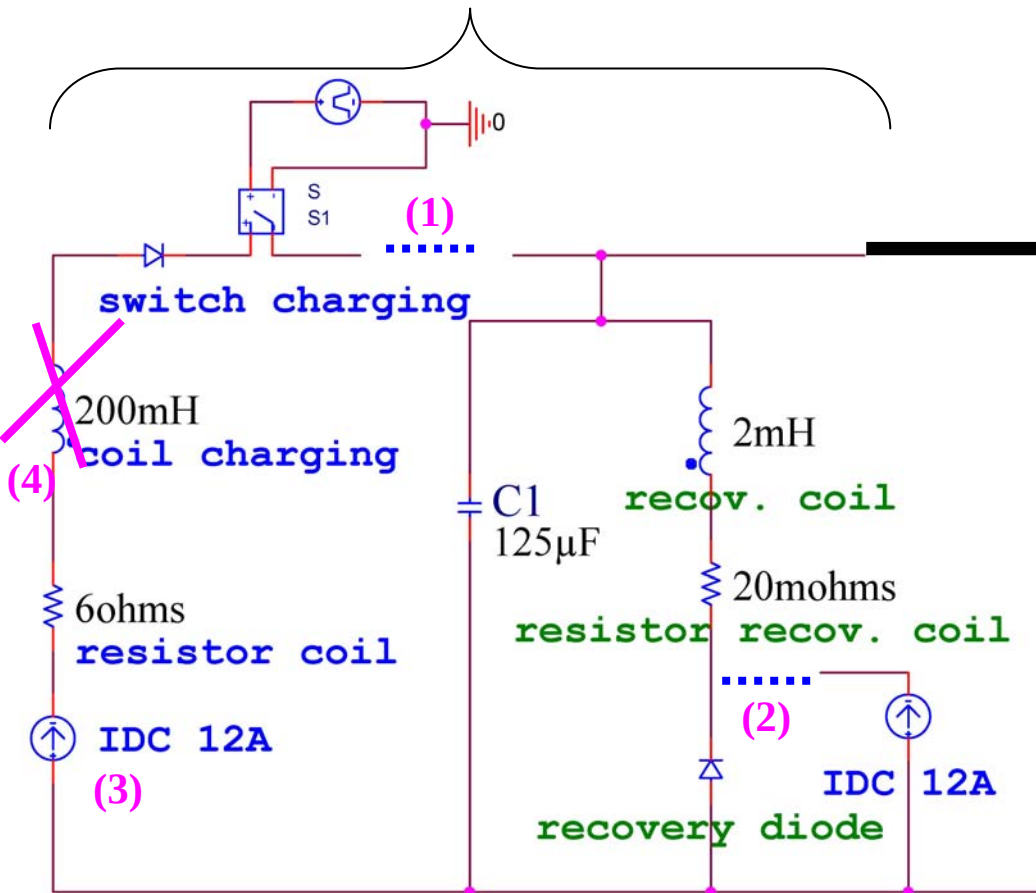


PLAN

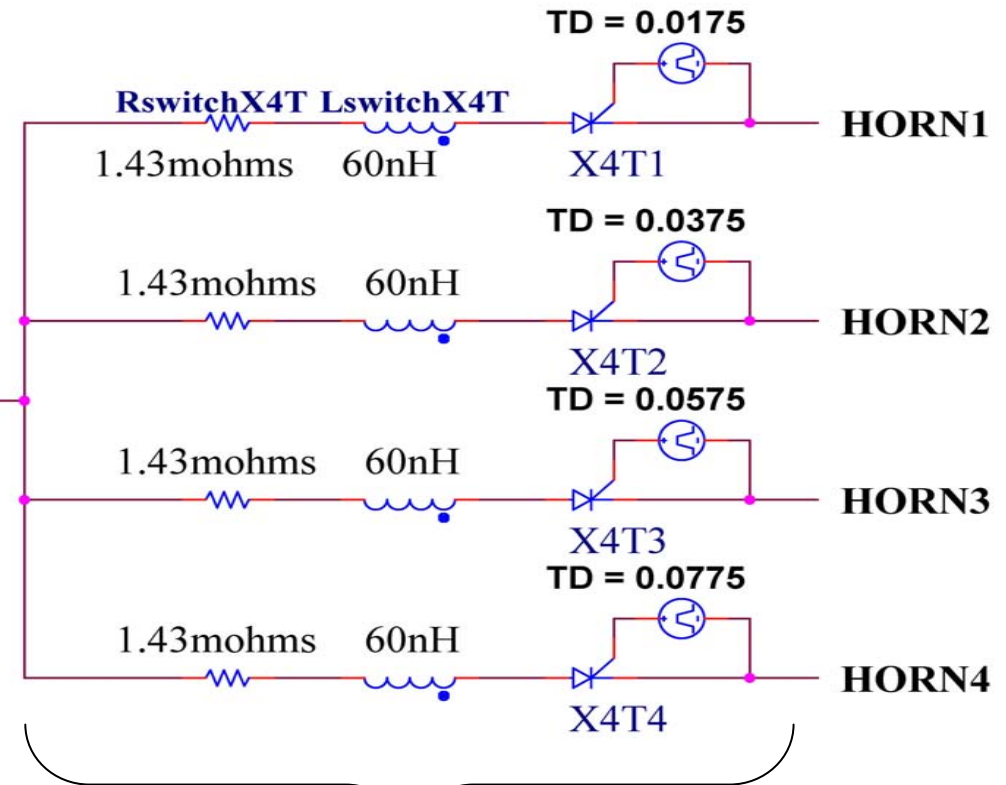
- 1) 44kA Module power supply :
 - a. Solutions for capacitors chargers (SCR or HF switching)
 - b. Components costs
- 2) Total 4 horns power, comparison of global architecture:
 - a. Effect on horn signal
 - b. Comparison of costs

**44kA Peak, 50HZ Power Module :
+12kV 2310ARMS**



- (1) : direct charging, cut frequency 32Hz
 (2) : recovery stage cut frequency 320Hz
 (3) : IDC: 12A-12KV Linear or HF switch frequency
 CHARGER
 (4) : no coil if choice on HF switch charger

Iout 4X44kA Peak 12.5Hz 1154Arms



**4 DISCHARGE
SWITHES**

**4X44kA Pulse Power Module:
Comparison of charging methods**

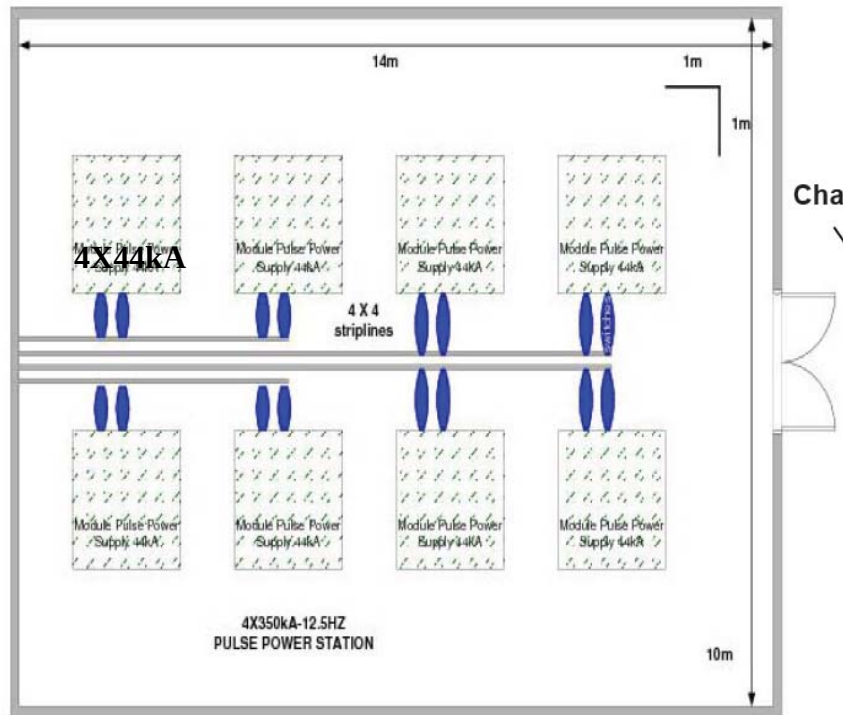
4X44kA Pulse Power Module: Cost comparison vs. open loop time response of the chargers

Time response open loop	Module 4X44A	CHARGER		Charging Switch & diode	Charging Iron coil 200mH	Capacitors Diode reco. Coil 2mH	4 Discharge switches	COSTS Per Module K€
		Linear SCR	HF Switching					
	Components Maximum Specifications	12A 12KV 50HZ	12A 12KV 50HZ	12A 50HZ	12A 50HZ	125µF 2310A rms 50HZ	44kA peak 1332A rms 16.66Hz	
	Costs K€	31.5	75.6	3.44	4.7	128.1	214.2	
<1ms			☑	☑		☑	☑	421.34
10ms		☑				☑	☑	373.8
10ms			☑			☑	☑	417.9
100ms		☑		☑	☑	☑	☑	381.94

☞ SCR Charger solution is higher reliability, with lower cost, but have a smaller time response to change in set point or fast 380V variations

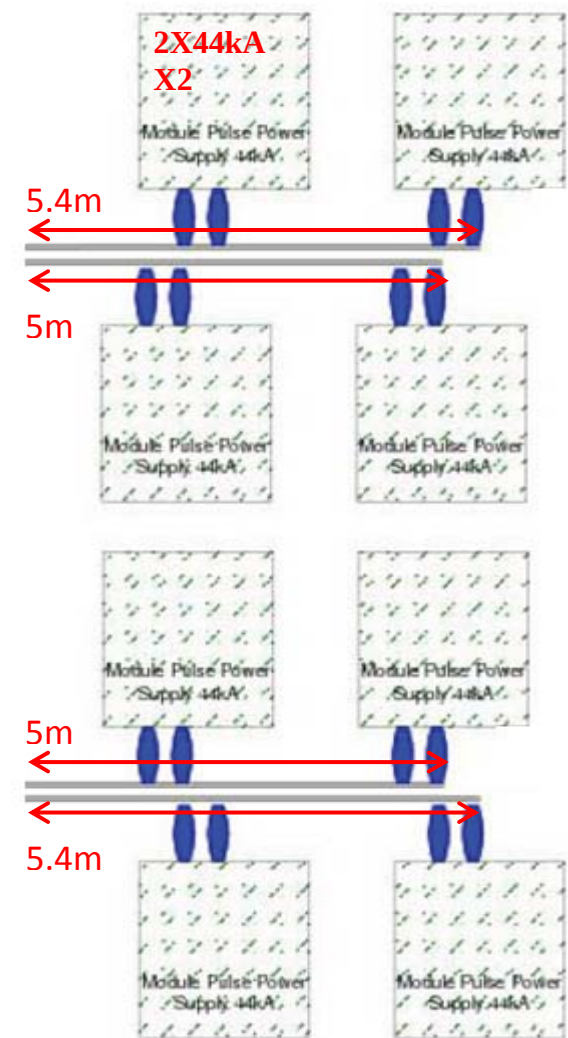
☞ HF Switching Charger solution have a smaller reliability, higher cost, but offer a higher time response and a better modularity

Pulse Power Room: Effects of modules configurations



- One horn need 8 discharge switches of 44kA-16.66Hzmaxi
- One Horn is supplied by the 8 Modules of 4X44kA-50Hz
- The 4 horns need 8 modules of 4X44kA-50HZ

- ▶ equalize the length of striplines
- ▶ equivalent in term of power distributed
- ▶ increase the cost due to the number of modules X2
- ▶ increase the striplines length



- One horn need 8 discharge switches of 44kA-16.66Hz maxi
- Two Horns are supplied by 8 modules of 2X44kA-25Hz
- The 4 horns need 16 modules of 2X44kA-25Hz