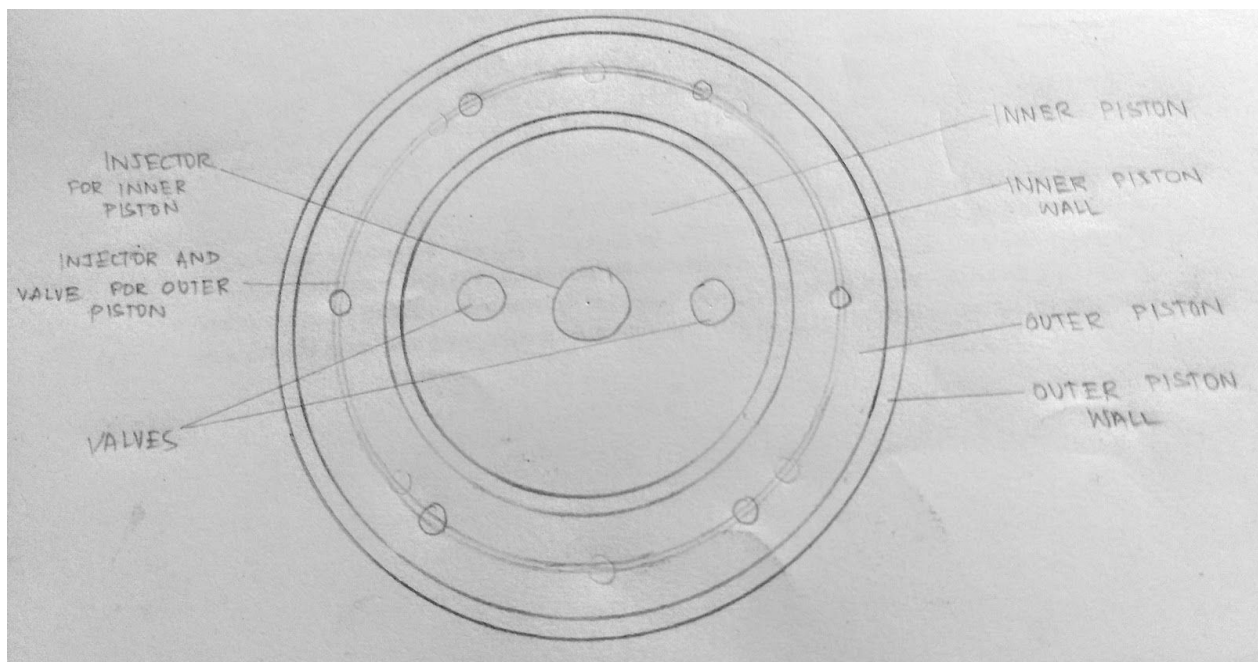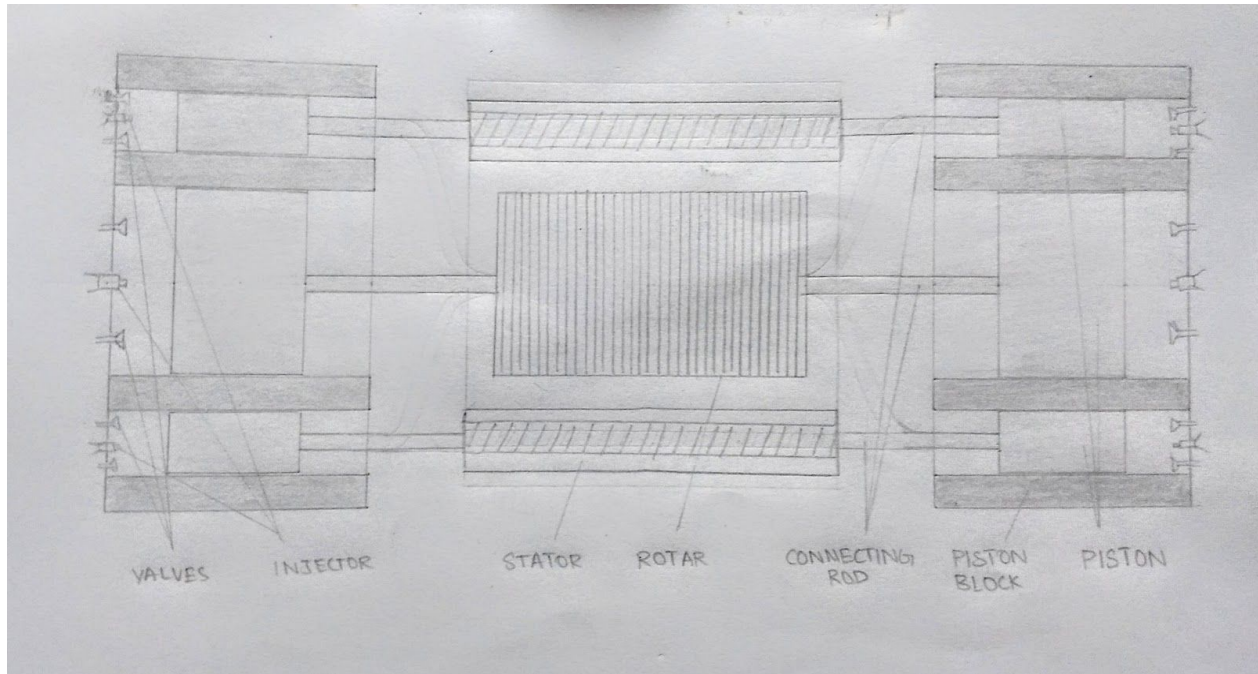| TEAM NAME	RE-VOLT
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Re-Volt

Schematic Diagram of our model:

VALVES   INJECTOR   STATOR   ROTAR   CONNECTING   PISTON   PISTON
                                             ROD   BLOCK

INJECTOR
FOR INNER
PISTON

INJECTOR AND
VALVE FOR OUTER
PISTON

VALVES

INNER PISTON

INNER PISTON
WALL

OUTER PISTON

OUTER PISTON
WALL

Overview of our model:

The idea of our design is to have four pistons in the engine, two pistons placed on each side concentrically. The pistons are attached directly to a linear generator. The inner piston is connected to the magnetic core and the outer piston is connected to the generator coils. The outer pistons and the inner pistons move with a 180 degrees phase shift and thus in a direction opposite to each other as the masses move in opposite directions nullifying the momentum created by one another. This is done to reduce vibrational losses. The necessity of having the counterweights are eliminated and the mechanical components have been reduced which decreases the mechanical losses of the system. Double action pistons are incorporated in order to have four stroke cycles on each side of the pistons. This leads to a power stroke for every back and forth motion of the linear generator. There will be a single injector with two valves present for the inner piston and two injectors with four valves for the outer one to have a homogeneous distribution of air and fuel to obtain uniform pressure for the whole area. A separate system of connecting rod with crank and a flywheel is added to this arrangement to maintain the momentum of the pistons and to reduce the vibrations. Compression can be controlled better with the help of the flywheel as it leads to a lesser variation in compression ratios which reduces the influence of the previous combustion for the successive ones. The frequency of the voltage induced in the stator coils will be twice compared to that when the stator coils are stationary. The efficiency of our configuration can be achieved as high as 55 percent which is greater than that of the existing diesel generators.

Flow of power:

The outer and inner pistons in the concentric arrangement each have a thermodynamic system on the side of either face that delivers power in a four stroke cycle. The reciprocating motion of the inner pistons is transferred to the magnet that moves back and forth within a coil in which the EMF is generated. This coil also oscillates along the same axis as the magnet and with a phase difference of one stroke to it. It receives power for the reciprocating motion from the outer piston. EMF generated in the reciprocating coil is taken to stationary wires through slip rings.

Conversion fluctuating current into a uniform output:

The current produced by alternator is fluctuating alternating current. It is converted into direct current using full wave rectifier. The direct current so produced is converted into smooth alternating current of desired voltage using a pure sine wave inverter which is transferred to the sockets.

Block Diagram of our Layout