

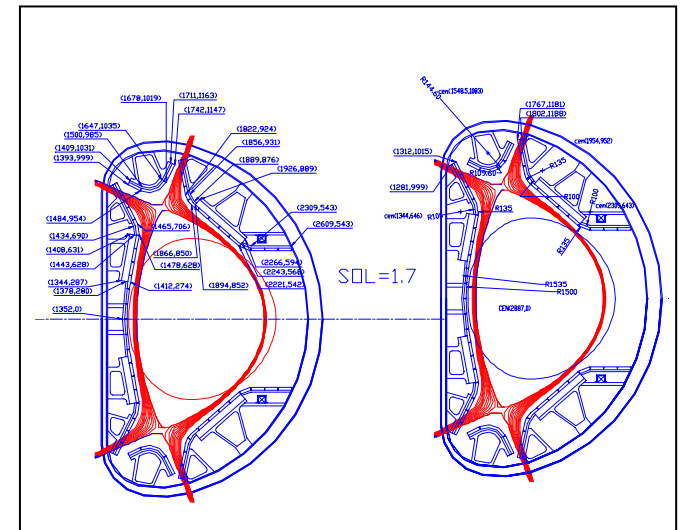
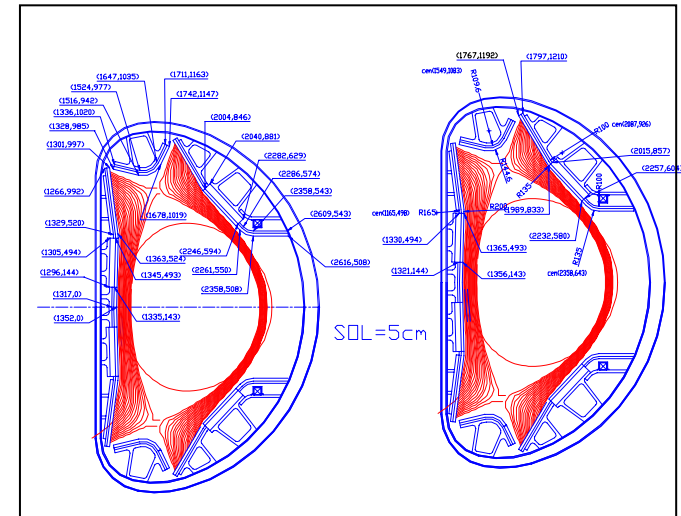
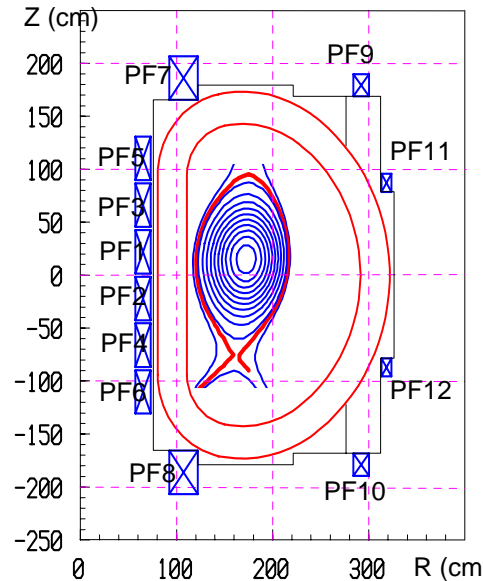
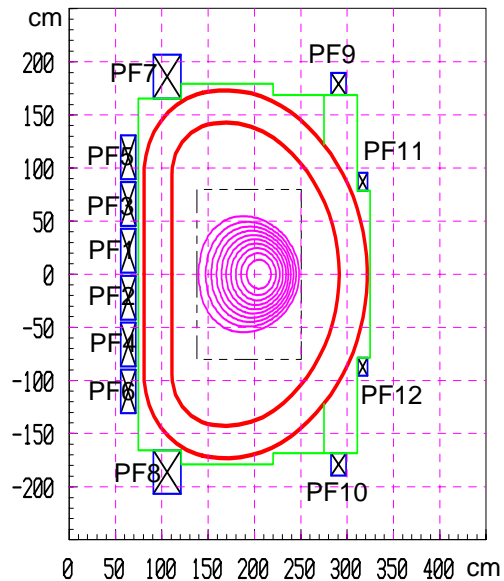
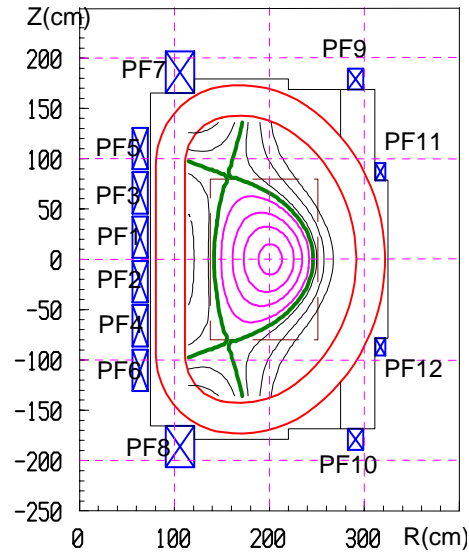
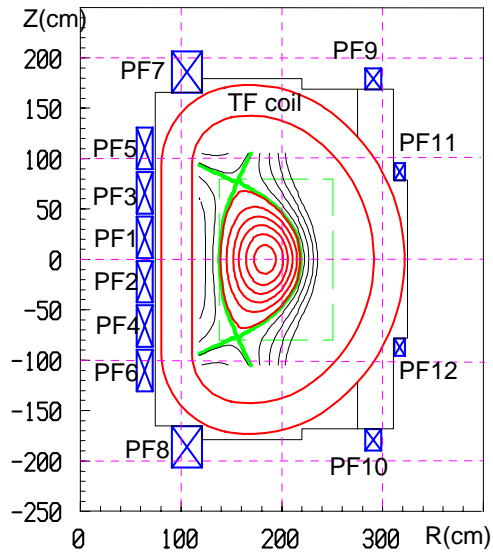
# New project: HT-7U

## Objective

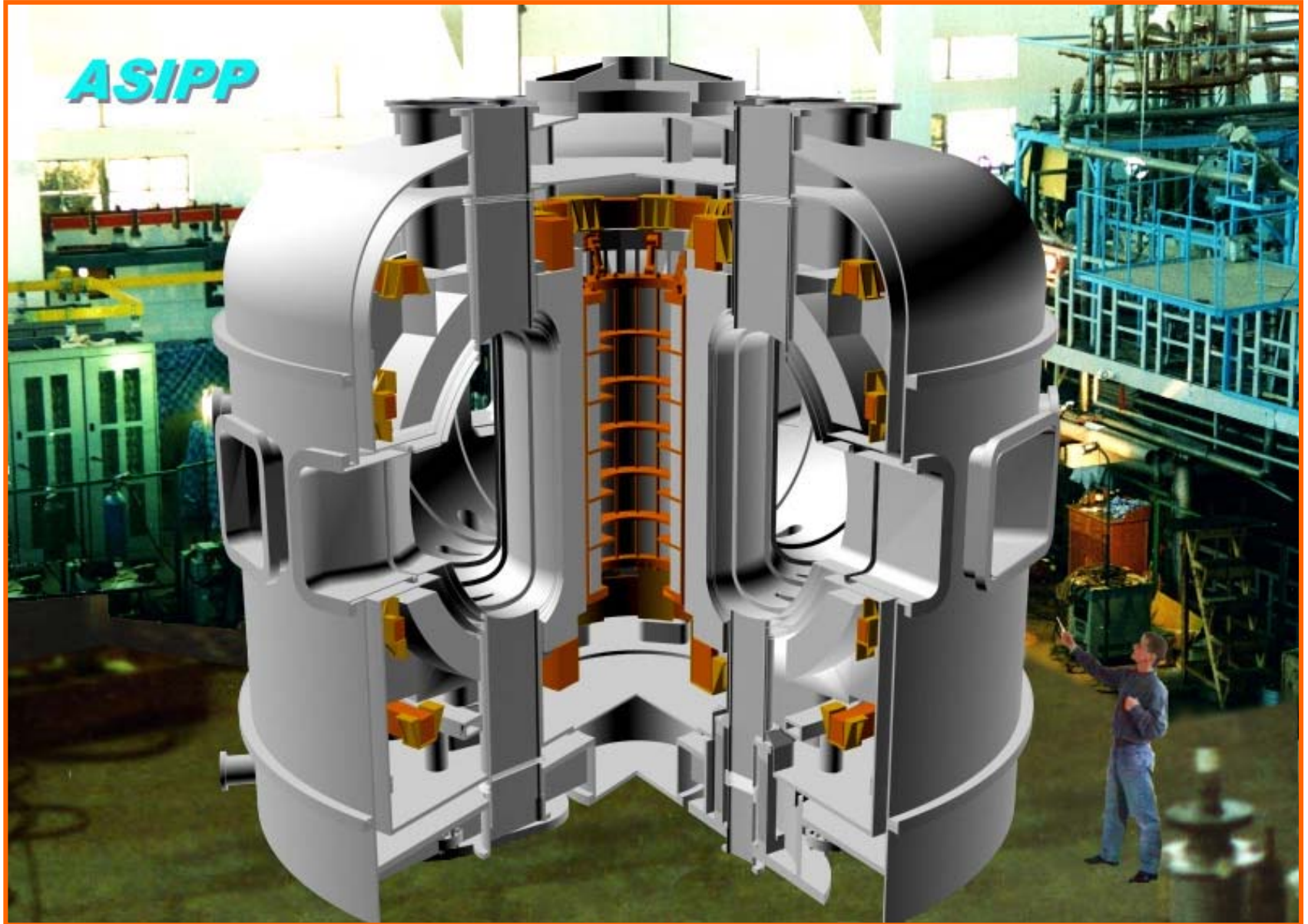
- Investigation and developing of the engineering and technology of a full superconducting tokamak
- Steady-state operation with higher plasma performance;
- Investigation of Advanced Tokamak physics;
- Power and particle handle under steady-state operation condition

Prepare to go to SS/AT reactor

# Typical magnetic configuration and divertor design



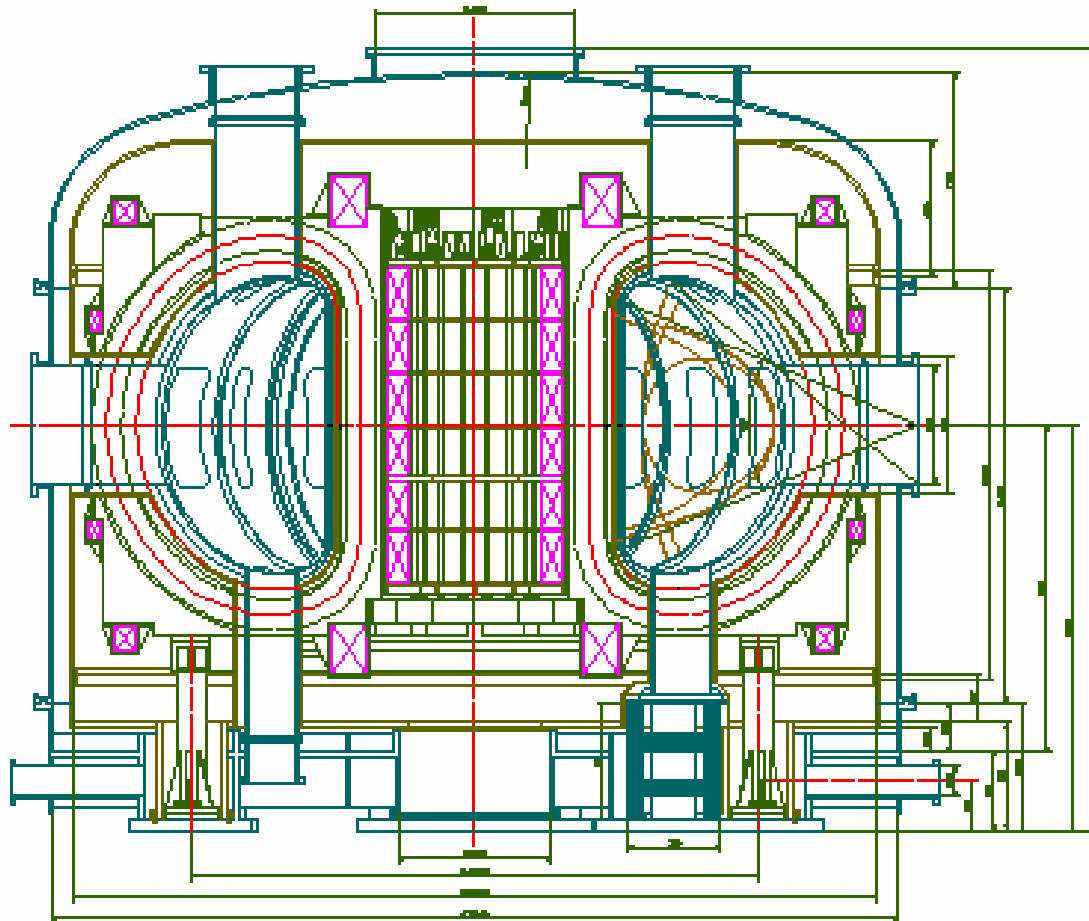
National research project  
HT-7U superconducting tokamak



# Engineering design

## HT-7U Tokamak

## Main Parameters



Toroidal Field, $B_0$	3.5 T
Plasma Current, $I_p$	1 MA
Major Radius, $R_0$	1.7 m
Minor Radius, $a$	0.4 m
Aspect Ratio, $R/a$	4.25
Elongation, $K_x$	1.6 - 2
Triangularity, $\delta_x$	0.6 - 0.8
Heating and Current Driving:	
ICRH	3 - 3.5 MW
LHCD	3.5 MW
ECRH	0.5 MW
Pulse length	1000 s

# **R&D, test facilities and fabrication**



# First wall materials (1)



# First wall material tests(2)





# Superconducting Magnet Test Facility(1)





# Superconducting Magnet Test Facility.(2)



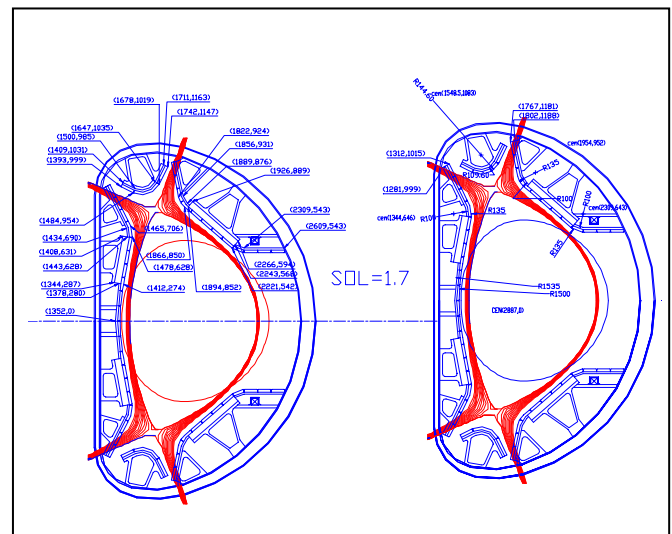
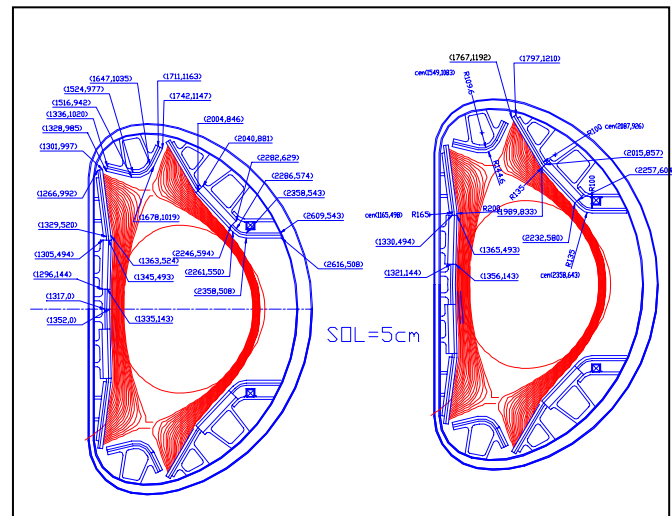
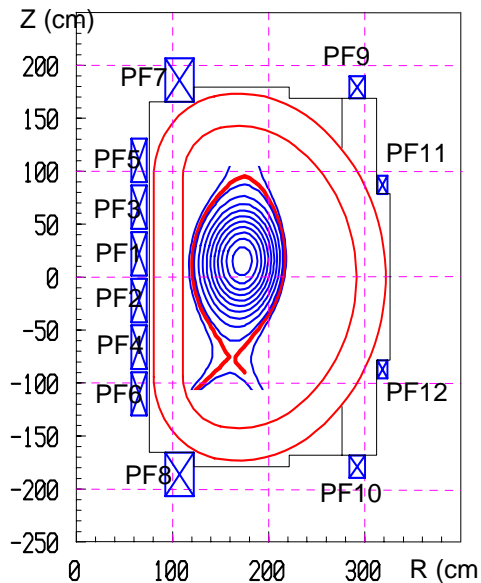
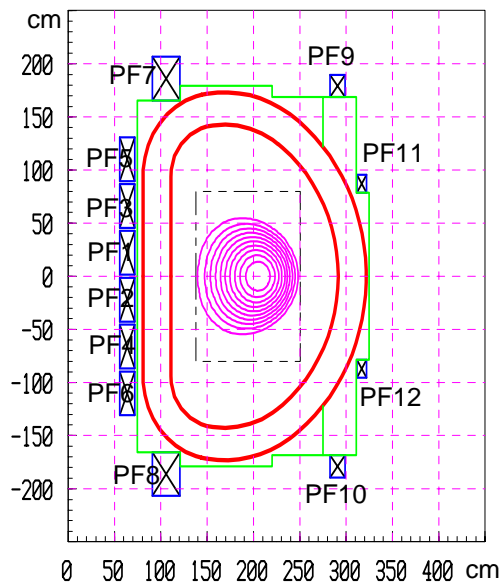
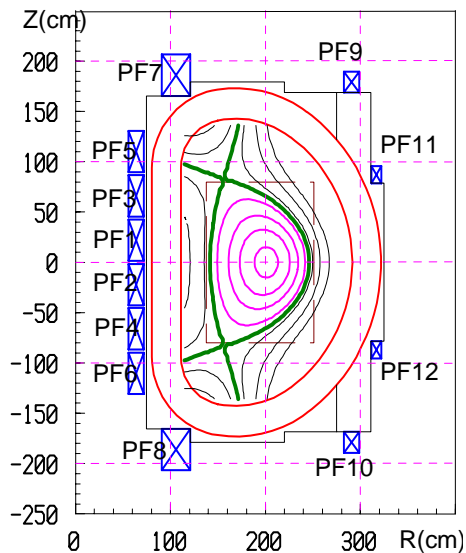
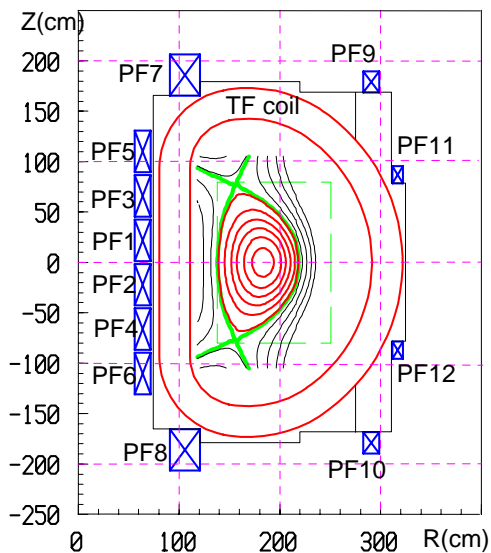
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## Objective

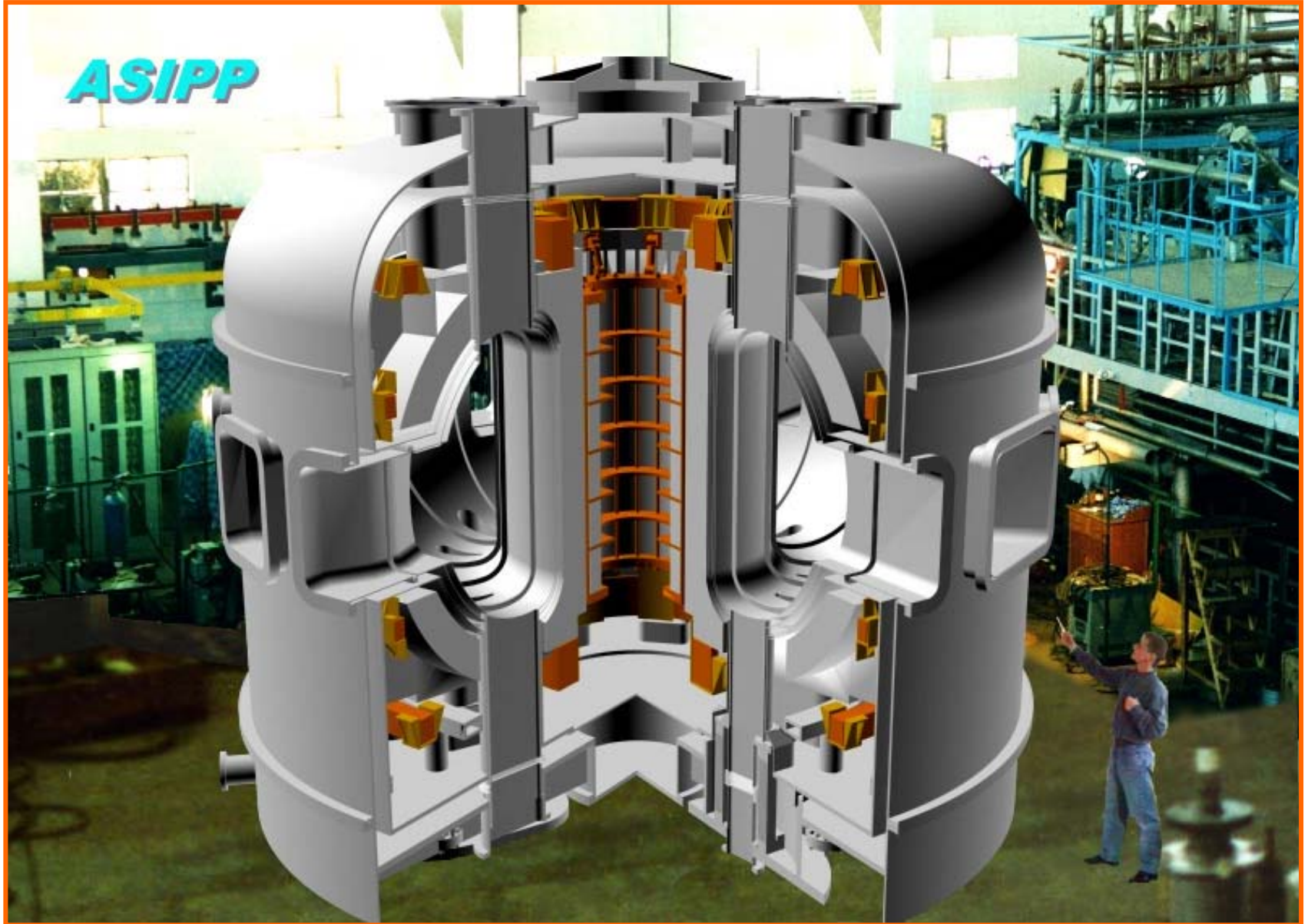
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National research project  
HT-7U superconducting tokamak

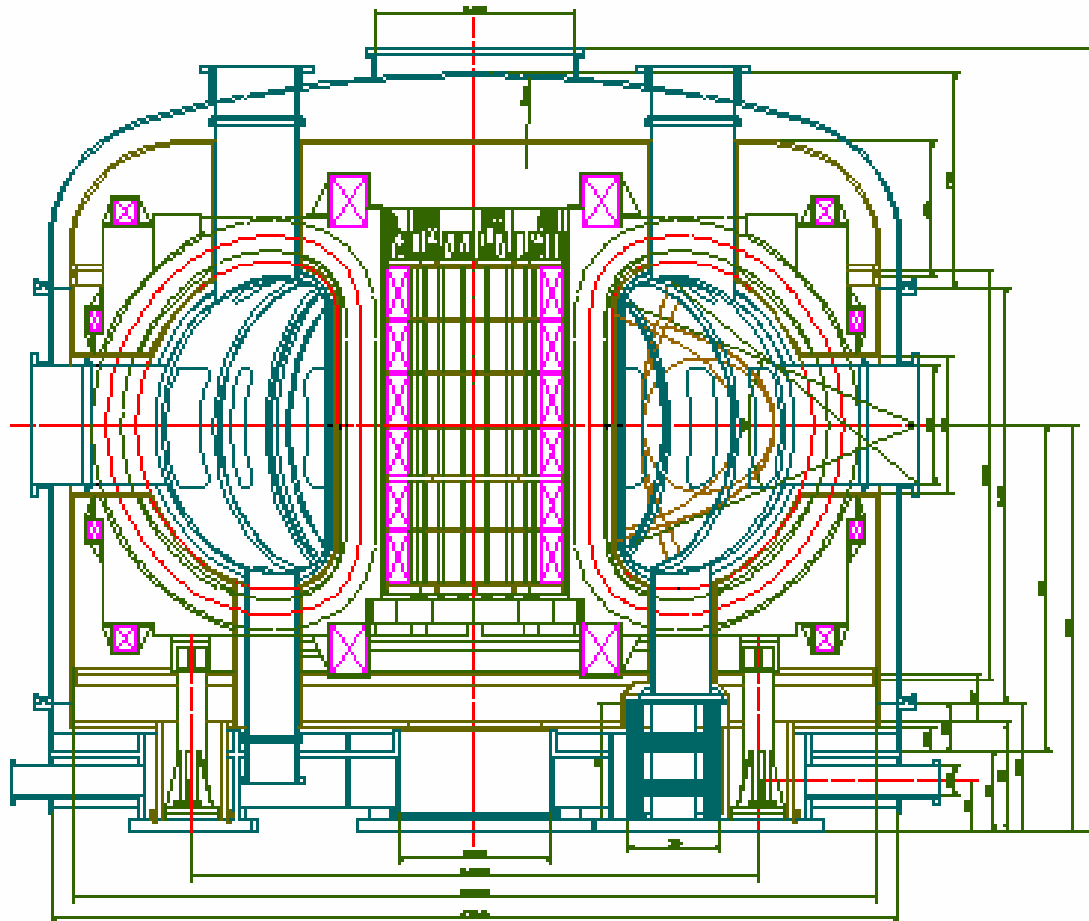




# Engineering design

## HT-7U Tokamak

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# First wall material tests(2)



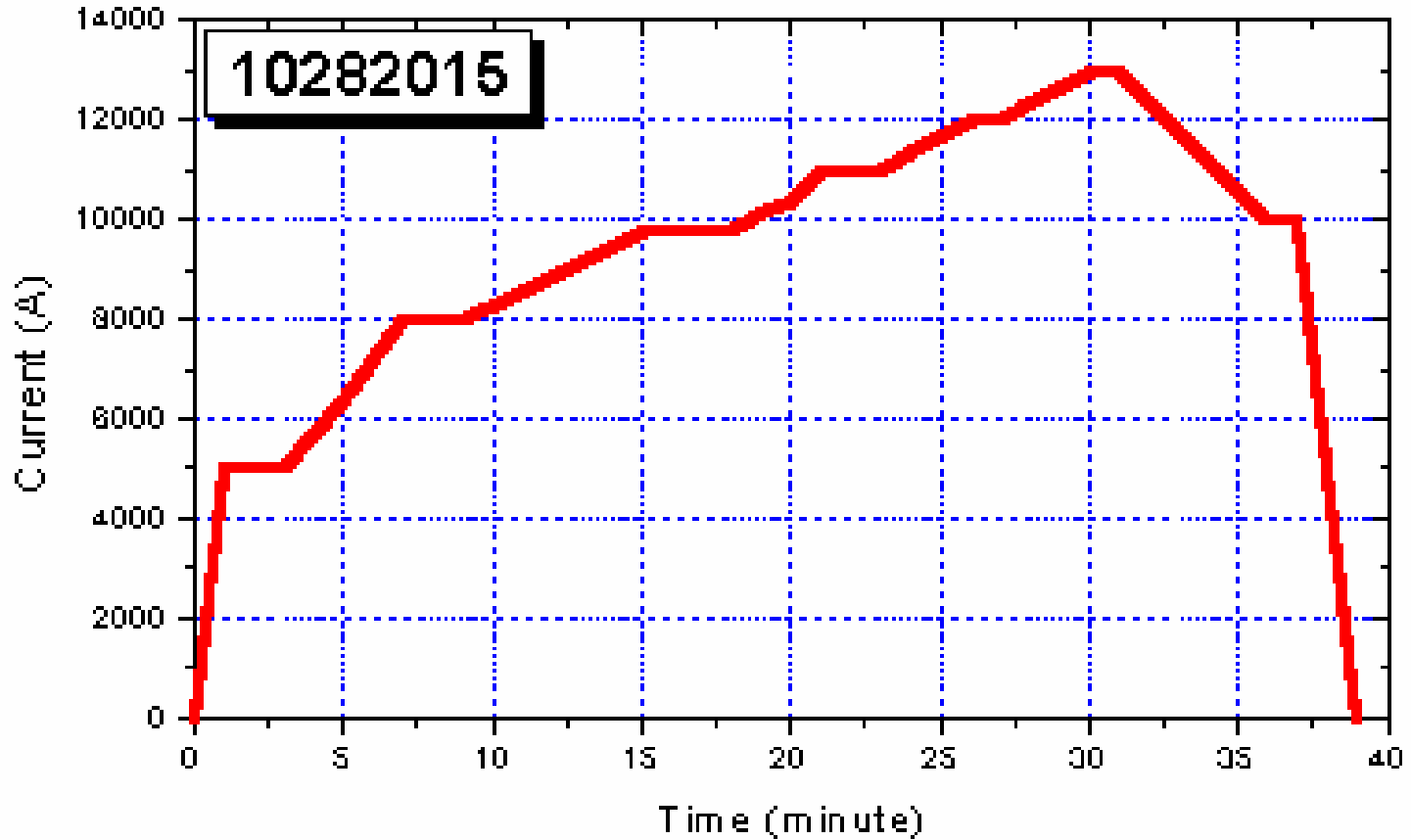


# Superconducting Magnet Test Facility(1)

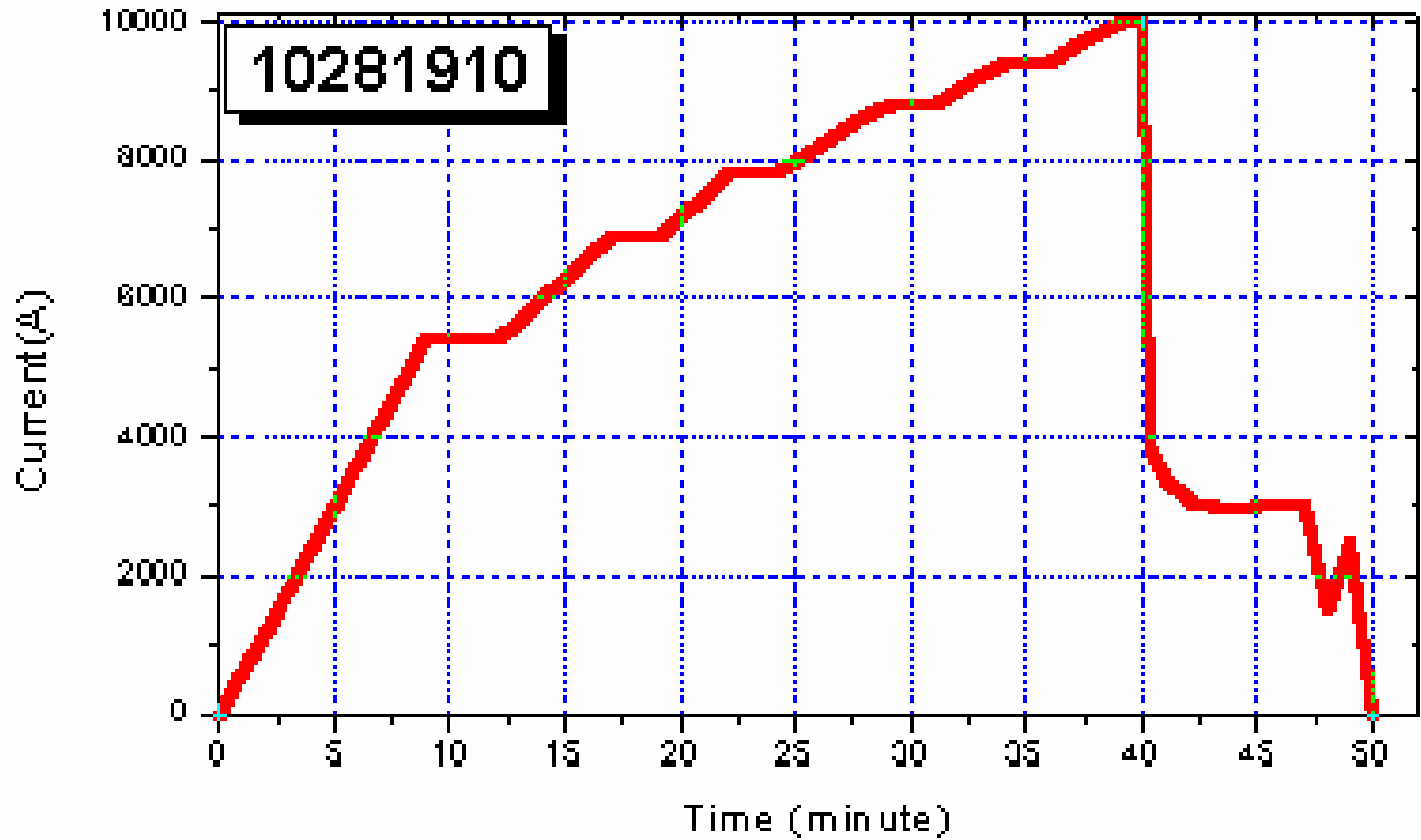


# Superconducting Magnet Test Facility.(2)





**The maximum current on CSMC achieved 13000A**



**CSMC sustained fast current drop**



# Fabrication

The cryostat, vacuum vessel, two thermal shields and support structure system are fabricated in industrial company and will be completed around middle of next year.



**The building for HT-7U**  
(will be completed around May 2002)

# HT-7U Project Schedule

- ◆ **1994~** Submitting the proposal and begin the conceptual physics design
- ◆ **1996** Begin the preliminary engineering design
- ◆ **1997** The project approved by government and conceptual engineering design
- ◆ **1998 -1999** Final conceptual engineering design and R&D
- ◆ **2000 - 2001** Engineering design and begin fabrication
- ◆ **2001 - 2002** Fabrication and some pre-assembly test
- ◆ **2002 - 2003** Fabrication and assembly
- ◆ **Around 2004** Complete assembly and hope to get first plasma

# Possible future plan will be proposed by fusion community in China

- Participate ITER if it is possible and if ITER can be constructed
- Test reactor for breeding fission fuel and transmutation the high radiation waste if both HL-2A and HT-7U are fully success.



# Summary

- Magnetic confinement fusion research is getting more support in China ;
- The significant progresses from small to medium size and superconducting tokamak have been achieved;
- China will certainly make more contribution to fusion research after new projects to be completed;
- Fusion community in China hopes that ITER can be constructed finally and both SWIP and ASIPP will promote to participate ITER project by a suitable way for China if ITER can be constructed.