Off-Grid Europe

Offering energy independence worldwide.

This picture is the winner of the 2024 photo contest of the Alliance of Rural Electrification in the category Manufacturing & Power Components.

Contents

Who we are.

Off-Grid Europe (OGE) was founded in 2010 by Christiane Kragh and Mark Kragh. The company developed into a provider of complex technical energy solutions. OGE provides customers with end-to-end renewable energy solutions.

OGE specializes in PV (Photovoltaics) and BESS (Battery Energy Storage Systems) and works across a wide spectrum from system design and planning to system procurement and construction. The company’s proprietary intelligent software solution, the Off-Grid Controller, provides efficient energy monitoring and control.

Since 2020, OGE is part of the rural electrification project ASER300 in Senegal. In the course of realizing this project, OGE founded its Senegalese subsidiary Off-Grid Africa. Together, the two companies are making an important contribution to the electrification of rural regions in Senegal and beyond.

By providing competitively priced, easy to maintain and scalable energy systems, OGE strives to create a positive impact on the environment, local economy and uplift the lives of millions of people.

Innovation is at the heart of OGE. They recently launched Joule Box, a compact BESS that can be used to generate electricity in off-grid regions and in harsh conditions, even for MW-sized installations.

Additionally, the company developed a solar powered cooling hall: Much Cooler to combat post harvest loss which is still a huge issue on the African continent. With 100% solar power and battery storage, farmers can store and cool their harvest. This solution contributes to nutrition security, price stability and food quality in Africa.

Christiane Kragh
CEO and Co-Founder

Mark Kragh
CTO and Co-Founder

Gnagna Cambel Dieng
CEO Off-Grid Africa

World wide.

Where we are.

Starting with small-scale installations in the UK, Off-Grid Europe has steadily grown from modest beginnings. The company progressively ventured into larger projects, notably pioneering the construction of their first Mini-Grid in Nigeria.

From individual projects in Paraguay, Ghana, and Papua New Guinea, to winning the lighthouse project ASER300 in Senegal, the largest rural electrification endeavor in Africa. This significant achievement led to the creation of Off-Grid Africa, OGE's Senegalese subsidiary, which is now forging its path in the West African market.
Looking forward, OGE's sights are set on further expansion. In 2024, the company establishes a subsidiary in Angola, tapping into another promising market and broadening their reach.
While we remain committed to our core values, our focus is on growth, innovation, and making a tangible impact in the regions we work in.

- Off-Grid offices in Germany, Senegal and Angola
- Off-Grid systems and components installed
- Off-Grid Power Container installed

Headquarters in Germany.

In Germany, OGE‘s ever growing team comes from 17 different nations. As a team, we share a common goal: to drive innovation and maximize our impact.

Situated in a rural area in southern Germany, our production hall is where we bring our ideas to life. Here, we are constantly refining our systems, reflecting our dedication to staying at the forefront of advancements.

Next to our office space, we have our production hall where the containers are being built. We also have our own metal workshop building structures for our Mini-Grids and more. Our IT department is constantly working on our energy monitoring and control platform while also enhancing our internal ERP Odoo.

Off-Grid Europe‘s headquarters in Pfullendorf, Germany.

Off-Grid Africa in Senegal.

Off-Grid Africa is situated at Point E, the heart of Senegal‘s capital Dakar. Until today, we employ 100 locals that work on different projects in and around Senegal.

From administration and business development to logistics, installation and commissioning, Off-Grid Africa handles everything locally.

The company has established itself as a reliable partner in the region and works on several projects from EV charging to Commercial and Industrial clients.

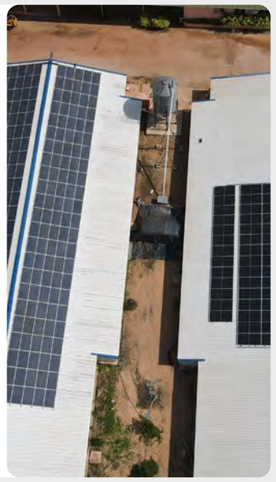
Off-Grid Africa has the expertise to support clients in every phase of the project from implementing a system to after sales services.

Mark Kragh with the first team of Off-Grid Africa in Dakar, Senegal.

Success Stories.

Powering four factory sites on-grid in **Dakar, Senegal.**

400
kWp



Electrical vehicle charging in **Thiès, Senegal.**

11
kWp

30
kWh

End-to-end Services.

What we offer.

Our services cover everything from design to installation. From procurement to monitoring & control. For your peace of mind.

Planning

Evaluation of demand
Analysis of return of investment
Design

Financing

Export finance
Collaborative financing models
De-risked access to renewable energy

Production

Containerized solutions
Electronics
Steel mounting structure: Sun Hat

Logistics

Packing
Shipping
Distribution

EPC

Engineering
Procurement of equipment
Construction
Installation & Commissioning

Training

Local engineers and electricians
Knowledge transfer

Monitoring & Control

Smart software solution
Ensuring maximum lifespan
Secured in a foundation

Operation & Maintenance

Operation
Maintenance
Securing optimal return of investment

BESS.

Joule Box.

The Joule Box is a compact battery energy storage system (BESS) that is designed to operate in remote and harsh conditions for extended periods of time.

The innovative swappable battery feature allows for easy exchanges without the need for specialized equipment. With its minimalist design and focus on affordability, The Joule Box is an ideal solution for the developing market while offering easy maintenance and high performance. Its robust construction ensures durability, while real-time monitoring ensures optimal functionality.

The Joule Box seamlessly integrates with renewable energy sources, aiding in peak shaving, load balancing, and grid support, contributing to a sustainable energy future.

Technical specifications

- Up to 300% overload capacity
- Blackstart capabilities
- Modular Power Conversion System (increased redundancies)
- Integrated Battery Management System (module and cell level monitoring)
- ATS integration for grid and genset
- PV integration (DC or AC coupled)
- PLC based monitoring and control
- Electrical protection equipment: Fuses, MCBs, Contactors
- Integrated thermal management using industrial HVAC systems
- Safety: Fire suppression system

Benefits

Reliability

Built for any environment: reliable in any setting, seamless integration and reliable power.

Fast installation

Turnkey solution for fast and safe installation.

Scalable

Scalable units from 135 kWh up to MWh. Units work in parallel and independently.

Solar Mini-Grid System.

Mini-Grid.

Our Mini-Grids address the need of small sized installations like farms or off-grid areas for rural electrification. From Papua New Guinea to Senegal, we provide pragmatic solutions.

Technical specifications

- Engineered and produced in Germany
- High quality components
- Designed to withstand the most extreme conditions
- Plug-and-play containerized solution
- Equipped with the Off-Grid Controller for monitoring and control
- Solar panels on our Sun-hat mounting structure

Benefits

Containerized solution

Safe transport, heat protection, fast deployment.

Sun Hat

Our own metal structure, the so-called Sun Hat is the perfect addition to our systems.

Turnkey solution

Clean and reliable energy for rural areas.

Productive use of energy.

Much Cooler.

Much Cooler, an insulated cooling hall, embodies our commitment to sustainable agriculture, combating post harvest loss, reducing carbon footprints, and ensuring long-term food security goals of vulnerable communities.

Its functions include complete independence and energy supply through integrated Photovoltaics and battery energy storage. The cooling system is designed to maintain optimal temperature and humidity levels for long-term storage of vegetables and fruits. Integrated software ensures intelligent energy management and the longest lifespan possible.

The off-grid cooling hall is a model for an environmentally responsible storage facility as well as a demonstration of innovative design choices, high quality components and fast installation. The system is a direct form of bringing solar power to good use.

Technical specifications

- Turnkey solution for the agricultural sector
- Exoskeletal metal structure for PV panel mounting
- Cooling system integrated with PV and LFP battery storage system
- Providing space for long-term storage of vegetables and fruits
- Optimal temperature and humidity levels
- Processing area, equipment and storage boxes included
- Advanced monitoring & control for precise energy management

Much Cooler has been selected by the expert panel as one of the Finalists of the smarter E AWARD 2024 in the category „Smart Integrated Energy“.

Benefits

Nutrition security

Optimal for the long-term storage of harvest.

Food quality

If food is stored correctly, it stays nutritious and healthy.

Price stability

Food can be sold all year round.

Solar Home System.

Solar Home System.

Solar Home Systems provide a sustainable and reliable solution for meeting household energy needs, particularly in areas with limited or no access to electricity grids. They are an immediate and effective solution for informal settlements and other remote areas.

Solar Home Systems are designed to be user-friendly, requiring minimal maintenance and providing a reliable source of electricity for essential energy needs such as lighting, phone charging, and powering small appliances. They contribute to better living conditions and improved safety for individuals and communities.

Additionally, they reduce dependency on traditional energy sources and help reduce carbon emissions and air pollution associated with fossil fuel based power generation e.g. diesel generators.

Technical specifications

- Capacity: The 640 Wh configuration meets various household energy requirements
- Equipped with the Off-Grid Controller for advanced Monitoring & Control
- PAYG (Pay-As-You-Go) Integration: each system supports both online and offline payment mechanisms allowing for flexible, user-friendly payment options
- Standard support for GSM and Bluetooth connectivity
- Optional features: NFC, 3G, 4G, and GPS integration for enhanced functionality and remote management
- Durability and longevity: dust and water resistant casing
- 200 W MPPT Charger: high-efficiency solar charging for optimal performance in varied solar conditions

Benefits

Energy independence

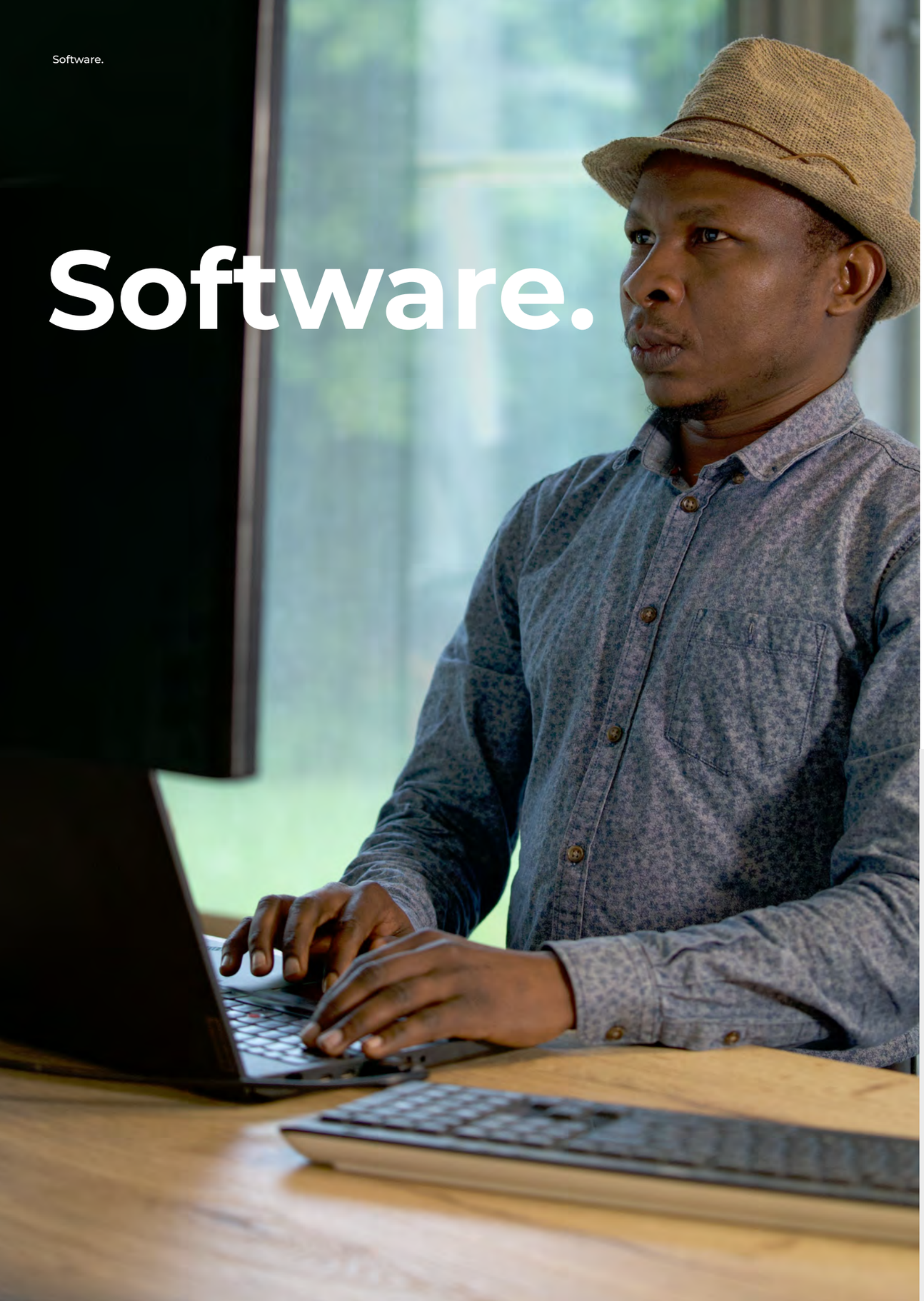
Practical, cost-effective and sustainable solution for informal settlements.

Economic growth

Potential for home-based economic activities enabled by stable power.

Immediacy

Rapid roll-out without the need to create expensive and permanent infrastructure.



Software.

Off-Grid Controller.

The Off-Grid Controller is the holistic energy monitoring and control platform by Off-Grid Europe. The smart software solution provides our customers with unlimited support and continuous monitoring and control.

Our solution offers real-time data visualization, reporting, and automation features, improving efficiency and decision-making to ensure longevity of each system.

Technical specifications

- Innovative and intuitive system design and layout, 100% off-grid enabled
- Integration of edge computing through our energy management platform
- Fast frequency and voltage reaction
- Continuous monitoring, control, and load balancing in real time
- Designed for the Internet of Things (IoT)
- Future systems expansions implemented through software updates to improve performance and to add additional service and functions
- PV/grid/generator management for optimal return of investment (RoI) and lifespan

IoTEM Foundation.

Off-Grid Europe will secure the Off-Grid Controller source code within a German Foundation, the IoTEM Foundation (Internet of Things Energy Management).Off-Grid Europe takes this pioneering effort to protect the customers and their critical energy infrastructure. For the sovereignty of states and people.

Benefits

Transparency

Transparency in critical energy infrastructure

Protection

Protection of the source code in non-profit entity

Sovereignty

For sovereignty of states and people

References.

What we did.

Smart engineering, high quality components, and competitive prices are the driving force behind our solutions.

Supply of 62.250 Solar Home Systems for four provinces in **Angola**.

62.250
Solar Home Systems

Electrification of 22 banana farms with solar water pumps in **Senegal.**
Client: ID BIO
Financing: Voltares Africa

650
kWp

330
Ha.

Much Cooler: solar powered cooling hall for food storage in **Senegal**.
Client: Voltares Africa

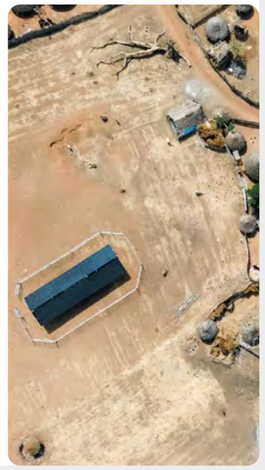
141
kWp

156
kWh

ASER300 project: Rural electrification of 200+ villages in **Senegal.**
Client: GAUFF Engineering, ASER

6
MWp

25
MWh



References.

Our services cover everything from design to installation. From procurement to monitoring & control. For your peace of mind.

Powering of 10 petrol stations in **Nigeria, Cameroon, Guinea.**

500 kWp

1.2 MWh

Electrification of Goethe Institut in Dakar, **Senegal.**
Client: Goethe Institut

118 kWp

29 kWh

Electrification of training centre in **Senegal.**
Client: GAUFF Engineering

20 kWp

40 kWh

Electrification of Ice facotry **Senegal.**
Client: KTI – Plersch

35 kWp

38 kWh

Electrification of 3 hospitals in **Nigeria**

400 kWp

3 MWh

Powering a large farm in **Paraguay**

100 kWp

156 kWh

Powering a fitness centre in **Ghana**

65 kWp

278 kWh

2 Off-Grid Systems powering air quality monitoring in **Mauritania**

10 kWp

100 kWh

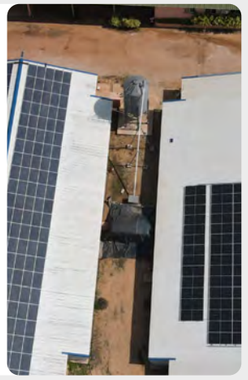
Powering Airport Ligthing in **Papua New Guinea**

20 kWp

100 kWh

Powering four factory sites on-grid in **Dakar, Senegal.**
Client: Gade Gui

400 kWp



Electrical vehicle charging in **Thiès, Senegal.**

11 kWp

30 kWh

Powering farms in **Senegal.**
Client: Couvoir Amar

230 kWp

Rural electrification in Senegal.

ASER300.

Since 2020, Off-Grid Europe is part of the ASER300 project that set the target to electrify at least 300 villages in Senegal. Up until today more than 380 villages are being electrified.

Together with ASER (Agence Sénégalaise d'Électrification Rurale) and GAUFF Engineering, OGE builds and delivers Mini-Grids to rural regions where people don't have access to electricity yet. Installation and commissioning of the systems is carried out by Off-Grid Africa.

The Senegalese state is aiming to achieve comprehensive access to electricity for all its citizens by 2025. The majority of this electricity is to be generated from renewable energies. For rural areas in Senegal in particular, electrification is an important step towards sustainable and environmentally friendly economic and social development.

In the ASER300 project, a PV system of 15 up to 90 kWp with LFP battery storage is installed per village. Additionally provided are: Distribution networks comprising a total of around 840 km of lines; 25,000 masts and 3,600 LED lanterns for street lighting; 24,000 house connections including five sockets and five LED lamps in each connected household and further equipment for the productive use of energy, such as refrigerators, water pumps and grain mills.
To achieve this, a number of private and public, German and Senegalese stakeholders were brought together. As a first step, preliminary studies were carried out to determine the exact energy requirements for each village. On this basis, the plans for project implementation and logistics were developed. The actual installation work will then takes place simultaneously in several villages in order to keep to the ambitious schedule.

An important part of the project is a training program in which local workers are trained in the installation, operation and maintenance of the systems.
This important project with a volume of 120 million euros is being financed by KfW IPEX-Bank while the German government is supporting the project with a credit cover from Euler Hermes.

A total of 195,000 people will benefit from the electricity generated through this project.

6
MWp
Installed solar capacity

25
MWh
Installed battery storage

203
Villages
Electrified

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P.01.2025.01