LI LENS UPDATE

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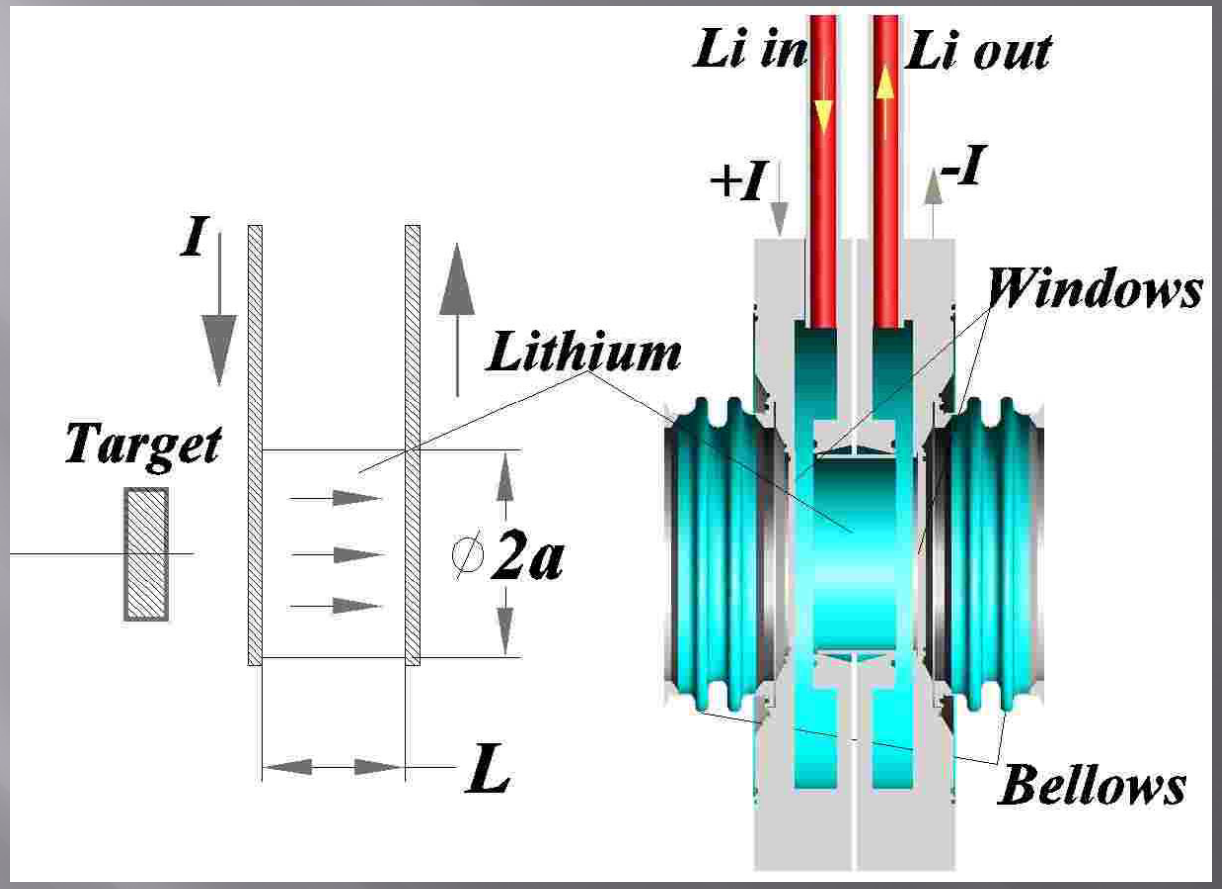
Li LENS BASICS



Windows made from BN or Be

For given focal distance *F*, radius *a*, length *L*, the current required is

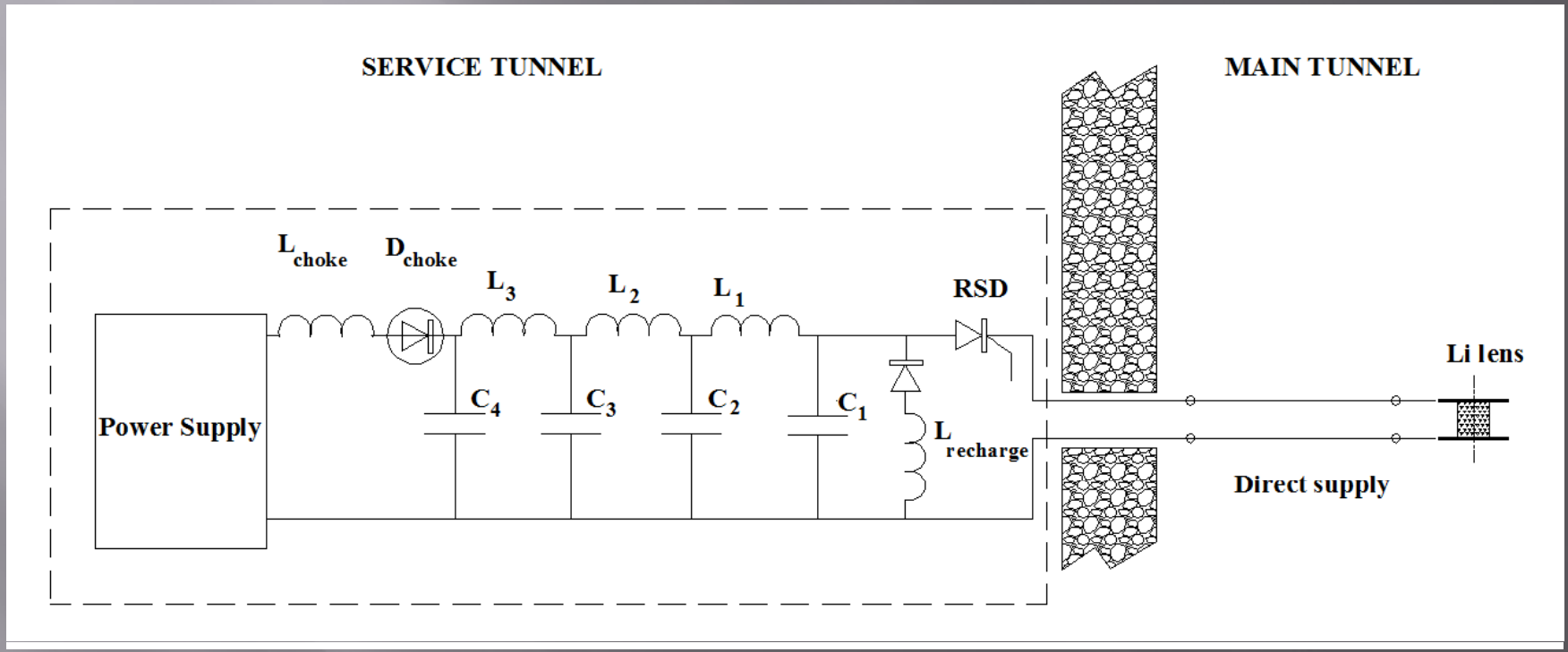
$$I \cong \frac{a^2 \cdot (HR)}{0.2FL}$$

For *F*=1cm, *a*=0.5cm, *L*=0.5cm *I*=166kA

NEW TYPE OF COMMUTATORS FOR HIGH CURRENT

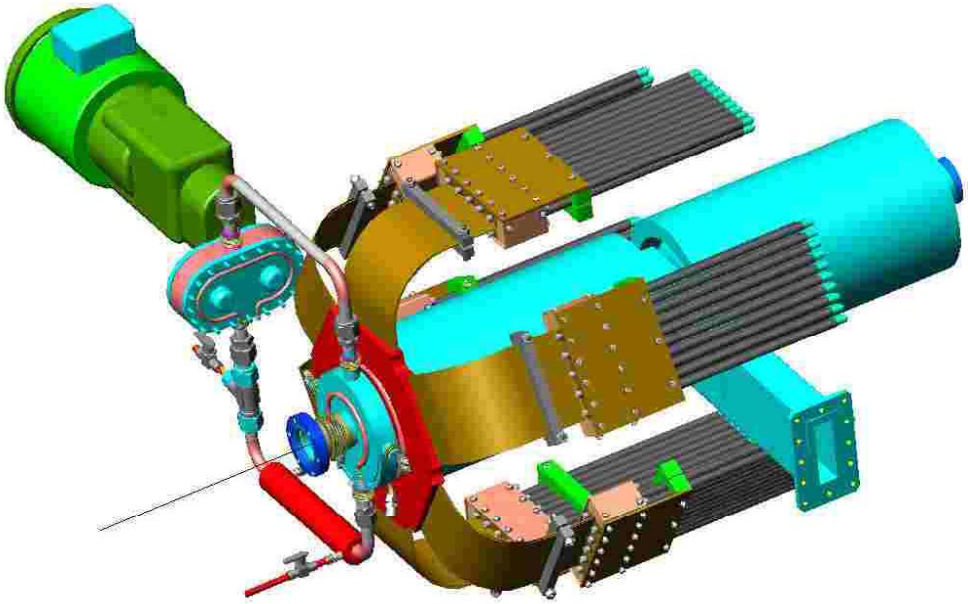
Fig.2. Reverse – switched dinistors for peak current from 200 kA to 500 kA and blocking voltage of 2400 V, encapsullated in hermetic metal – ceramic housing and without housing (RSD sizes of 64, 76, and 100 mm)

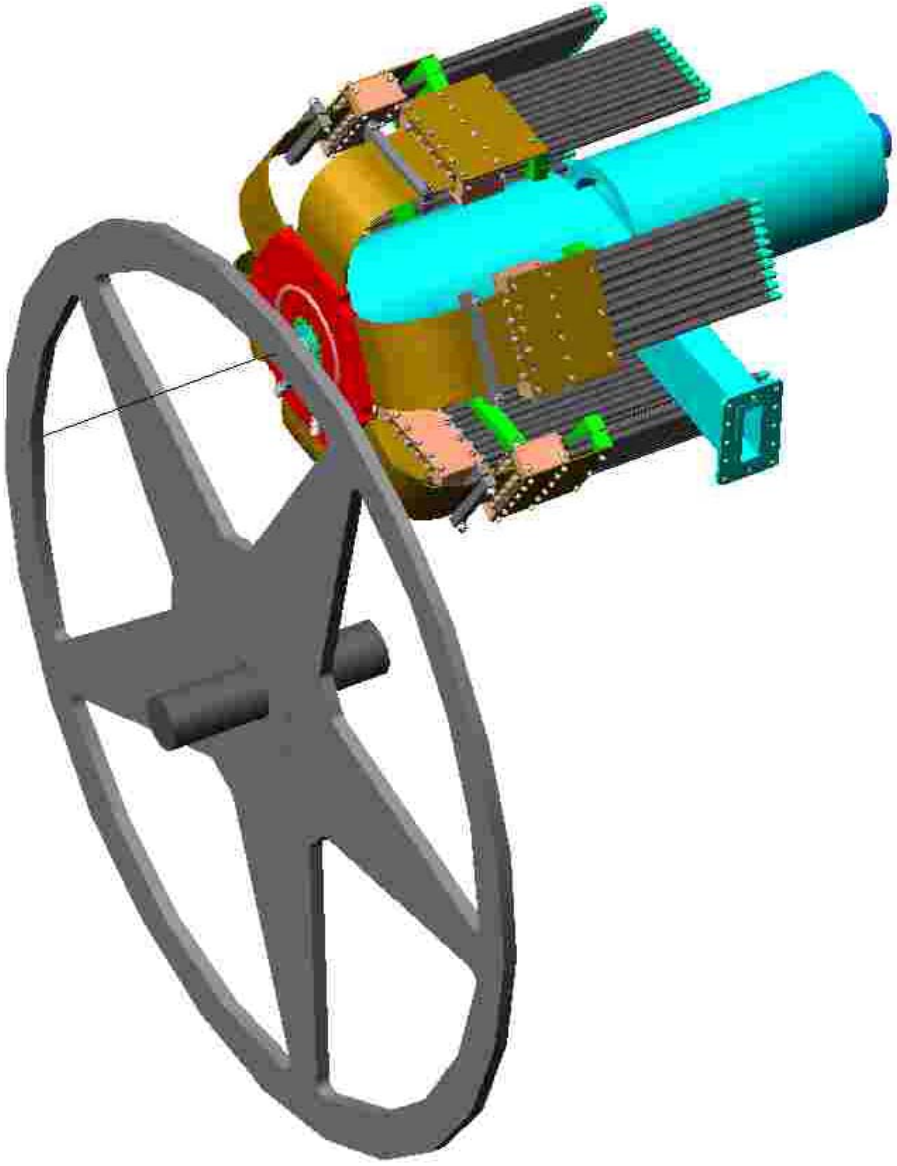
POWER SUPPLY SCHEMATICS



BY USAGE OF RDS, THE POWER SUPPLY LOOKS PRETTY GUARANTEED

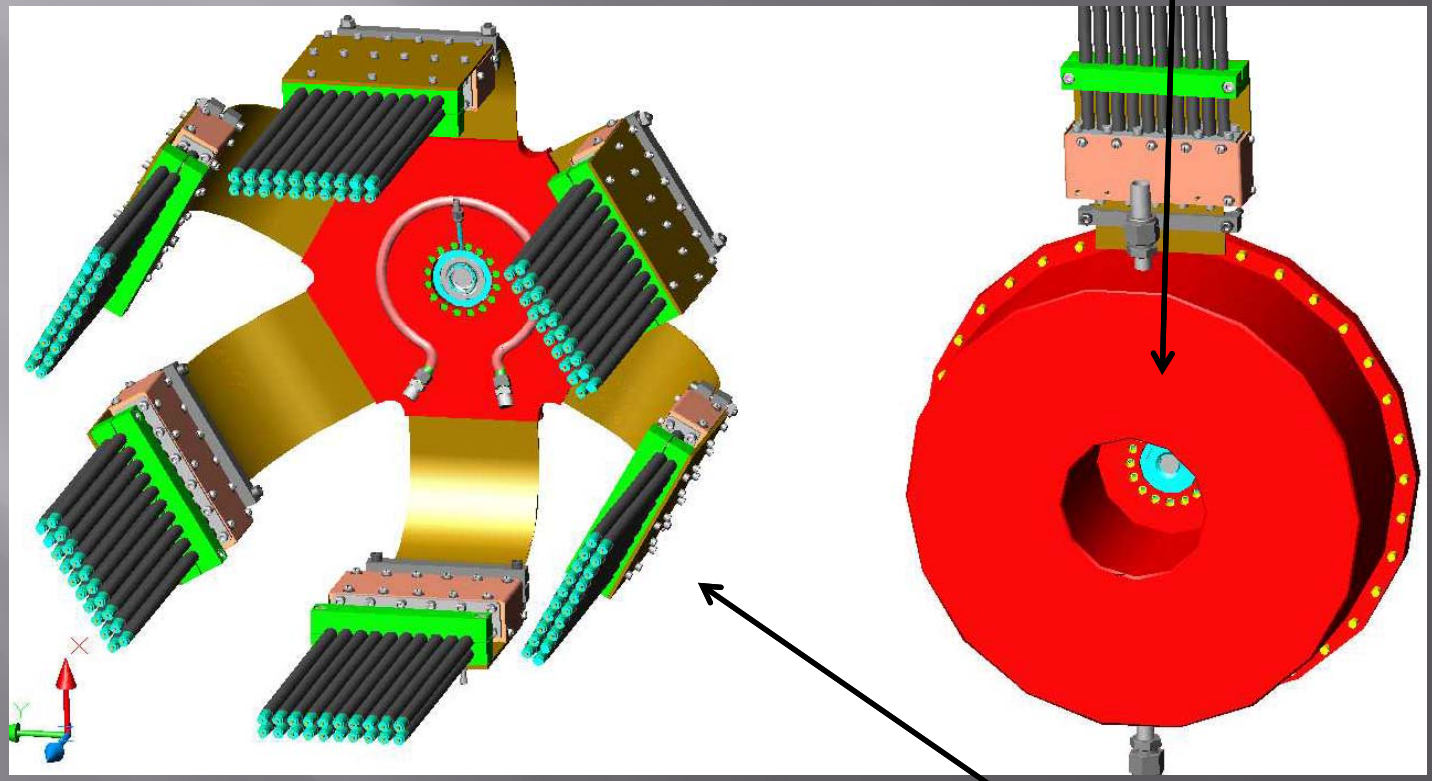
Li lens can be used with any target: liquid metal (Pb-Bi, Hg) or Ti rim





Right after the target located Aluminum made accelerating structure immersed in solenoidal magnetic field.
Solenoid wound with Al conductor.

In principle the transformer could be used here also



Direct feeding with high current PS looks more progressive

General parameters	
Energy of primary beam	~150 GeV
Undulator period λ	10-12 mm
K factor, $K = eH\lambda / 2\pi / mc^2$	0.4-1
Undulator length	≤ 200 m
Efficiency , e^+ / e^-	1.5
Polarization	≥ 60%
Target W/Ti	1.75 mm/14.8 mm
Energy of quanta	~18 MeV
Distance to the target*	180 m
Lens	
Feeding current, I	<150 kA
Field at surface, H_m	43 kG
Gradient	≤ 62kG/cm
Pulsed power	~200kW
Average power	~4kW
Pulsed duty , τ	<4msec
Lens diameter, 2a	1 cm
Length, L	0.5-1 cm**
Axial pressure, P_0	74atm (for L=0.5cm)
Temperature gain per pulse	≤ 170°C at 150kA