



## Electrical Power Backup System

Academic Year 2019 – 2020

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*Issued by* : Head, Electrical Maintenance Department

*Purpose* : This document defines the Electrical Power Backup System availability in the event of an electrical power interruption/disruption.

*Scope* : This document provides the details about the Power Backup Infrastructure availability in MKCE. This policy applies to all staff of ITKM who are involved in the installation, operation, and maintenance of the Server and Network equipment.

- 1. Introduction* :
- 1.1 To make the best use of the Backup Power systems, they must be operated and maintained according to the manufacturers' and installing electrical contractor's guidelines.
  - 1.2 In MKCE, regular Electrical Power is obtained from (a) Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) (b) Solar Power Panels Installed in premises
  - 1.3 Electrical Power to All Computing Equipment's are drawn from Online Uninterrupted Power Supply (UPS) powered by batteries.
  - 1.4 The proper functioning of Backup Power Systems helps to ensure continued power access (uninterrupted power supply) during power outages. This is required to efficiently maintain Servers, Computers and other Networking equipment.
  - 1.5 IT systems that are critical to Institution activities are clearly identified, as well as the potential risks of disruption that apply to them.
  - 1.6 Regular and regulated supply of electricity, appropriate electrical fixtures, adequate power backup and support, including alternate sources of energy, where needed, are ensured. Students and teachers will also be trained in the safe use of electrical outlets and fittings.
  - 1.7 Adequate safety precautions and rules for use is also established according to the manufacturers' and installing electrical contractor's guidelines.
- 2. Guidelines* :
- 2.1 The Backup Power systems are designed to operate without significant manual intervention. They will start automatically when an interruption of electrical power from the utility power grid is detected and will continually operate until the power is restored.
  - 2.2 The protected network and servers equipment under ITKM draws its power from Online UPS at all times, even when commercial power is available. The batteries are continuously recharged from this commercial power.
  - 2.3 When an interruption of electrical power from the commercial power grid is detected, the equipment which is connected to the UPS will continue to operate from the UPS with no interruption in service, But the generator will automatically start up to provide power to recharge the batteries.

- 2.4 The diesel generator's fuel tank maintains enough fuel to run the generator for up to 72 hours.
  - 2.5 When the commercial power is restored and become stable, the electrical service switches back to the commercial power grid and the generator shuts down automatically.
  - 2.6 The equipment protected by the Backup Power System UPS includes all servers in the Computer Center, essential network equipment, the telephone switchboard, the Help Desk, the building access, essential emergency lights and alarm system. In addition, the computer room air conditioning system, the computer room lights, and the hall lights on all floors will be powered by the generator only.
  - 2.7 Protection from environmental hazards are in place, including where possible, hazardous or combustible materials would not be stored within data-centres or data rooms or computer labs.
  - 2.8 Appropriate equipment are installed in data-centres or data-rooms or computer labs to monitor and react to fire, high temperature and humidity.
3. *Testing* :
- 3.1 At a predetermined time and date each week, the generator will automatically start and will run for an interval long enough to warm up the oil in the crankcase as a maintenance activity.
  - 3.2 Additionally, during the first week of each month, the control in the transfer switch in the server room will be manually set to its fully system test position. This will actually interrupt the utility power when the test begins, causing the protected equipment in the server room to operate from the UPS, which will be recharged from the generator during the test.
  - 3.3 Quality and integrity of backups are verified at the end of each backup operation.
4. *Maintenance* :
- 4.1 The systems are initially under full warranty. Upon the expiration of those warranties, a maintenance agreement will be negotiated with the appropriate electrical contractors(s).
  - 4.2 Normally, the only maintenance required by maintenance staff is to monitor the fuel level and to observe the proper operation of the systems during scheduled tests.
  - 4.3 All power supply equipment are maintained, regularly checked and tested in accordance with the manufacturer's recommended instructions or procedures.
5. *Roles & Responsibilities*
- 5.1 The Institutions policy makes it clear that Electrical Maintenance Department is responsible for purchasing, managing and ensuring the safety of all equipment related to power backup and activities.



## Annexure – 1


### Tata Power Solar Energy System @ M Kumarasamy College of Engineering

- 1.1 Solar Energy is being harvested through solar panels and is now used in M.Kumarasamy College of Engineering (MKCE) as a step towards use of clean energy for protecting the environment.
- 1.2 The Government, in order to promote the use of clean energy, has initiated National Solar Mission to control air pollution and to discourage the use of fossil fuels for energy needs. Therefore, MKCE has also installed solar panels in roof top of campus to meet their power needs and as power backup along with maximum utilization of energy efficient use.
- 1.3 Use of solar energy in institution will inter alia have multiple benefits;
  - i. Help in reducing the air pollution
  - ii. Create awareness among the students about the use of renewable sources of energy.
  - iii. Lower the monthly electricity bill.
  - iv. Generate funds by selling excess power to the State grids as per Government policy.
- 1.4 Solar Power Monitoring System


System Information


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 English ▾YIELD DATA    DIAGNOSTICS    CONFIGURATION    




## Welcome to the Main Menu of the Solar-Log 1200



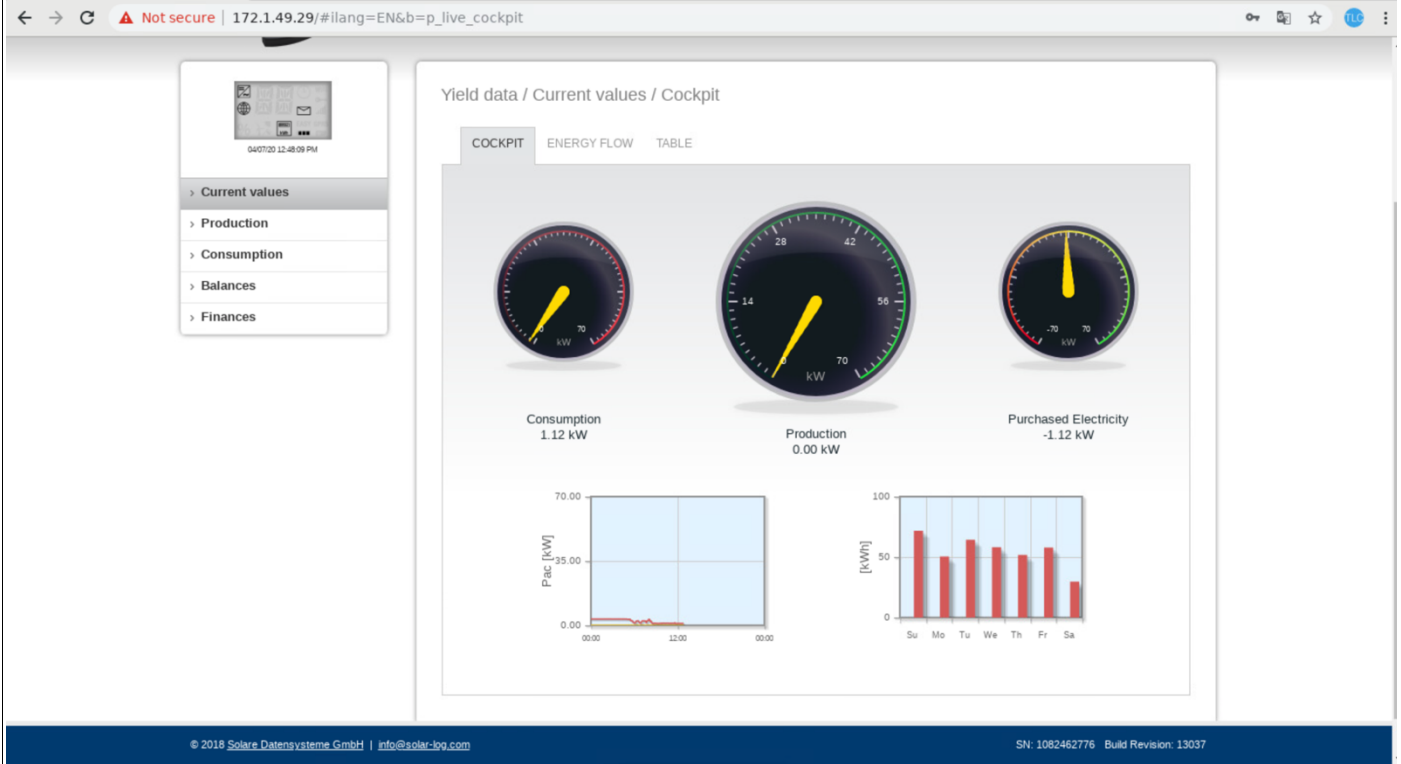


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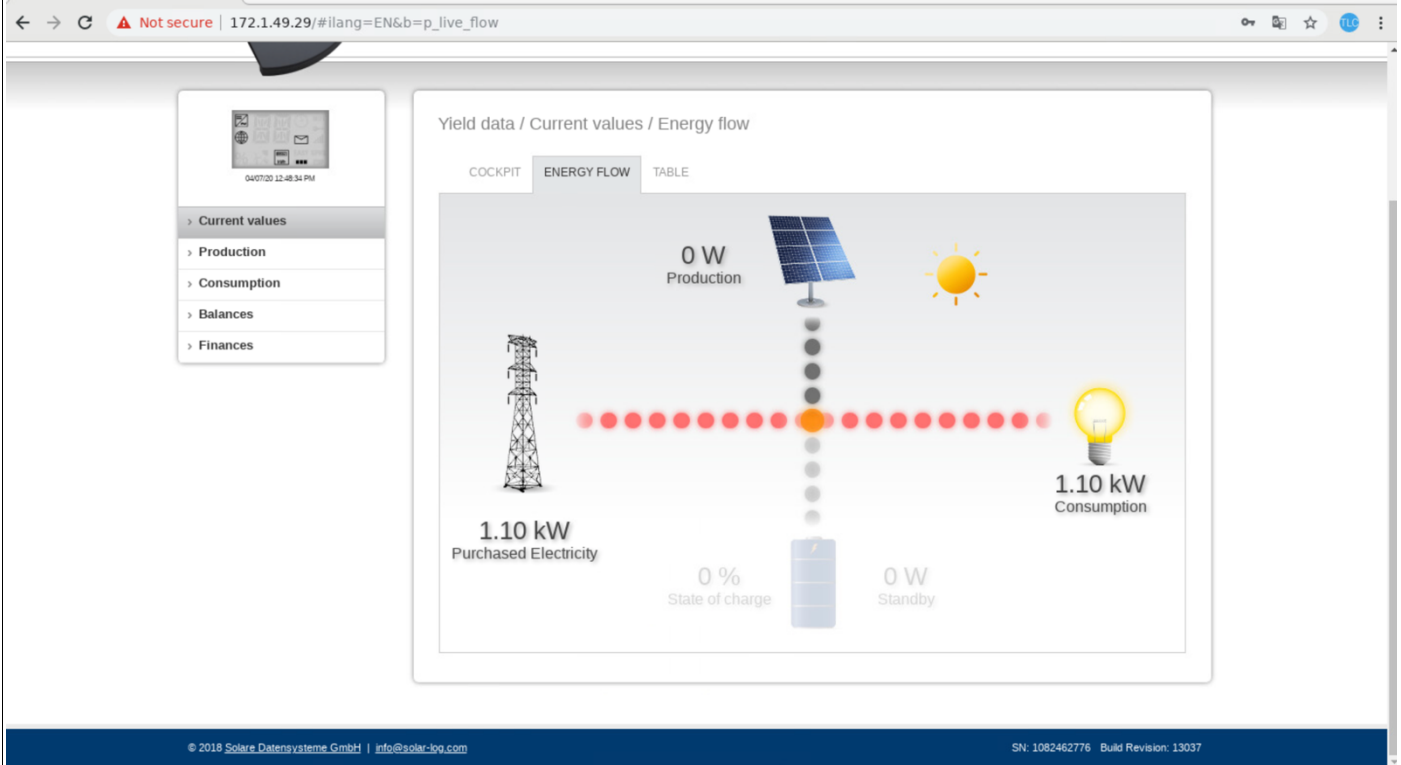
About this Solar-Log™	
Model	Solar-Log 1200
Serial number	1082462776
Firmware version	4.2.3 Build 112 - 12.02.2019
Plant data	
Plant size	60000 Wp
Detected devices	
Inverters	RS485-A: 2 x GoodWe RS485
Power meters	RS485-B: 1 x Schneider Electric EM6400NG
Data transfers	
Portal transfer	04/07/20 12:49:41 PM - OK
Export (FTP)	Deactivated
E-mail	Deactivated
Performance and Failure Monitoring	
Monitoring period	11 o'clock - 13 o'clock
Maximum deviation	10%
Minimum feed-in power for power comparison	20%
Fault duration before message will be generated	30Min.
Maximum number of message to be sent per day	3
Messages via	Monitoring is carried out by WEB Enerest™ using above parameters. 

© 2018 Solare Datensysteme GmbH | [info@solar-log.com](mailto:info@solar-log.com)SN: 1082462776 Build Revision: 13037

## Yield Data → Current Values



## Yield Data → Energy Flow



# Yield Data → Production

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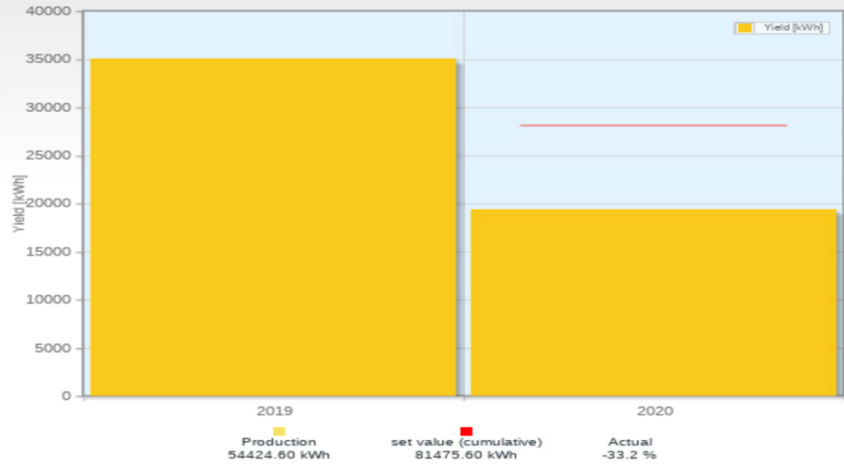
172.1.49.29/#ilang=EN&b=p\_prod\_all

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- > Current values
- > Production
- > Consumption
- > Balances
- > Finances

## Yield data / Production / Total

DAY MONTH YEAR TOTAL

Display mode [Graph](#)  
[Table](#)



Graphic autoscale  Activated

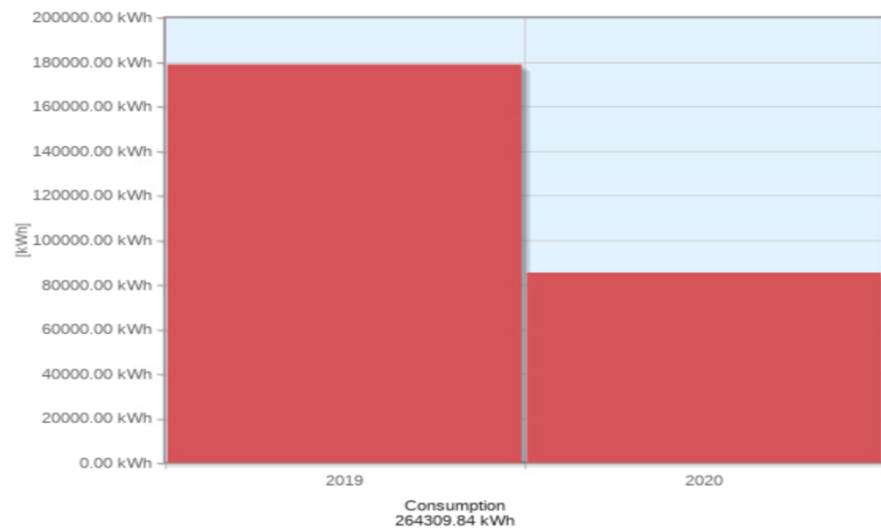
# Yield Data → Consumption

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- > Current values
- > Production
- > Consumption
- > Balances
- > Finances

## Yield data / Consumption / Total

DAY MONTH YEAR TOTAL

### consumption overview



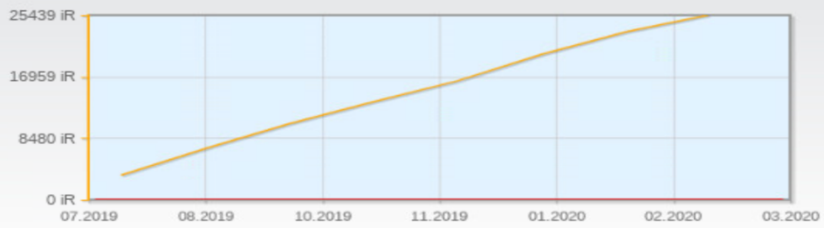
Graphic autoscale  Activated



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- > Current values
- > Production
- > Consumption
- > Balances
- > **Finances**

Yield data / Finances



		Total	2020	2019
Feed-in	kWh	54424.60	19375.70	35048.90
Tariff	iR	25443.49	9058.14	16385.36
Self-consumption	kWh	49128.42	16957.00	32171.43
Tariff	iR	0.00	0.00	0.00
Electricity costs saved	iR	0.00	0.00	0.00
Purchased Electricity	kWh	264309.75	85387.90	178921.85
Electricity costs	iR	0.00	0.00	0.00
<b>Savings + PV revenue</b>	<b>iR</b>	<b>25443.49</b>	<b>9058.14</b>	<b>16385.36</b>
<b>Purchased power expenses</b>	<b>iR</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total</b>	<b>iR</b>	<b>25443.49</b>	<b>9058.14</b>	<b>16385.36</b>



Welcome to the Main Menu of the Solar-Log 1200



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- > **Network**
- > Internet
- > Devices
- > Plant
- > Notifications
- > Smart Energy
- > Feed-In Management
- > Data
- > System

Configuration / Network / Ethernet

ETHERNET PROXY

Ethernet settings

Obtain IP address automatically (DHCP)  Deactivated

IP address

Subnet mask

Gateway

Alternate DNS server  Activated

DNS server

Disable querying Google public DNS  Deactivated

Internet connection

CONNECTION TEST

CANCEL

SAVE

# Plant Configuration



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- › Network
- › Internet
- › Devices
- › **Plant**
- › Notifications
- › Smart Energy
- › Feed-In Management
- › Data
- › System

## Configuration / Plant / Graphic

GENERAL PLANT GROUPS **GRAPHIC** FORECAST TARIFF ELECTRICITY COSTS

### Scale of the graphic

The scaling will be recalculated automatically as soon as the device configuration or the plant forecast will be changed.

Graphic autoscale

? Activated

Consumption : Line graphics

Deactivated

No.	Name	Generator Power	Day	Month	Year	Total
1	INV 1	30000	33000 W	230000 Wh	3650000 Wh	36500000 Wh
2	INV 2	30000	33000 W	230000 Wh	3650000 Wh	36500000 Wh
3	Meter 2	60000	66000 W	315000 Wh	9800000 Wh	118000000 Wh

SAVE

RECALC

CANCEL