

<b>COST ESTIMATE (Draft)</b>			
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TT2A Pulsed Magnet Installation and Operation		US	CERN*
	kCHF (material+manpower)		
<b>Proximity equipment</b>			
1) DVB valve box	60	60	
2) vacuum pump for insulation vacuum of magnet/equipment			
3) vacuum pump for reducing pressure in bath	25		25
4) heat exchanger or el. heater	15		15
<b>Intermediate Infra</b>			
1) transfer line for cooling and filling	70		0
2) exhaust for cold nitrogen gas	70		0
3) pump line (warm) DN150	18		0
<b>External Infra</b>			
1) LN2 reservoir next to vertical shaft (rental)	20		
2) Concrete Platform (to be constructed)	20		20
<b>Process control and instrumentation</b>			
1) Controls equipmemnt (PLC/supervision) + programming	70	70	
2) Instrumentation and cabling	70	70	
<b>Safety</b>			
1) ODH and warning system	20		20
<b>Installation</b>			
Installation manpower	25		25
Deinstallation	10		10
<b>Operation</b>			
1) cryogenics team			
-surface tests 250 shots	20		20
-underground 250 shots	25		25
2) Fluids 200 l shot x 500 shots	15		15
<b>TOTAL</b>			
	553	200	175
<b>Engineering</b>			
ECR group engineering/design 4 man months = 80 days x1000 CHF/day	80		
<b>GRAND TOTAL</b>			
	633		
* if already available at CERN, material can be reused and results in lower costs			