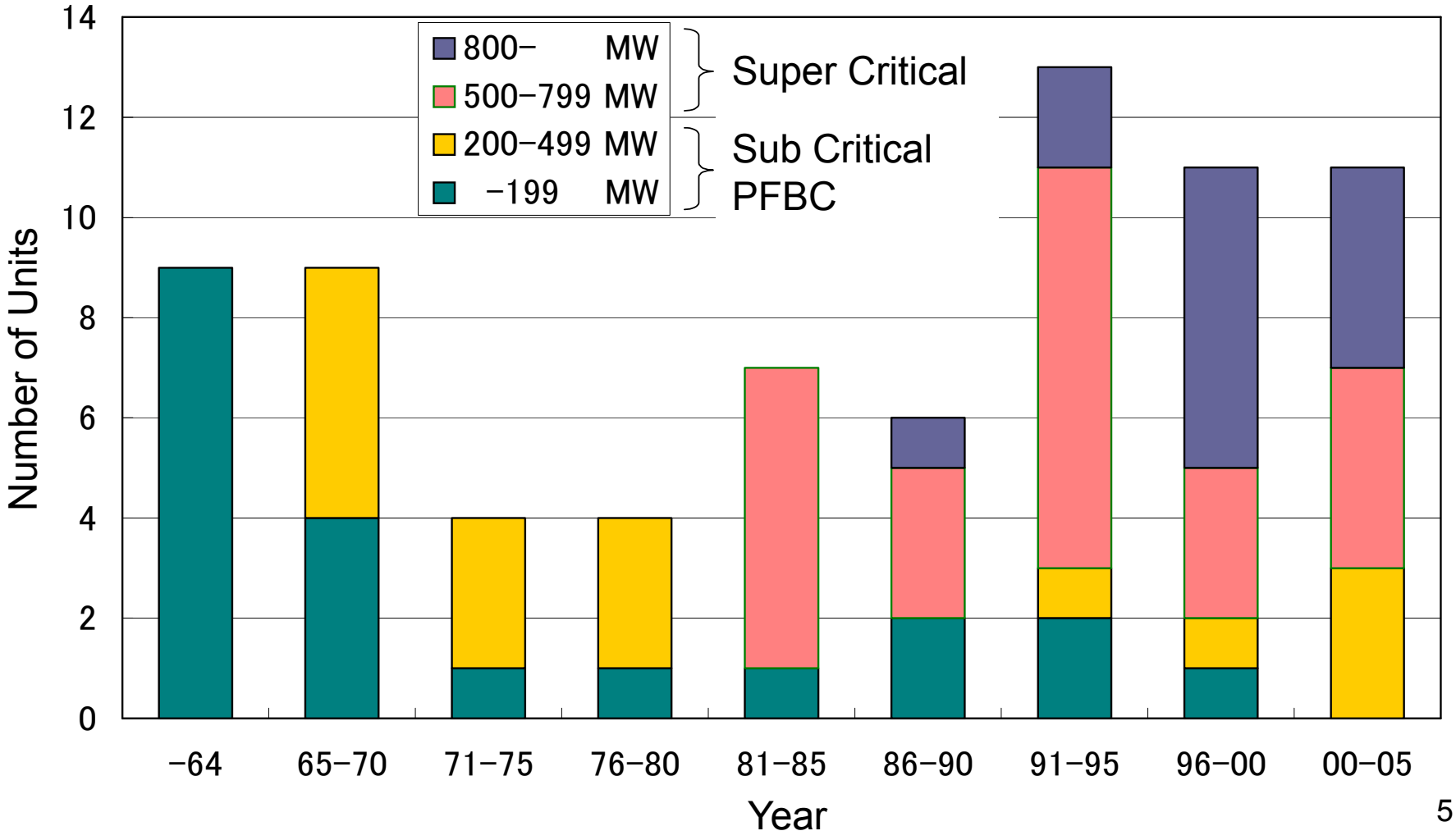
IEA A-USC Workshop

A-USC Technology Development Project in Japan

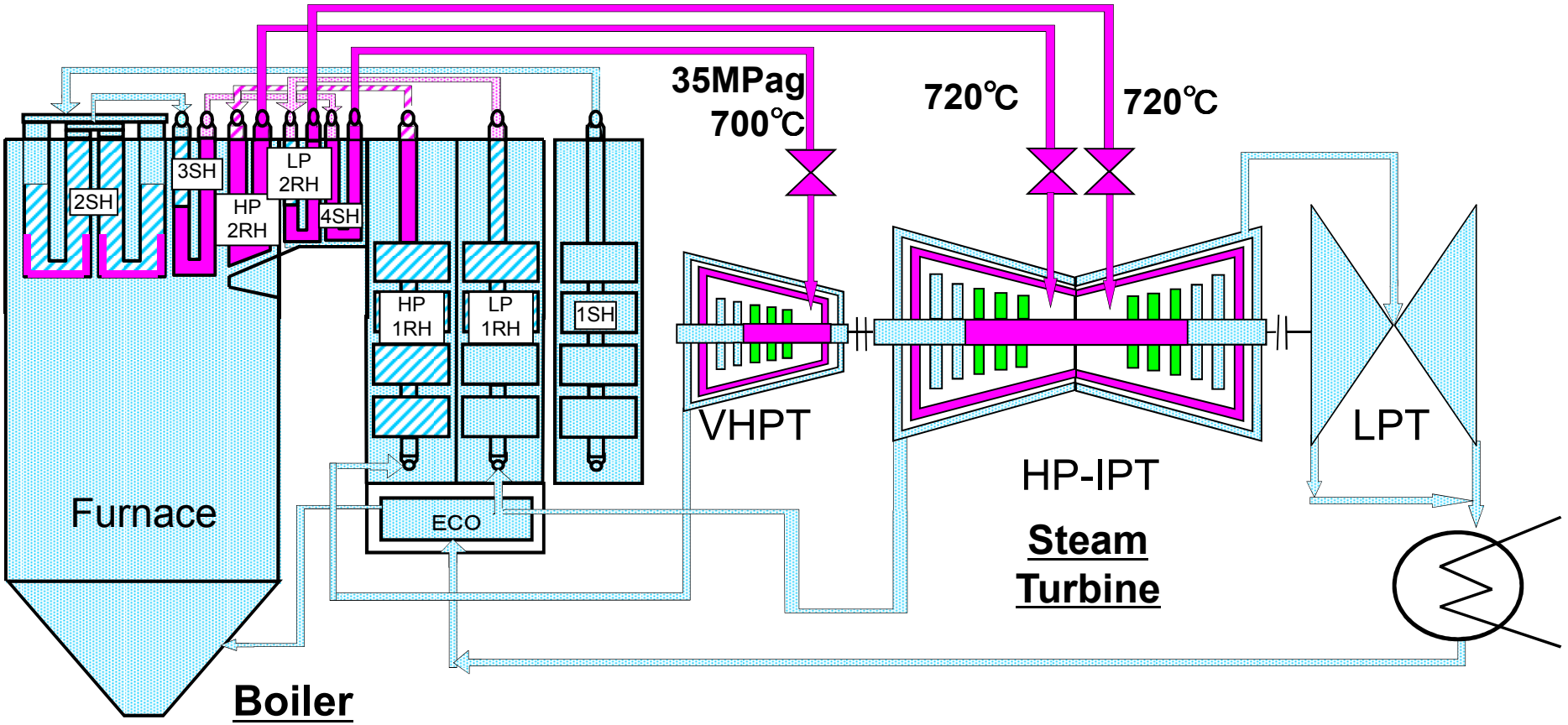
Sep 20, 2012

Masafumi Fukuda
NIMS Japan

Number of Existing Coal Power Plants and Steam Conditions



Selected Materials



Conventional Materials

Ferrite

Austenite

GT Materials

Ferrite

Ni-based

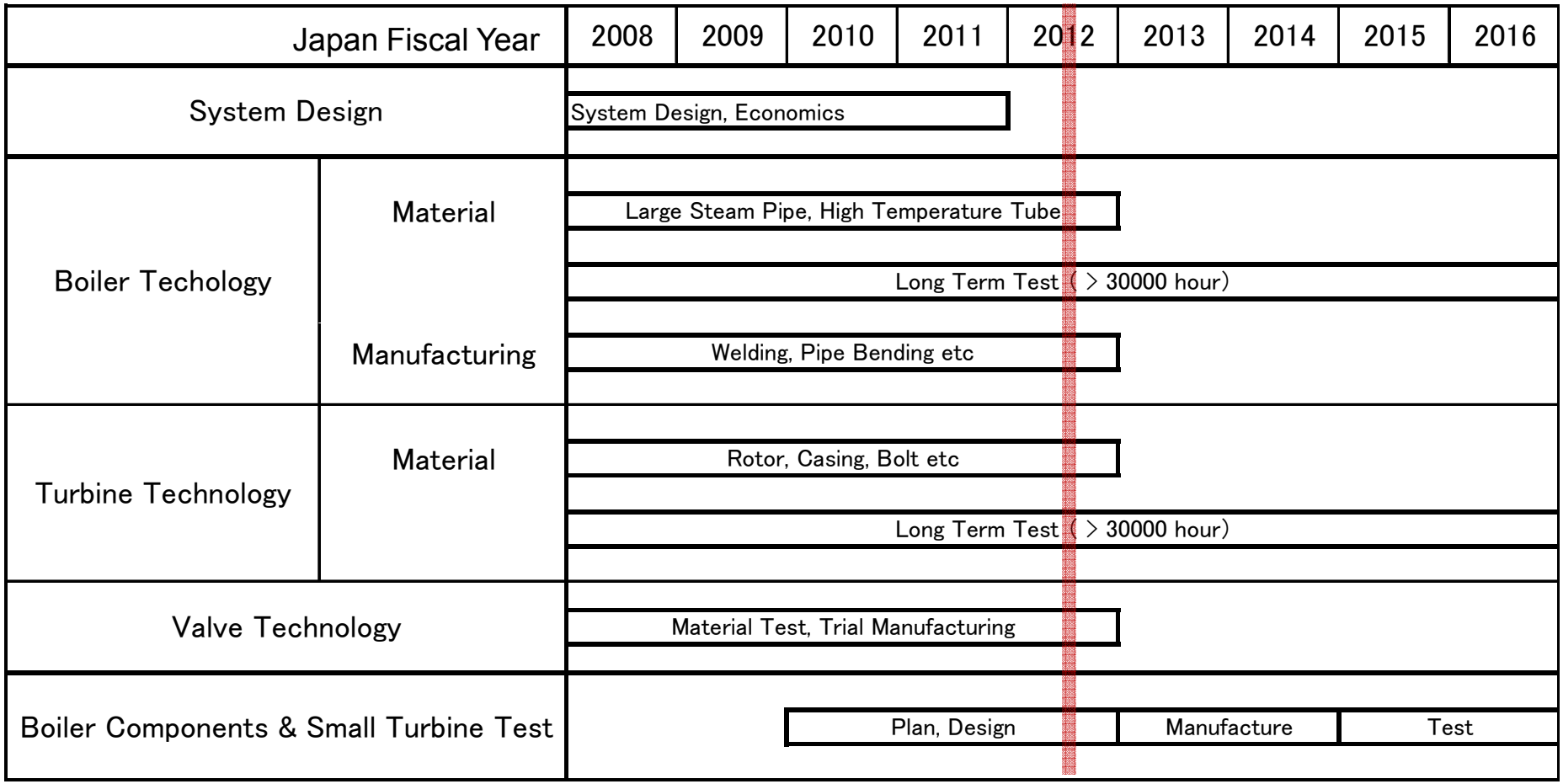
Materials under Development

Ferrite

Austenite

Ni-based

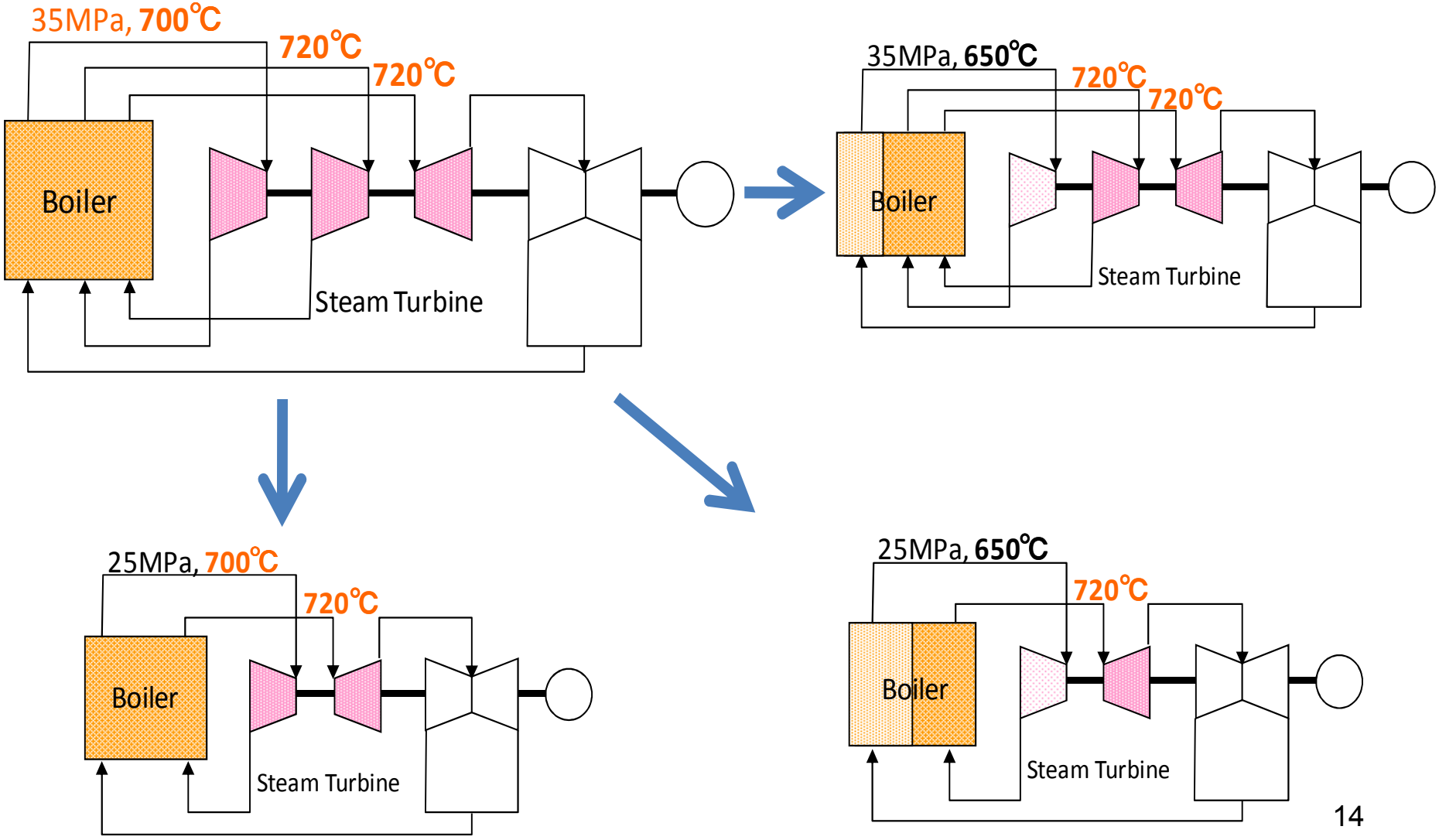
Road Map


Japan Fiscal Year
2008
2009
2010
2011
2012
2013
2014
2015
2016
System Design
System Design, Economics
Boiler Techology
Material
Large Steam Pipe, High Temperature Tube
Long Term Test (> 30000 hour)
Manufacturing
Welding, Pipe Bending etc
Turbine Technology
Material
Rotor, Casing, Bolt etc
Long Term Test (> 30000 hour)
Valve Technology
Material Test, Trial Manufacturing
Boiler Components & Small Turbine Test
Plan, Design
Manufacture
Test

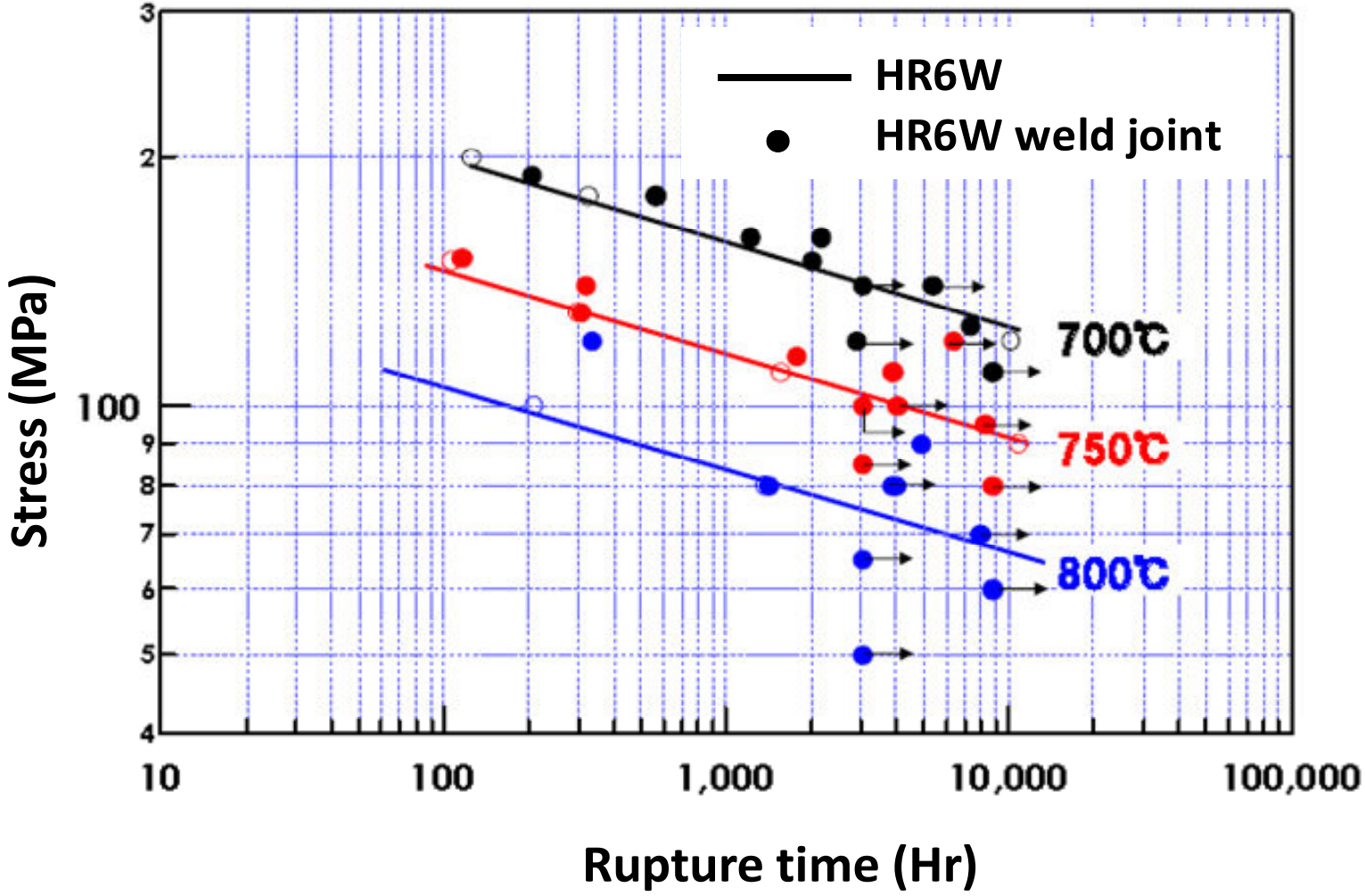
Boiler Candidate Materials

By courtesy of Sumitomo Metal Industries

System Configurations



Creep Rupture Strength of HR6W Weld



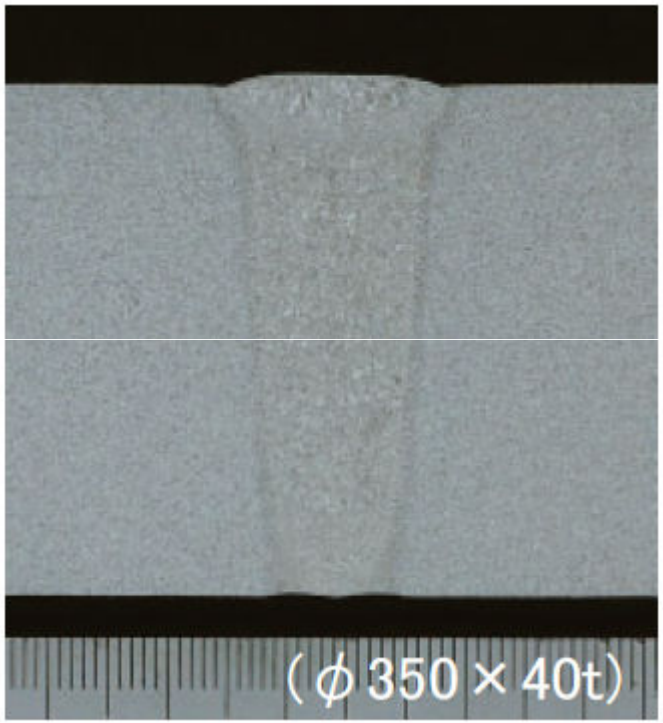
By courtesy of Babcock-Hitachi, IHI, Mitsubishi Heavy Industries

HR35 Pipe and Welding

By courtesy of IHI

Advanced 9Cr Alloy

SAVE12AD



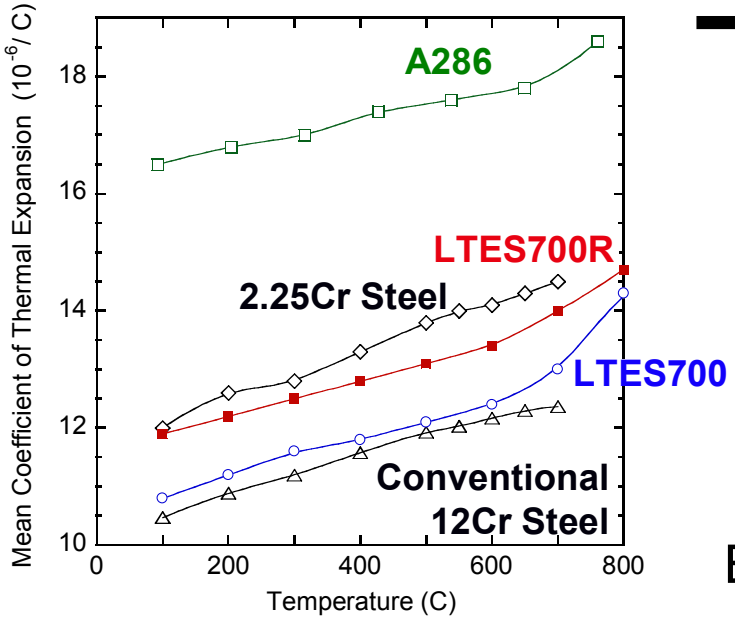
Welding Test

Bending Test

By courtesy of Babcock-Hitachi K.K.

Turbine Rotor Dissimilar Welding

LTES700R



Dissimilar Weld

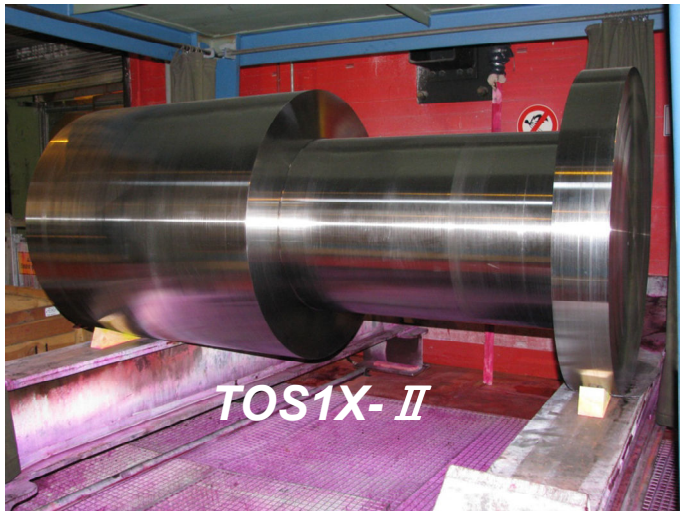
By courtesy of Mitsubishi Heavy Industries

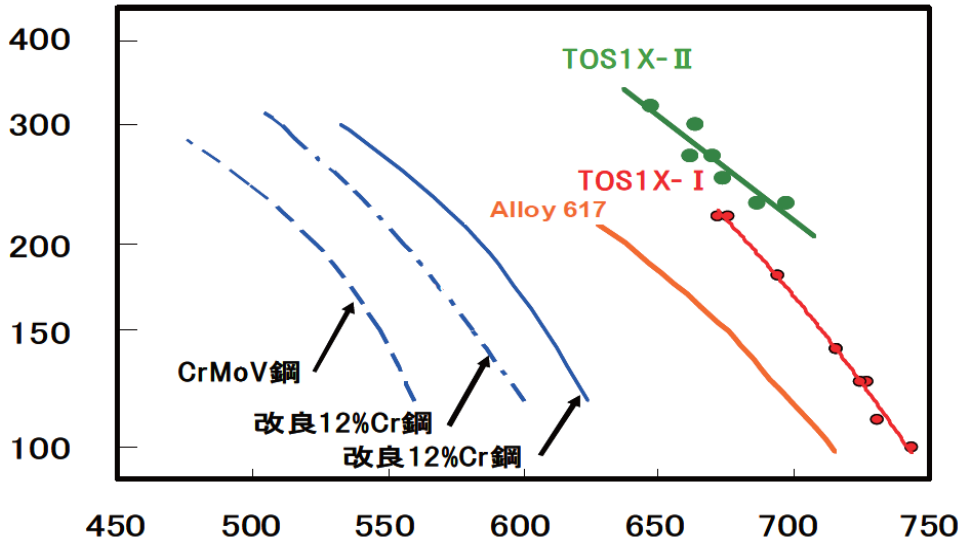
Turbine Rotor Material

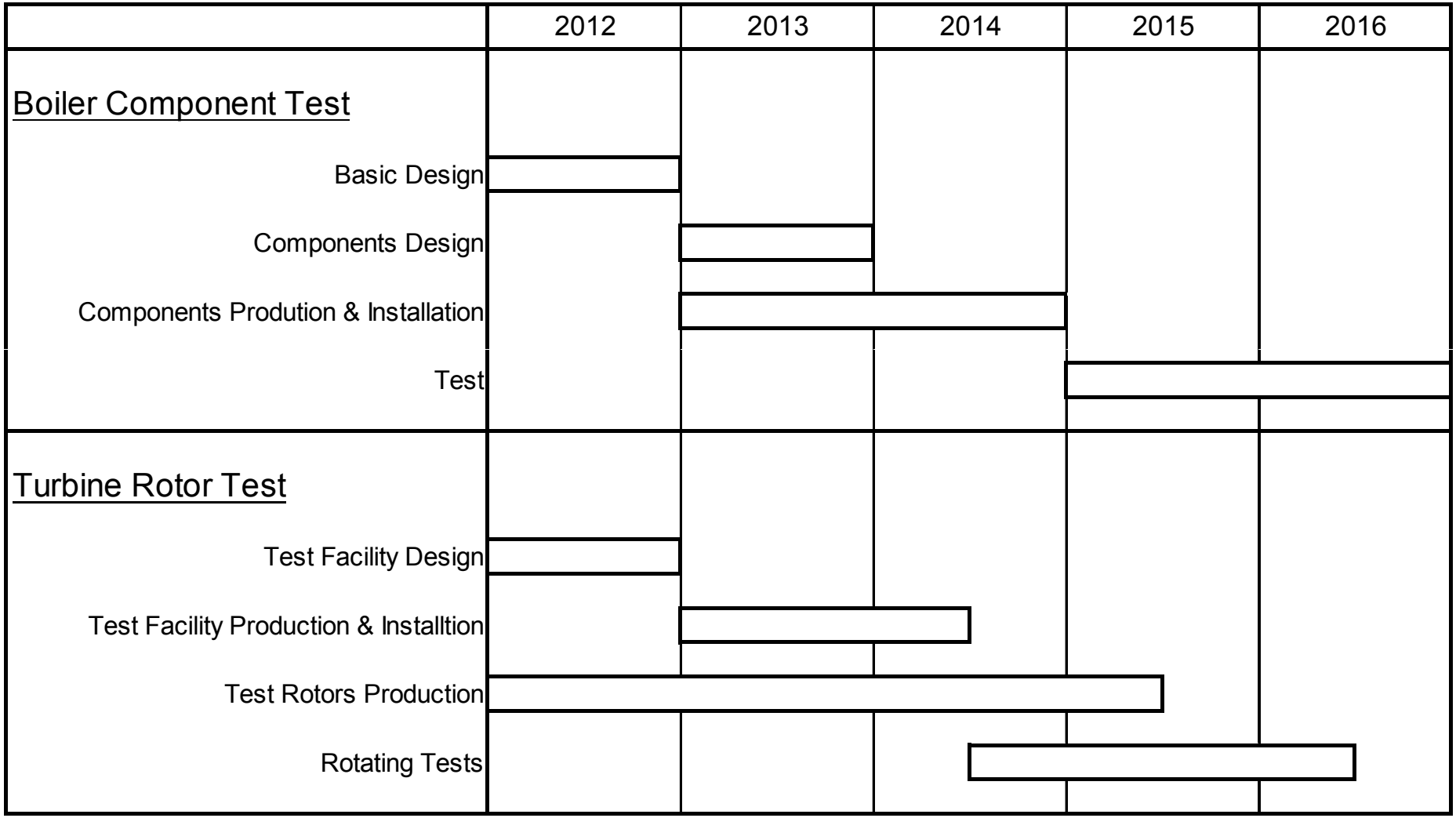
TOS1X

Higher Strength

Larger Size





By courtesy of Toshiba

Boiler Component Test, Turbine Rotor Test