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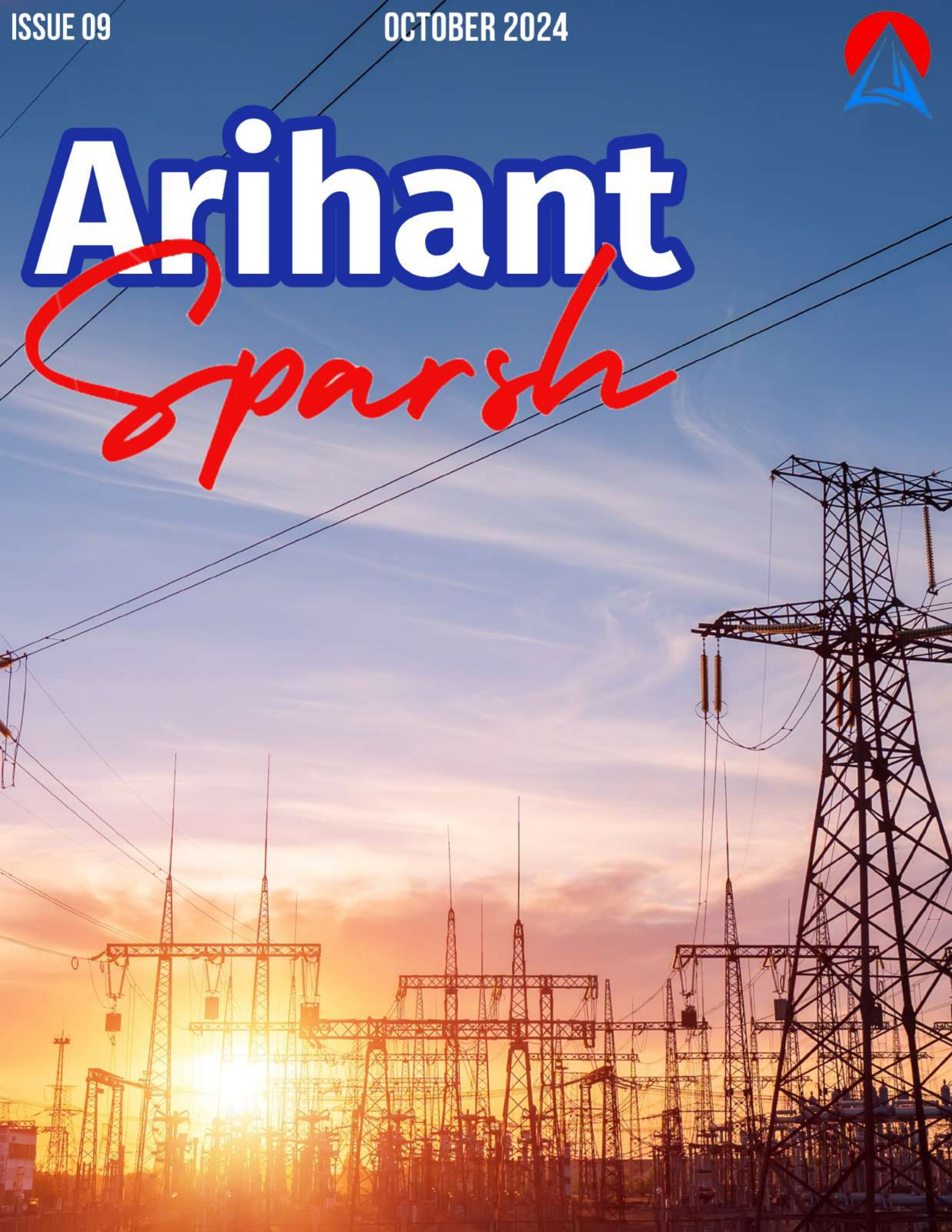
Arihant Sparsh



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Building Stronger Teams: The Importance of Leadership-Team Synergy - Sudhanshu Samal

Leadership and team synergy is a cultivated culture over a period of time when leaders and team members work together smoothly to reach common goals. This teamwork is crucial for a successful organization. Here's how it helps:

Aligned Goals: When leaders and team members have the same vision, every action contributes to the organization's success. This shared direction reduces conflicts and confusion, leading to smoother operations and higher productivity.
Increased Productivity: Synergy creates a collaborative environment where team members feel motivated to do their best. Working well together improves performance and helps achieve business goals faster.

Better Problem: Solving and Innovation: Close collaboration brings different ideas, which leads to creative solutions and innovation. This encourages new thinking and continuous improvement, helping the organization adapt and stay competitive.

Higher Team Engagement and Retention: When team members feel valued, they are more engaged and committed to their work. This leads to lower turnover rates, saving costs on hiring and training while retaining talented individuals.

Mutual Growth: Leaders provide opportunities for training and career development. Team members use their new skills to help the organization grow. This creates a cycle of growth that benefits everyone.

Improved Communication: Synergy encourages open and honest communication, building trust and cooperation. Clear communication prevents misunderstandings and keeps everyone focused on the organization's priorities.

Positive Work Culture: Synergy fosters a positive and inclusive workplace where respect and collaboration thrive. A strong culture attracts top talent, boosts morale, and improves overall jobsatisfaction, leading to business success.

Better Decision-Making: Involving team members in decisions brings diverse ideas and solutions. This leads to well-rounded choices that consider different perspectives, reducing errors and improving outcomes.

Faster Adaptation to Change: In a synergized environment, both leaders and team members are flexible and open to change. This agility helps the company respond quickly to market shifts and challenges.

Shared Success: Working together towards common goals means both leaders and team members share in successes. Recognizing this boosts morale and strengthens their partnership, leading to greater loyalty and sustained growth.

Confidence Building: Synergy builds confidence among team members, making them feel supported by their leaders. Confident team members are more likely to take initiative and contribute great ideas, driving the organization forward.

Effective Task Delegation: Leaders who delegate tasks well empower team members to take on responsibilities and grow. Good delegation makes sure tasks are done efficiently and builds trust within the team.

In Summary: *Leadership-team synergy is key to long-term success. By aligning goals, promoting collaboration, and maintaining open communication, organizations can thrive and achieve lasting growth.*

Solar System Inverters Types

- Sudhakar Sharma

ABSTRACT

Population growth and economic development lead to increase the global energy consumption from (60) million barrels per day in 1980 to (96.5) million barrels per day in 2021 and consumption is expected to increase and reach to (104.1) million barrels per day in 2026. Fossile fuel causes emission greenhouse gases such as carbon dioxide and methane which are causes what is known as global warming and it is expected it will be exhausted within (40-60) years. Solar energy do not emit any pollutants and it is permanent as the sun is always shining, so it
is necessary to develop the solar energy sector to reduce the risk of climate change and to make the air we breathe more safer, also to produce energy locally and reduce dependence on foreign sources of energy. A solar inverter is one of the most important elements of the solar electric power system. It converts the variable direct current (DC) output of a photovoltaic (PV) solar panel into alternating 220V current (AC). This AC electricity then can be fed into your home to
operate your appliances. Long lasting solar power systems require a high quality inverter with a robust convection cooling system. Lowquality inverters have failed in generating the required power. The efficiency and reliability of the inverter is considered one of the most important factors for the success of the solar system. The appropriate inverter is selected depending on the size of the solar system and the way it is connected to the main grid. The main types of the solar inverter will be introduced in this article.

Keywords-- central inverter, string inverter, micro-inverter, inverter/charger, simple inverter, hybrid inverter, power optimizer devices.

INTRODUCTION

Inverter is a system that converts unidirectional voltage waveform (DC form) into a bidirectional voltage waveform (AC form). In general, there are seven types of inverters used in solar systems

1. Central inverter
2. String inverter
3. String inverter with power optimizer
4. Micro inverter
5. Hybrid inverter
6. Inverter with charger
7. Simple inverter

We will discuss about each type of inverters used in the solar system

1. Central inverter

Figure 1: Central Inverter

These inverters are characterized by their high capacity up to (4MW). These types of inverters are used in on-grid systems. In the solar system, one central inverter is used, where all string of solar panels are connected to it to convert the continuous voltage into alternating voltage as depicted in figure 2.

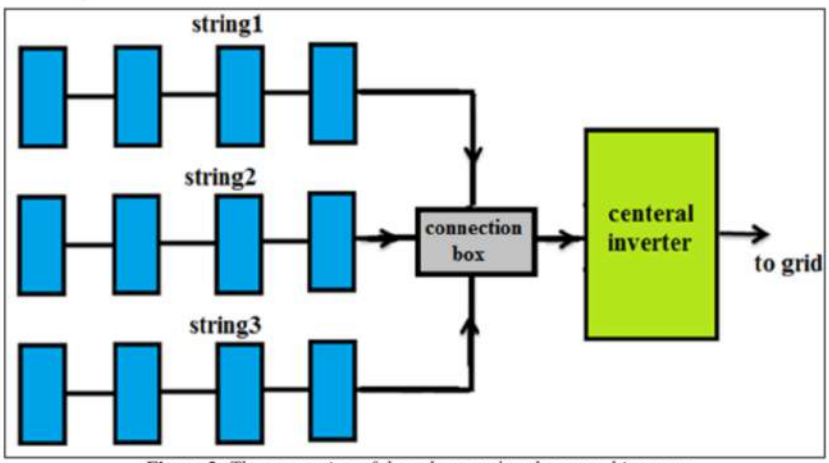


Figure 2: The connection of the solar panel to the central inverter

In the case of large systems, the use of one central inverter is the most appropriate choice in terms of cost and ease of installation, but the use of this type of inverter has some drawbacks, such as;

- It is difficult to maintain compared to other types of inverters
- A malfunction in the central inverter leads to the system being out of service, as most of the time there is no backup central inverter.
- A decrease in the performance of one of the panels (in case it is exposed to shade) leads to a decrease in the power generated by the system. Therefore, When choosing this type, you must take into account the absence of reasons for shade such as tall buildings and large trees, as well as the solar panels should not be left for a long time without cleaning them from the dust

2. String inverter

This inverter has a lower price and easy to maintain compared to the central inverter, so it is the preferred choice in most on-grid solar energy systems. But one of the disadvantages of using this type of inverter is if one of the panel in the string exposed to the shade, the electric power generated from the string will be decrease, therefore, it must be ensured that there are no shadow causes. Figure 4 presented the connection of the solar system with the string inverter.

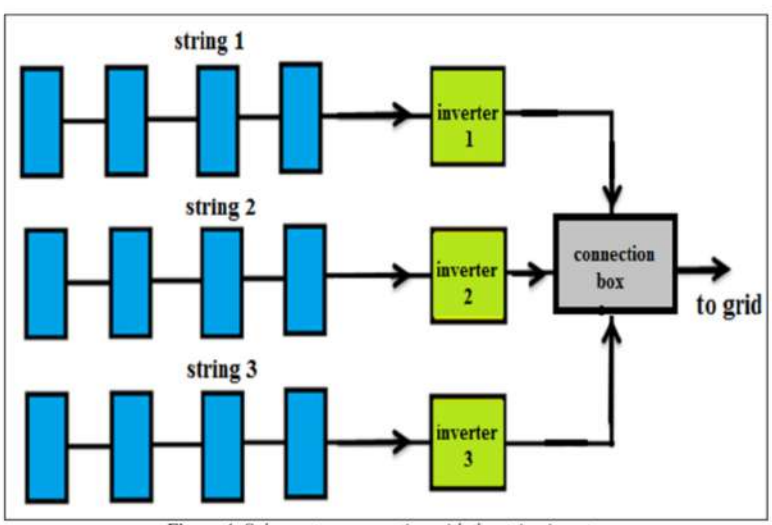


Figure 4: Solar system connection with the string inverter

3. String inverter with power optimizer

Each solar panel is connected to the power improvement device, which is a device that consists of a system that raises the DC generated voltage from the panel and operats using the (MPPT) technique. The shade or decreased performance of one of the panels does not affect the performance of the rest of the panels since the panels are not connected with each other. Figure 6 depicted the connection of the solar system with power optimize.

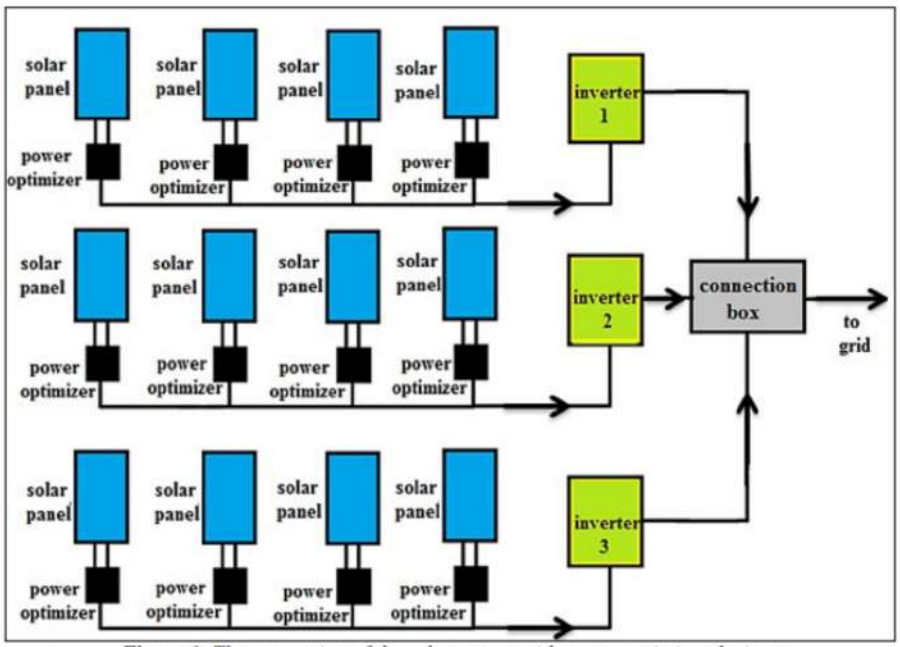


Figure 6: The connection of the solar system with power optimizer devices

Figure 5: power optimize dvice

4. Micro Inverter

Each panel is connected to a micro- inverter that converts the continuous voltage generated from the panel into alternating voltage, so the panels are not affected with each other as they are not connected to each other. This type of inverter operates with the on-grid system, and due to use a large number of solar panel, the system becomes costly, so this type used in a small systems which contains a small number of panels.

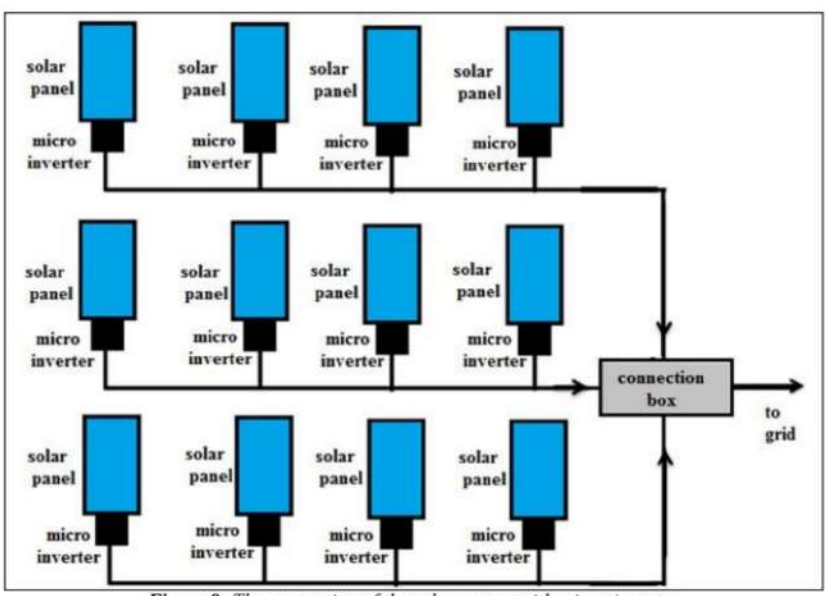


Figure 8: The connection of the solar system with micro-inverter

Figure 7: Micro inverter

5. Hybrid Inverter

In this type of inverters two types of energy sources are used, such as solar panels and batteries, where a series of solar panels and a series of batteries are inserted into the hybrid inverter, which in turn performs more than one function;

- Converting the voltage generated from the panels into AC voltage
- Charging the batteries from the solar panels, and if the power generated from the solar panels is insufficient to charge the batteries, the inverter charges the batteries from the main grid after converting their alternating voltage to a continuous voltage
- Feeding the load with electric current in the event of a power outage in the main grid
- If the main grid supplies the load with electricity, the inverter will give the amperes generated from the solar panels to the main grid.

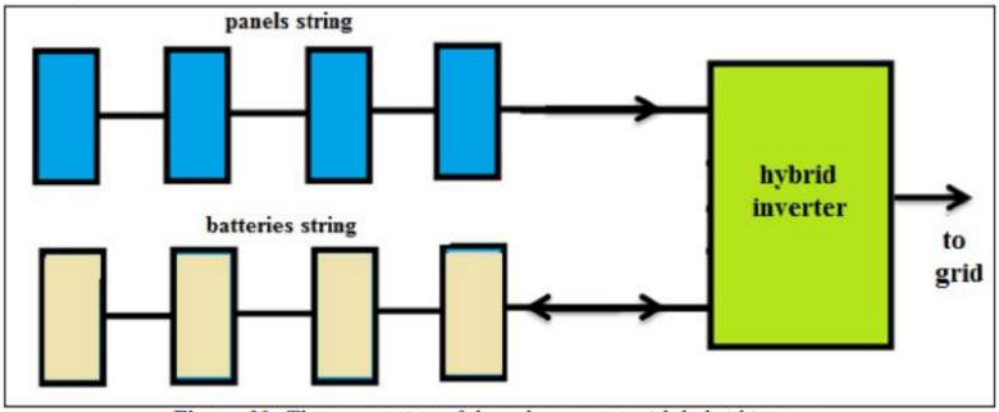


Figure 10: The connection of the solar system with hybrid inverter

Figure 9: Hybrid inverter

6. Invertor with charger regulator (invertor/charger)

This type of inverter performs the process of charging batteries in addition to converting continuous voltages to alternating voltages and is used in off-grid systems and stand-alone systems. Figure 6 showed solar system connection with inverter/charger.

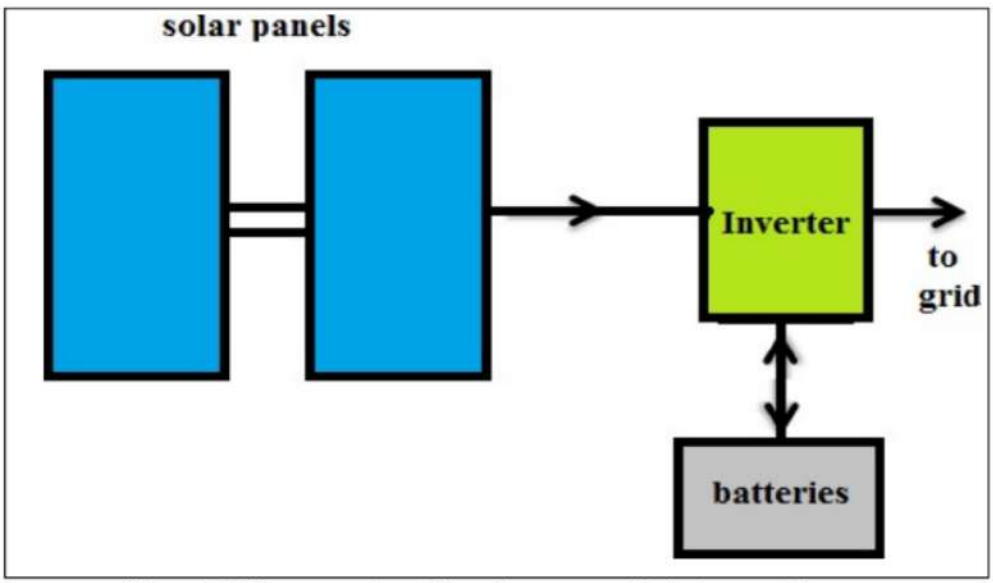


Figure 12: The connection of the solar system with the inverter/charger

Figure 11: Inverter with charger regulator

7. Simple Inverter

This inverter converts DC voltage to AC voltage only. In this case, a charge regulator (pwm) or (mppt) must be used. This type of inverter is used in stand-alone systems. Figure 7 depicted the solar system connection with the simple inverter.

Figure 13: Simple inverter

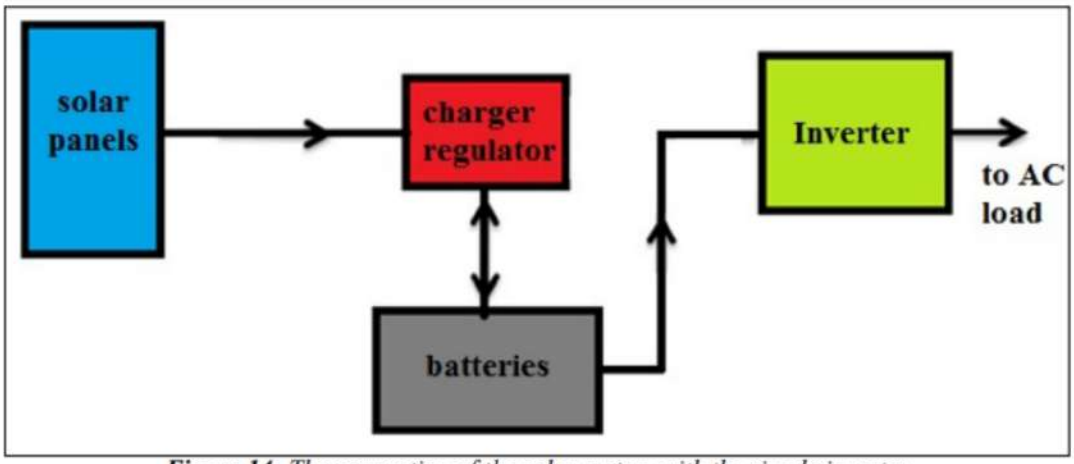


***Figure 14:** The connection of the solar system with the simple inverter*

CONCLUSION

This article presents seven types of the solar inverters; centeral inverter, string inverter, micro inverter, and string inverter with power optimizer which are used in on-grid solar systems, hybrid inverter is used in hybrid solar systems while inverter/charger and simple inverter are used in stand- alone solar systems. For on-grid solar systems, micro-inverter and string inverter with power optimizer are the best choose to avoid the decrease in the electrical power generating from the solar systems when one of the solar panels is exposed to one of the reasons that lead to a decrease in the productivity which is the most dangerous of which is shadow. The cost of the systems can be reduced with this type of inverters by using high-power solar panels such as Half Cut Set solar panels and Multi Bus Bar solar panels, whose its power is more than 400 watts, and this lead to reduce the number of solar panels, and therefore we need a less number of microinverter and power optimizer devices. The hybrid systems are preferred to be used in institutions and government departments to supply the main grid with amperes at times when these institutions are out of business hours. In stand-alone solar systems, it is preferable to use the inverter with a charger regulator to reduce the number of devices in the solar system and for ease of installation and reduce its cost.

Hybrid Electric Vehicle Along With A Super Capacitor - Prashant Awasthi

What is HEV?

Hybrid Electric Vehicle (HEV) technology. HEV technology combines the best characteristics of fuel-driven engines, electric motor drives, and energy storage components. It is designed with a combustion engine that functions as the primary power source, and an electric power storage system that functions as the secondary power source. he secondary source handles peak power demands for acceleration. In addition, the secondary source is used for capturing regenerative braking energy and applying that energy for further acceleration or for the basic energy needs of supplementary electrical systems.

HEV with Battery as a secondary power source and its Deficiencies.

Many manufacturers have made progress in HEV control, engine, and motor design, they have not been as successful with regard to the electric power storage systems used as secondary power sources. This insufficiency has primarily been due to the fact that batteries are used to provide electric power storage in most of the HEVs currently under development.
Batteries have difficulty functioning in cold weather, so they create significant inconveniences for passengers, drivers, and transportation officials and, more alarmingly, facilitate threats to safety. Second, batteries have a very limited cycle life under extreme conditions, which results in repeated replacement throughout the life of the vehicle.

Beyond Batteries (Super Capacitor)

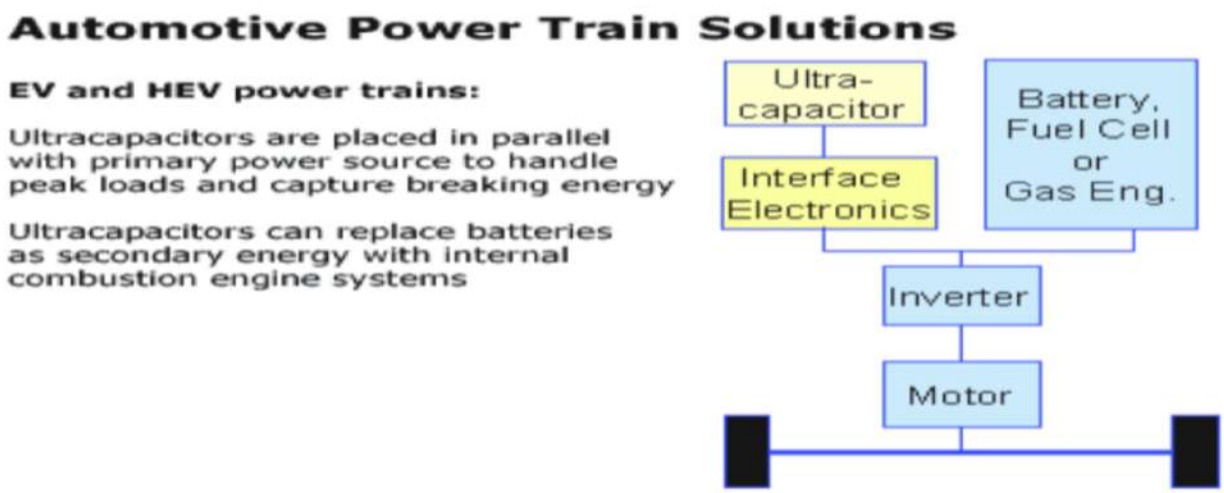
Recently, a promising technology has been introduced that has the potential to improve HEV energy storage: Super Capacitor
As the name suggests it is a capacitor with large capacitance. It polarizes an electrolytic solution to store energy electro-statically. Though an electrochemical
device, no electrochemical reactions are involved in its energy storage mechanism. This mechanism is highly reversible, and allows the Supercapacitor to be charged and discharged hundreds of thousands of times, without any appreciable loss in its capacitance. It is ideally suited for the intermittent loads.
In terms of applications, Super capacitors serve two primary purposes. The first is for temporary backup power in electronic devices.
The second use for Super capacitors - and the one of most interest to the transportation industry - is in supplying peak power in electronic devices.
Here, Super capacitors are used in tandem with other energy sources for systems that require both low power discharges for continual function and a pulse of power for functions that demand peak loads.

Comparison between Super Capacitor and Battery

Sr.No.	Parameter	Ultra-Capacitor	Battery
1	Expected life, years	More than 20	1 to 3
2	Charge – discharge cycles	More than 500,000	1000
3	Power density, W/Kg	4000	300
4	Energy density, Wh/Kg	3 to 5	80 to 100
5	Charge control	Not needed	Needed
6	Ability to discharge completely	Yes	No
7	Self discharge	High	Low

HEV with Super Capacitor

In the case of Supercapacitor-enhanced HEVs, the traditional combustion engine functions as the primary power source. It handles continuous load requirements such as cruising and basic electric needs. Super capacitors function as the secondary power source, and they are sized for short duration load leveling. these short duration events are experienced many thousands of times throughout the life of a vehicle, they are very well suited for the long life cycle of the ultracapacitor, which can cycle millions of times without any constraint on depth of discharge.



To be sure, Super capacitors will not completely replace batteries in HEV design. After all, their strength lies in providing high power, rather than high energy. As such, batteries should be utilized to supply energy for non-power train electrical components, such as stereos and interior lighting, when a vehicle's engine is shut off.

Other Common application of Super Capacitor Wind Turbine(Pitch Control System), Smart Meter, Security Camera, medical devices, Railways(PIS) ETC.

Understanding how we think

- **Pragti Gupta**

Are you here with the solution or are you part of the problem?

When **you** realise that **you** are broaching a sensitive "problem" offer solutions, suggestions and ideas even as **you** ask questions.
You find a solution or an answer to it.

What is technical thinking?

Technical thinking primarily focuses on finding solutions.
The emphasis is on developing a simple yet meaningful solution, with less consideration given to marketing, revenue, or client appeal.

Here are some tips on what we can do instead of being someone's problem solver:

1. Actually take the time to listen to what they have to say. Have your brain shut off for a bit and actively listen by asking questions, asking how they feel about it and validating their feelings.
2. Offer support, not advice.

How can I solve problems better?

1. **IDENTIFY** the problem. ...
2. **DEFINE** the main elements of the problem. ...
3. **EXAMINE** possible solutions. ...
4. **ACT** on resolving the problem. ...
5. **LOOK** for lessons to learn.
6. **Thinking skills** encompass a set of higher-order thinking processes that include critical thinking, creative thinking, problem-solving, decision-making .

आओ दशहरा मनाएं !

- प्रमोद जैन

जैसा की सर्व विदित है इस दुनिया में रावण नाम का दूसरा कोई व्यक्ति है ही नहीं | कोई भी पिता अपने बेटे का नाम रावण नहीं रखता, क्योंकि समाज रावण को बुराई का प्रतीक बनाकर सैकड़ों सालों से उसका पुतला दहन करता आ रहा है| जब मनुष्य अपने मन के वश में होकर कोई कार्य करता है तो उसे किसी अच्छे बुरे कर्म का भेद नहीं रहता ! जिन्होंने रावण के सम्पूर्ण चरित्र को पढ़ा है, वे यह भली भांति जानते है कि रावण बहुत ही विद्वान व्यक्ति थे और उन्होंने अपने देश तथा धर्म के लिए बहुत से अच्छे कार्य भी किए थे| रावण इतना भी बुरा नहीं था कि लगातार प्रत्येक वर्ष उसे बुराई का प्रतिक मान कर उसका पुतला दहन करते रहें !

जब हम किसी के बुरे कर्मो को सदियों तक याद रख सकते है तो उनके द्वारा किये गए अच्छे कार्यों का उल्लेख भी तो होना चाहिए| हम एक अरसे से हर वर्ष रावण को मारते आ रहे हैं| .... उसे आतिशबाजी के साथ दहन भी कर देते हैं लेकिन अगले ही वर्ष वह फिर से अट्टहास करता हुआ हमारे सामने तनकर खड़ा हो जाता है|.... हम उसे फिर मारते हैं, वह फिर आ जाता है| .... समस्या जस की तस| .... बड़ा बुरा लगता है जब कोई रावण का दहन करता है और कहता है की हमने बुराई पर विजय प्राप्त कर ली ! क्या, हमारी ही संस्कृती के अनुसार किसी को मिटाना और उसके मिटने का जश्न मनाना अंहकार नहीं है ? ..... हर साल हम उसका दहन करते है जिसने अपनी बहन के अपमान का बदला लेने की गलती की, जिसने अपने स्वाभिमान के लिये अपने सारे वंश की कुर्बानी दे डाली, अपनी सोने की लंका जलवा डाली, जिसने विभीषण जैसा एक ऐसा भाई पाया जिसने उसके शत्रु को उसकी मौत का राज बतलाया | ... एक बार रावण का दृष्टिकोण भी समझे !

हम हर वर्ष दशहरा मनाते है, दशहरा मनाना है तो पहले उसके अर्थ को समझना होगा ..... राम और रावण के जीवन मे छुपे सन्देश को तो समझना होगा .... जिस रावण को राम ने भी महान पंडित माना, जिससे लक्षमण ने भी राजनीती के गुर सीखे,.... जिस रावण के कारण राम अमर हुए, हम उस रावण को बुरा बताते है, उससे घर्णा करते है .... उस रावण को जला कर हम जश्न मानते है ! ... अन्याय और अनैतिकता का दमन हर रूप में सुनिश्चित है| चाहे दुनिया भर की कितनी ही शक्तियों और सिद्धियों से आप संपन्न हों, लेकिन सामाजिक गरिमा के विरूद्ध किए गए आचरण से आपका विनाश तय है| रावण को जलाने की परम्परा को मनाने का मकसद ही यही है की हमे, हमारे मन मे बसे रावण को जलाना होगा, अपने अंहकार को मिटाना होगा तांकि राम को अपनी विजय का स्वाभिमान हो और रावण को अपनी पराजय का अहसास... और जन-मानस मे दशहरे का विश्वास .... रावण को मारने का अधिकार सिर्फ राम को ही है* ... *रावण बन कर रावण को ना जलाये - राम को ना लजाएँ !

हम चाहे कितने ही रावण जला लें लेकिन हर कोने में कुसंस्कार और अमर्यादा के विराट रावण रोज पनप रहे हैं| .. सीता के इस देश में रोज कितनी ही 'सीता' नामधारी सरेआम सड़कों या घरों से उठा ली जाती है और संस्कृति के तमाम ठेकेदार रावणों के खेमें में पार्टियाँ आयोजित करते नजर आते हैं| .... आज देश में कहाँ जलता है असली रावण ?

जब तक सही "रावण" को पहचान कर सही 'समय' पर जलाया नहीं जाता... कैसे सार्थक होगा, शक्ति पूजा के नौ दिनों के बाद आया यह दसवाँ दिन जिस पर माँ सीता की अस्मिता जीती थीं|.... भगवान राम की दृढ़ मर्यादा जीती थीं|

कब जलेंगें इस देश में असली रावण और कब जीतेगीं हर 'सीता' ? ..... कब तक जलेंगे रावण के नकली पुतले ?

Media & Events

Electronica India and Productronica India 2024

Arihant Electricals at Electronica India & Productronica India 2024

Arihant Electricals proudly participated in Electronica India and Productronica India 2024, showcasing our advanced solutions in electronic components, power systems, and innovative technologies across key sectors like EV, Renewable Energy, Defense, and Aerospace. The event, co-located with Semicon India 2024, was inaugurated by Hon'ble Prime Minister Shri Narendra Modi and other dignitaries. It underscored India's growing role in global electronics and semiconductor innovation.

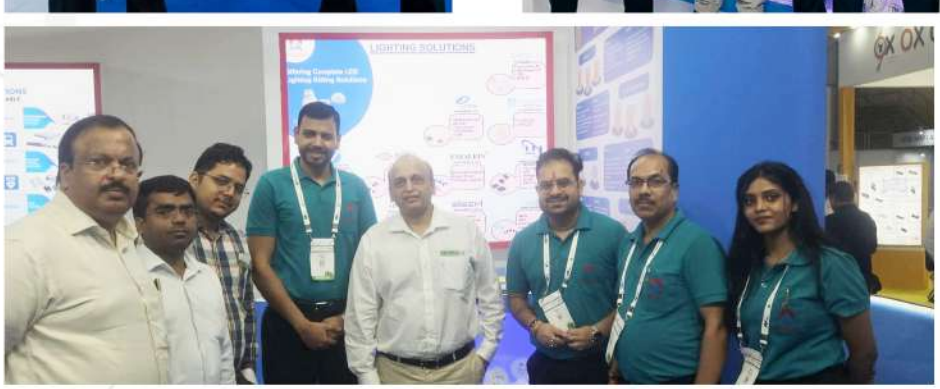
With over 1,500 exhibitors and thousands of visitors from around the world, the event served as a platform for us to showcase the next generation of solutions, including advancements in the fields of semiconductors, green energy, and defense applications. Our participation reaffirmed our position as a leader in power and electronic systems, committed to providing world-class solutions that meet the evolving needs of various industries

Media & Events

Electronica India and Productronica India 2024

Key Highlights of the Event:

- **Power Electronics:** Showcasing energy-efficient solutions for defense and aerospace applications.
- **Electric Vehicles (EV):** Unveiling our latest innovations in EV infrastructure and components.
- **Renewable Energy:** Demonstrating our contributions towards sustainable energy through advanced power solutions.
- **Defense and Aerospace:** Highlighting our cutting-edge technologies designed for high-performance and mission-critical applications.
- **Semiconductors:** Emphasizing the importance of semiconductors in India's technological future, and our role in this transformative sector.



Media & Events

Electronica India and Productronica India 2024

Join Us in Shaping the Future!

Arihant Electricals continues to lead the way with innovative technologies that power a smarter and more sustainable future. We extend our heartfelt thanks to all the attendees, partners, and collaborators who contributed to the success of Electronica India and Productronica India 2024.

As we move forward, we invite you to join us in exploring what's next in the world of electronics, power systems, and semiconductors. Together, let's power the future of technology!

Birthdays

Sarvesh Tiwari	-	2nd October
Sanjay Sharma (Manufacturing)	-	4th October
Jaynandan Pandit	-	5th October
Shivam Shrivastava	-	6th October
Sarvender Sagar	-	6th October
Panna Lal	-	8th October
Preeti Chaudhary	-	10th October
Vijay Dixit	-	11th October
Nittin Kumar	-	17th October
Shailendra Singh Bhadoria	-	24th October
Umang Kumar	-	28th October

Onboarding

1. Sunny Deval (Store)
2. Himanshu (Design)
3. Anubhav Sharma (Plant)