

Platform for Research  
and Applications  
with Electrons

PRAE



Projet Emblématique

île de France

Programme SESAME



# RF Power & RF Distribution For PRAE Linac

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With the support of



## RF Power for Linac

- Source of power for Gun and Accelerating Structure
- Modulator / Klystron
- Home Made Modulator
- Recycling elements from SLAC
- CPI Klystron
- 2 phases for the Modulator :
  - Construction and test in Hall LAGARRIGUE
  - Transfer to PRAE site

# Parameters

- RF Peak Power max.: 45 MW
- Peak Voltage max.: 310 kV
- Peak Current max.: 350 A
- Electrical Peak Power max.: 109 MW
- Pulse Width ( Voltage ): 6,5  $\mu$ S
- Rep. Rate: 50 Hz
- Delay Line type Modulator
- Thyratron switching system

## Composition

- HV Power supply  
Up grade?
- Pulse Forming Network  
To be change to fit PRAE parameters
- Thyatron switch system
- Pulse Transformer, Tank & Tank auxiliary  
New pulse transformer, New Tank ?
- Auxiliaires Systems, control & measurement  
To be change to fit PRAE parameters
- Remote Control  
New Interface

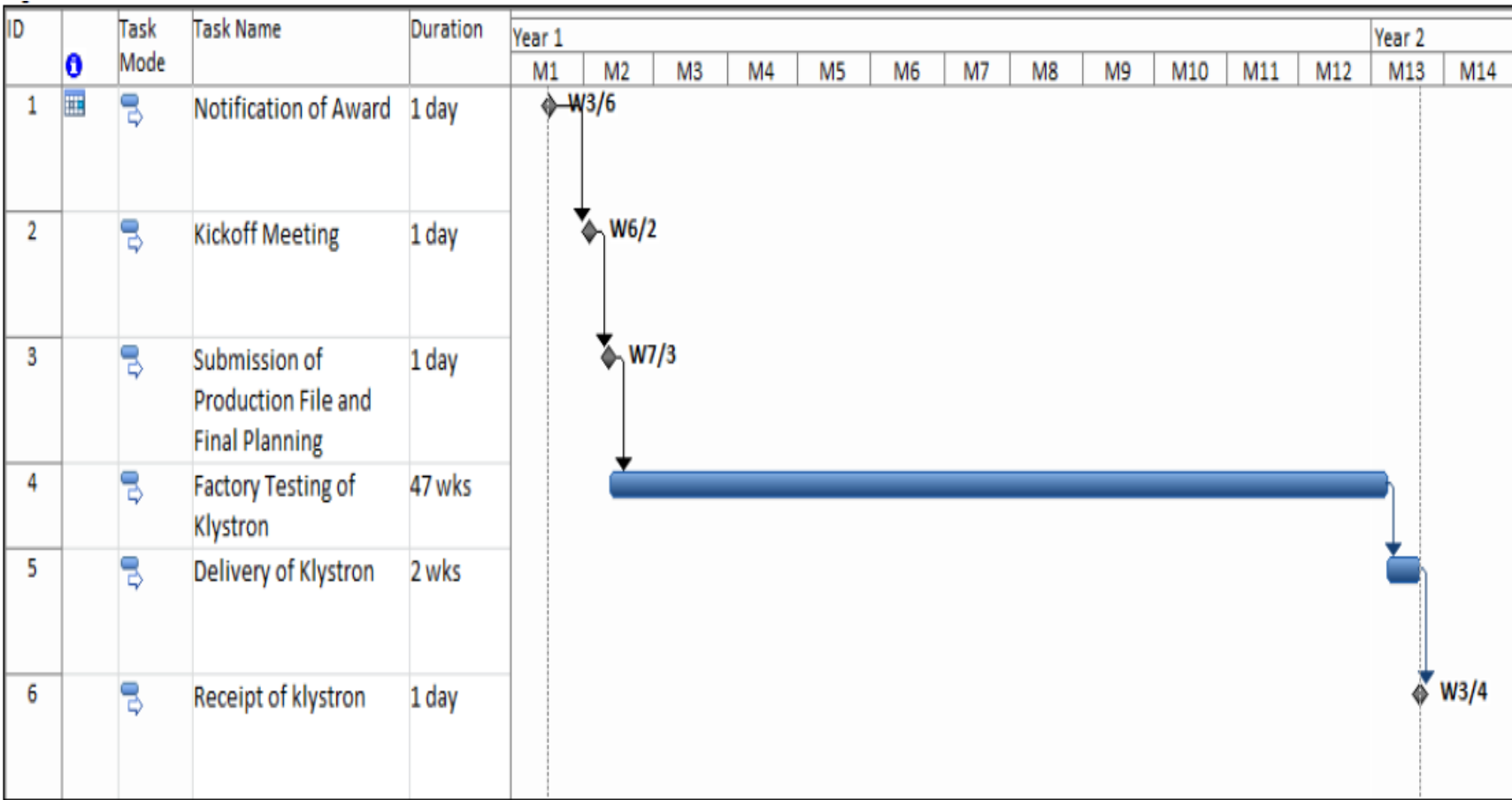
# Status

- Study & simulation of modulator : done
- Choise of emplacement for construction and test : Hall LAGARRIGUE
- Power and water to feed in place : not yet
- Recycling elements from SLAC : not yet
- Pulse transformer and Tank : in progress
- Auxiliaries systems : in progress
- Remote control : not yet

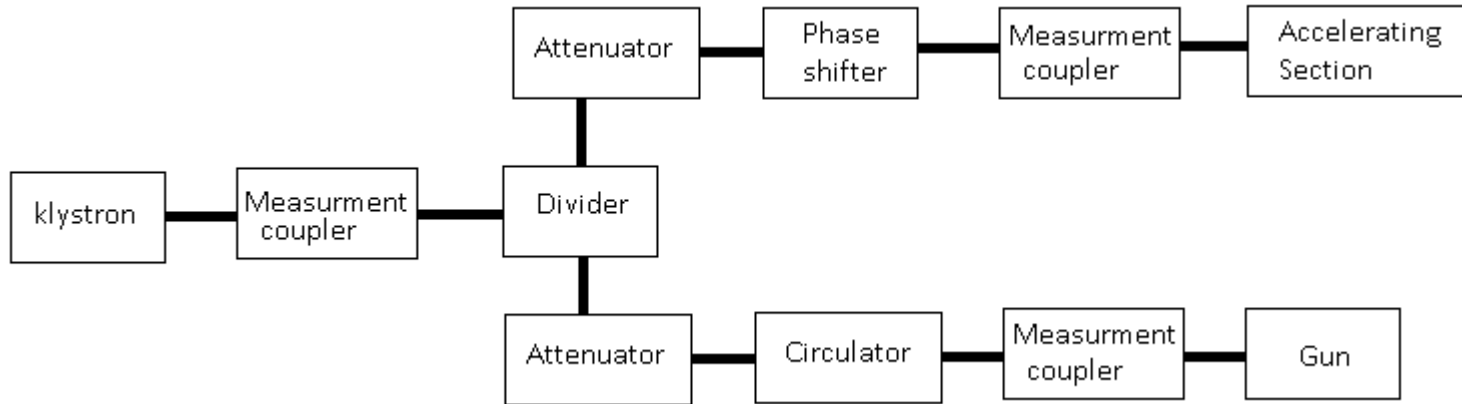
# Klystron

- Klystron: VKS-8245C
- RF power(output): 45 MW
- RF power(input): 500 W
- Cathode Voltage: 305 kV
- Cathode Current: 340 A
- RF Pulse Width: 4,5  $\mu$ S
- Rep. Rate: 50 Hz
- Efficiency: 43 %
- Gain: 47 dB
- Perveance: 2, [ $\mu$ a/v<sup>3/2</sup> ]
- High impedance Electromagnet

## Schedule



# RF Distribution



- RF Distribution similar to ThomX (> Power)
- Use of elements from CERN ( Waveguides & Loads )
- ALL other elements from Industrie



# Conclusion



Starting construction of the Modulator need:

1- Get the emplacement Hall  
LAGARRIGUE

2- Get elements from SLAC

Power and water connections

In progress: Pulse transformer & tank

Auxiliaries systems

Construction & test : 12 Months

Manpower: 1 Enginneer + 1 Technicien