

Team Name: _____MRM_____

	Name	Branch and Semester	Contact Number	Email- ID
Team Leader	Basavraj	EEE-8 th sem	9148051464	basavrajmbbs64@gmail.com
Member 1	Vedamurthy G B	EEE-8 th sem	8147781682	Veda123murthi@gmail.com
Member 2	Annappa M	EEE-8 th sem	8880730743	annappa211@gmail.com

Note:

1. One can participate either as a part of a team or an individual basis. Switching teams is not allowed.
2. The uploaded ideas will be screened to go to the second round.
3. Judging: competition entries shall be judged, or winners selected based on the following criteria
 - Is the problem worth solving
 - How innovative or novel is the idea
 - Scientific accuracy
 - Social impact
 - Scalability
4. Decisions of IIC JSSSTU in respect of all matters to do with the competition will be final and no correspondence will be entertained.
5. In second round, the selected teams will have to present their idea in front of the jury panel.
6. Idea should be submitted in **.pdf** format.

Abstract: (not more than 150 words)

Electricity has become a part of our existence but the grid-based power generation capacity is grossly insufficient and unreliable to meet the increasingly growing energy demands. The study for the search of renewable sources of energy is now a major concern worldwide as replacement to the high demand of fossil fuels. However, generating power through means of renewable resources such as the Sun, Wind, Tidal, Hydro-electric, and Geothermal is limited due to their *unavailability throughout the year and high initial capital cost*. Therefore, timely attainment of sustainable development is largely hinged on increasing access to affordable, reliable, and clean energy for all. To overcome this limitation, an affordable neodymium-based generator that operates continuously without depending on any external source can be developed. The repulsive force between the neodymium magnets produce a torque which serves as a prime mover for rotor blades of an alternator/generator to generate electricity.

Introduction (not more than 200 words)

Access to sustainable energy has a direct relationship with job creation, industrialization, health, climate change, food production, and consequently economic growth. However, more than one billion people in different parts of the world still lack basic access to modern energy services. Fossil fuel is the most popular primary energy source for electricity generation. But long over-dependence on fossil fuel for power generation has contributed largely to climate change, which is an adverse effect global warming. Energy accounts for about 60 percent of total greenhouse gas emitted worldwide.

Common renewable energy sources include solar, wind, hydro, and bio-fuels but the large-scale conversion of these abundant resources into usable form has been the challenge. For example, output performance of solar energy is subjected to unpredictable weather condition and limitations of geographical locations. The durability of photovoltaic panels is not satisfactory enough for sustainability. In addition, power generation using solar energy tends to be more cost-intensive to run on long term. Therefore, low incomes and exorbitant cost of energy make energy unaffordable for citizens, despite the availability of resources.

To meet continuously growing energy demand without any adverse effect on the environment , permanent magnet alternator can be used that operates without any external source. It operates purely on the principle of magnetic field and it is sustainable for households and small businesses. It employs neodymium magnets that exist between similar magnetic poles to generate electricity. The magnets rotate continuously without depending on any external source. It is a complex design that involves the interconnection of diverse components of power generation and distribution. The repulsive force produce a torque which serves as a prime mover for rotor blades.

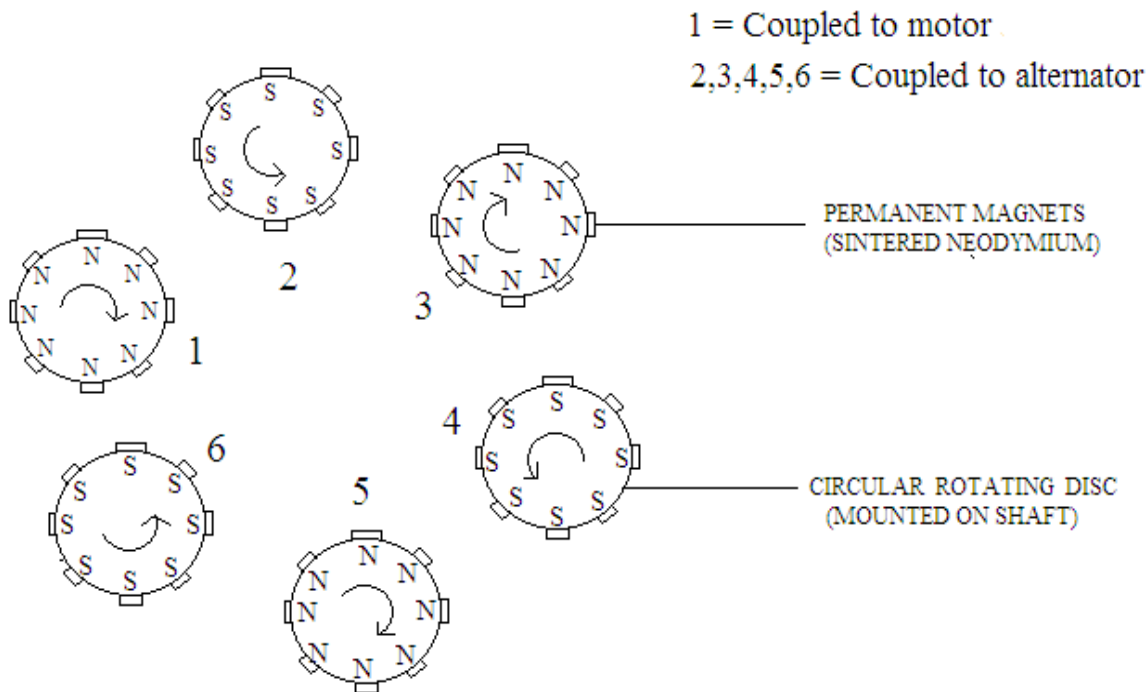
Motivation (not more than 100 words)

- Demand for electricity exceeds the power supply capability
- India's gross installed capacity is around 349 GW, but peak load met over FY 2018-19 has been about 175 GW.
- Limited energy generation due to lack of availability of raw materials, environmental factors , distribution losses etc.
- Frequent power cuts. About 9529 un-electrified villages are yet to access electricity.

TARGET:

- To meet the energy demand in coming years
- Provide reliable and good quality continuous power supply

Methodology (block diagram, related figures etc)



TOP VIEW OF PROPOSED SYSTEM

Permanent magnets of sufficient strength are attached along the circumference of circular rotating disc which is mounted on shaft of motor. Another circular rotating disc consisting of permanent magnets of opposite polarity is mounted on shaft of alternator. When both these Discs are brought close to one other with sufficient gap, the rotation of circular disc by motor causes the rotation of other disc mounted on alternator due to strong attraction of magnets.

When large number of such discs are connected in circular fashion such that the resulting system forms a feedback network, disconnecting the electric supply to motor doesn't affect the rotation of the discs. Thus the discs continue to rotate at a high speed even after the Electric supply to motor is disconnected due to **MAGNETIC LOCKING**. To get maximum output, all such alternators are synchronised. Hence, the net output power due to synchronisation of all alternators will be sufficiently large which can be used to meet the peak demand.

It is important to note that neodymium permanent magnet loses approximately 5% of its magnetism every 100 years.

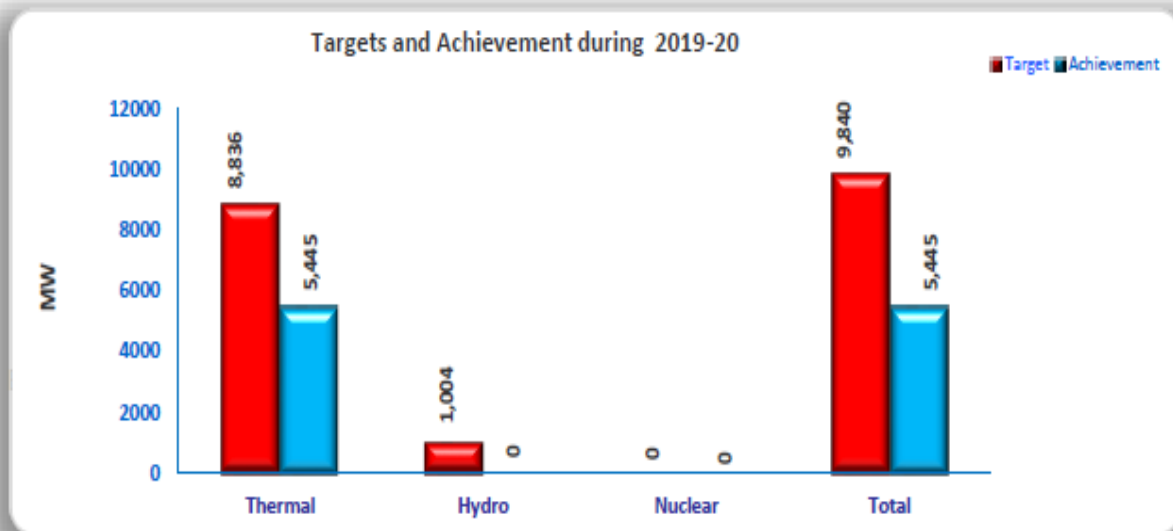
Social Impact

FEATURE COMPARISON	MRM	COAL POWER PLANTS	HYDRO POWER PLANTS	RENEWABLE POWER PLANTS
FUEL SECURITY	+	×	×	+
EMISSION CONTROL	+	×	+	+
SAFETY	+	×	×	+
ENERGY AVAILABILITY THROUGHOUT YEAR	+	×	×	×
SITE SPECIFIC	+	×	×	×

Market Survey

4. All India Annual per Capita consumption of Electricity Since 2006	
Year	Per Capita Consumption (kWh)#
2005-06	631.4
2006-07	671.9
2007-08	717.1
2008-09	733.5
2009-10	778.6
2010-11	818.8
2011-12	883.63
2012-13	914.41
2013-14	957
2014-15	1010
2015-16	1075
2016-17	1122
2017-18	1149
2018-19*	1181

(GrossGen.+ Net Import) / Mid-year population * Provisional



The demand for electricity exceeds the power supply capability.

Item	Name of State*
24 Hrs of Supply in 8 States	Gujarat, Himachal Pradesh, Kerala, Tamil Nadu, Telangana, West Bengal, Punjab, Maharashtra
<24 to 23 Hrs of Supply in 6 States	Andhra Pradesh, Uttarakhand, Tripura, Chhattisgarh, Madhya Pradesh, Manipur
<23 to 20 Hrs of Supply in 4 States	Rajasthan, Nagaland, Odisha, Bihar
< 20 Hrs of Supply in 10 States	Assam, Jharkhand, Uttar Pradesh, , Sikkim, Jammu & Kashmir, Haryana, Arunachal Pradesh, Mizoram, Karnataka,

* Excluding Goa & UTs

Energy Consumption by various segments

Sl#	Segments	% of total
1	Heavy Industries	23
2	Transportaion	21
3	Agriculture	18
4	Residential	18