D.E.S.I. Power ™

DESI Power + DESI Power Foundation

Sustainable Rural Development

Electricity, Water, Farming, Enterprises, Clean Cooking, Hygiene and Training

DESI Power Foundation

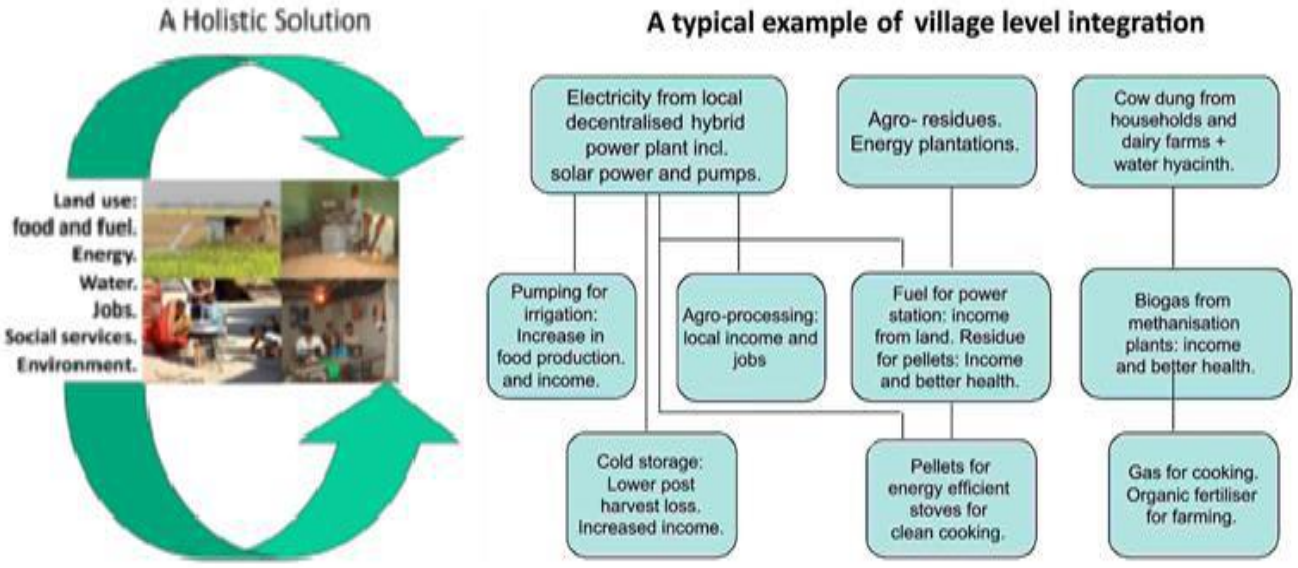
Decentralised Energy Systems India Pvt. Ltd. (DESI Power)

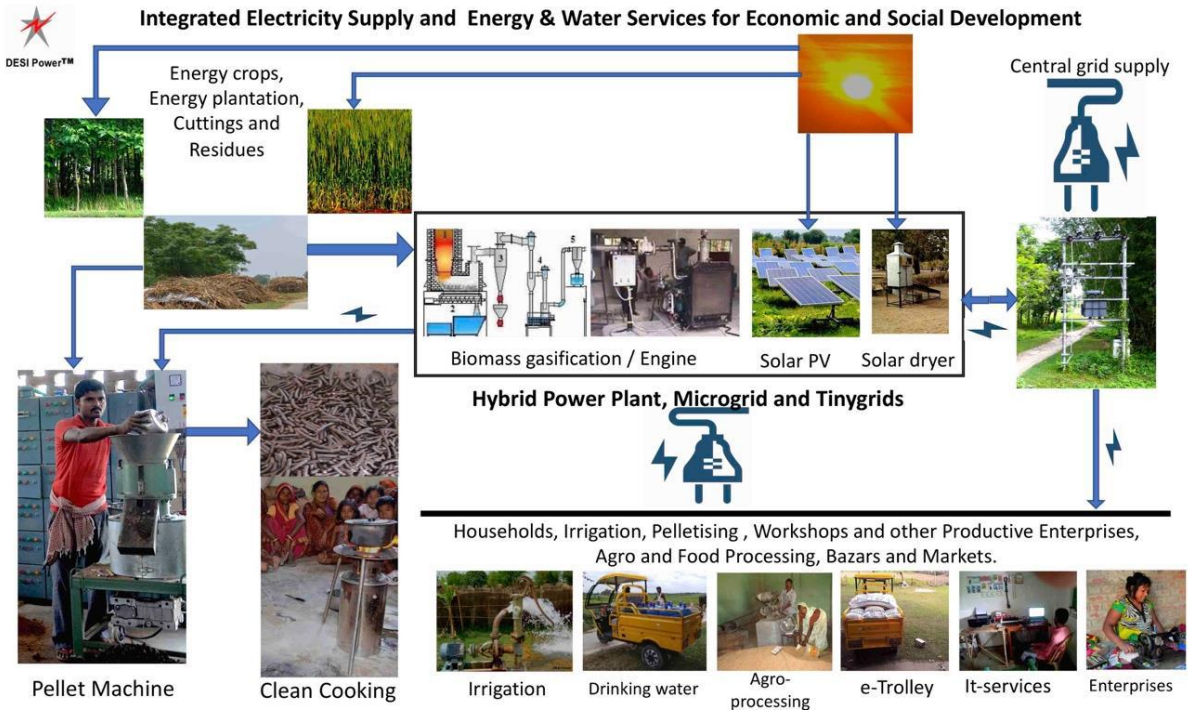
About Us

Decentralised Energy Systems India Pvt. Ltd. (D.E.S.I. Power™) was founded in 1996 by an internationally experienced and motivated energy and power engineer and a committed and internationally reputed scientist promoting sustainable livelihood projects.

DESI Power is focused on creating an empowered rural India where green energy is a means to achieve economic development of the region. The mission of DESI Power is to promote the reduction of endemic rural poverty through local job creation driven by electricity generation from power pants based on local resources of renewable energy for local micro-enterprises, businesses and energy services for lighting, water pumping for irrigation, modern biomass based clean cooking fuels, drinking water, cattle feed, food processing unit, electric vehicle. cold storage, etc.

DESI Power's Integrated Village Development Model





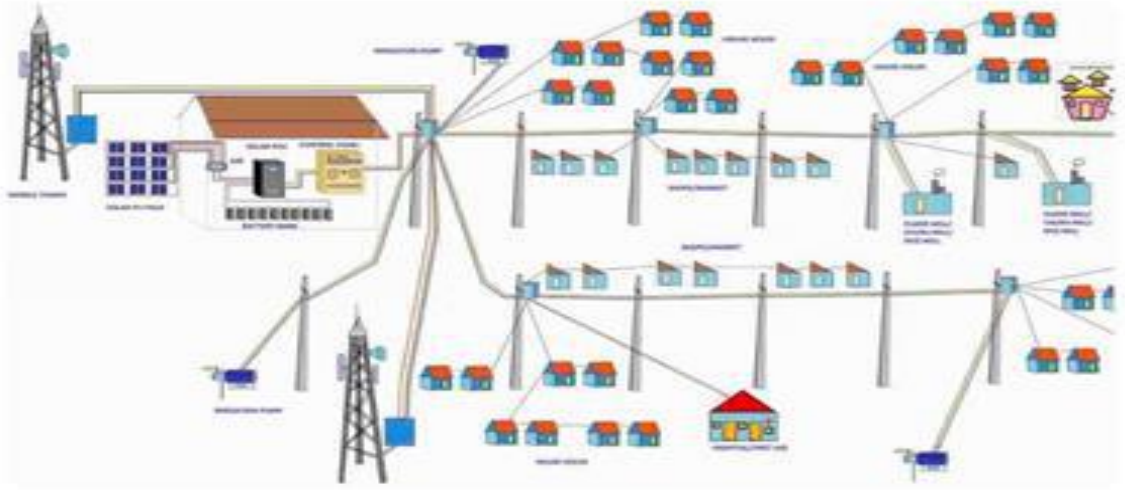
Integration: Not only energy solution but village development with total participation of local people, using local resources and local retention of benefits.
Renewable Energy Technologies: Adapting and adopting renewable energy based decentralised power plants, mini-grids /Tiny Grids and clean energy services capable of local management & O&M.
Innovation: Methods and means to increase efficiency, reliability and sustainability from adapted and tested technology.
Economics / Job creation: A dynamic demand-supply linkage to ensure profitability for power plants, energy and water services and micro-enterprises and thus create local jobs and reduce dependency on diesel use.
Environment / Ecology: Reduction of local pollution and elimination/reduction of GHG emissions.

Contribution to Meet Sustainable Development Goals (SDG) for Villages

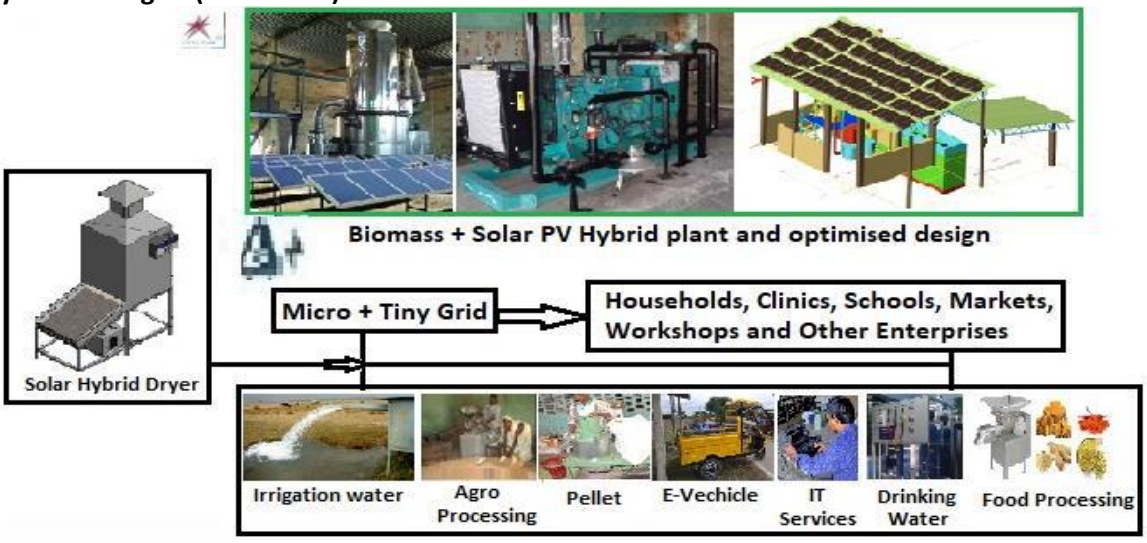
Reliable and Locally Manageable Technologies:

- Biomass gasification based power plant with 100% gas engine.
- Solar PV based Power plants (Mini/Micro and Tiny Grid plants)
- Hybrid (Biomass + Solar PV) power plants and microgrids
- Biogas plant for cooking / lighting and vermi-compost
- Solar Hybrid dryer for vegetable and spices

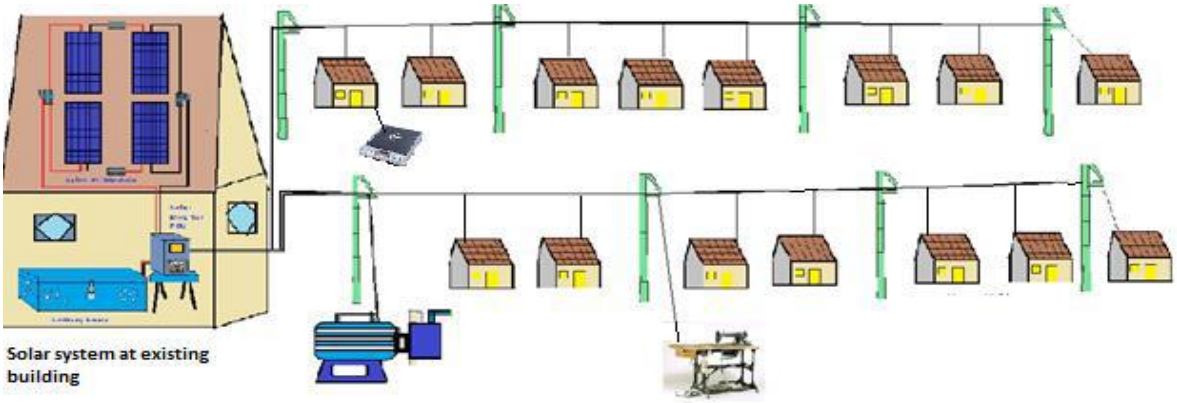
A typical Solar PV based mini/Micro-grid setup (10kWp to 50kWp range either single or hybrid technology): for households, shops, pumps, various other motor loads, telecom towers, etc:



Hybrid Microgrid (10 – 50kW):



A typical tiny-grid setup (1kWp to 5kWp range): for households, shops, pump/ sewing machine / induction stove or other small loads:



Experience

- Built, tested, modified and productionised decentralised biomass gasification based power plants that can be operated by villagers and supply reliable power in a continuous mode jointly with Dasag Switzerland and IISc, Bangalore.
- The first captive power plant was built by DESI Power in 1996 and one of first micro grids in India in 2006, Tinygrids in 2015 and Hybrid biomass-PV plants in 2017.
- Established new configurations of biomass and PV hybrid power plants and distribution networks along with power management systems (grid-linkage if needed) to ensure reliable supply.
- Established small AC and DC captive PV generation systems (Tiny Grids) to supply lighting, mobile charging and irrigation /drinking water. A number of TGs located around captive customers can substitute / supplement unreliable grid supply economically with much lower CO2 emission.
- Built 19 pilot plants at various locations in India and 51 operating plants are located in villages in Araria district, Bihar, India.
- Installing rooftop Solar PV for petrol pumps, schools, industries and domestic applications.
- Started a pilot business unit to commercialize Clean Cooking Fuels and Stoves, using agro-residues-based pellets with electricity from a biomass/PV hybrid power plant. Pellets can also be sold to replace coal in food stalls, hotels, furnaces and brick kilns.
- Promoted an energy plantation as a model for securing about 30% of the biomass supply for hybrid power plants.
- Promoted partner organisations in villages for power plants, diesel replacement, water services and micro enterprises.
- Established cattle feed and water service business.
- Designed, built and commissioned a village “Community Sanitation Centre” consisting of latrines, a biogas plant and supply of biogas for cooking jointly with DESI Power Foundation.
- Set up a Food Processing Unit with solar hybrid dryers.
- Set up DESI MANTRA, a Training Center jointly with DESI Power Foundation to provide training and refresher courses to villagers, including women, to take up responsibilities in village projects.

SERVICES AND PRODUCTS

- Conduct site surveys including assessment of renewable energy sources, energy needs and load surveys and prepare DPRs for integrating supply and demand sides.
- Setup biomass, biogas and PV power plants with Mini / Micro / Tiny Grids, either on their own or in a hybrid combination. Undertake erection, commissioning, and O&M of power plants.
- Provide EPC and O&M services for power plants, mini-grids, energy services and micro-enterprises.
- Consultation service regarding selection of appropriate technology.
- Provide consultation service for preparation of technical specification for biomass gasification and PV solar based power plants including load management. Provide consultation service on financial packaging of power plant.
- Undertake Energy and technical audit of biomass gasification and PV Solar power plants. Provide consultation service on performance evaluation tests of power plants.
- Promote energy plantations and organise biomass management such as procurement, processing and preparation.
- Promote and develop Micro-enterprises business such as Irrigation Pumps, Clean Cooking Energy, and Other Agro based businesses.
- *Provide training and capacity building as well as refresher courses for Power plant Technicians/Operators and Managers at its DESI MANTRA Centre.*

ADVANTAGES OF DESI POWER PLANTS

- *Resource efficient*
  Conserve non-renewable energy resources (Diesel/Kerosene).
- *Environment friendly*
  Utilizes agro residues to produce valuable electricity through biomass plant. Biomass and Solar PV plants are eco-friendly and do not add any net CO2 emission to the environment.
- *Consistent in supply*
  Highly reliable source of electricity with better quality. Extremely useful for continuous industrial production processes which otherwise hampers the efficiency adversely.
- *Cost efficient*
  Produces power cheaper than diesel and substitute grid power.
- *Encourage livelihood creation*
  Promotes job creation – jobs within the power plant, in new local micro-enterprises and small scale industries, which consume the electric power from the gasifier plant.
- *Promote sustainable development*
  Local value addition to local resources will accelerate village/small town development process, reduce migration to large cities and hence strengthen the local economy.

Biomass and Solar PV Based Power Plant

Micro Enterprises, Mobile Towers and Lighting

Running a training center in Araria

Energy Plantation with Inter-Cropping

Food Processing, drinking water and cattle feed business units using E-trolley:

Farm produce - from farmers

Facility for processing of farm produce

Ready for drying

Drying of farm produce

Grinding Unit

Processed product

Food Processing Plant

E-Trolley for water and other transportation purpose

Cattle Feed

Clean Cooking with biomass:

Biogas and "Safai Centre" with latrines and showers:

DESI MANTRA Training Centre:

DPF: Kids education

DPF also supporting kids' education in Araria and supported 20 kids in their education, who can't afford basic education but are interested in it. Apart than normal schooling, we also taught them on the aspect of environment, gardening and computers.

DESI Power has installed a 3.6kWp Solar PV system in a school in Araria as a support from DESI Power Foundation to the school. The aim of the project is to supply reliable and cost-effective energy with a reduced energy bill. In addition to the Solar PV plant, biomass pellets will now be used to replace LPG / Wood for cooking in the school.

DESI Power at G20-2023, Conference in Goa, India, 21st July 2023

Rooftop Solar PV: