

Travel Report

Kurdistan / Energy for the refugee town Mam Rashan

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For the first time: atmosfair equips a settlement with solar energy



In Mam Rashan, a refugee camp near Dohuk, northern Iraq, atmosfair built successfully a solar power plant. The goal: The full supply of the camp with solar power.

After a year of hard work, the time has finally come: In August 2018, the solar system at the refugee camp Mam Rashan went into operation successfully. With the high commitment of all those involved in Germany and on-site, we have for the first time installed a solar system of this size and quality in Iraq.

In the first weeks after commissioning, the solar system started running successfully. There are still some fine adjustments that need to be done to guarantee a balanced and sustainable solar power supply over a long period of the day. This is achieved through an adequately dimensioned battery, which is monitored by an energy management system. To ensure that the system can be operated safely and cost-effectively, a local team is currently receiving intensive training. Thanks to this, the solar power plant creates local jobs in Mam Rashan.

How it started / Travel report 2017

Today we are proud of the success. However, the beginning was not easy. In May 2017, Nele Erdmann and Dietrich Brockhagen from atmosfair visited the refugee camp for the first time

and experienced impressive encounters. Nele remembers: After three hours' drive through Kurdistan, a small patch of scattered white dots appears in the green-brown, hilly landscape on the horizon. Far away from the next village, there are nearly 2,000 white residential containers on a flat slope that brood in the sun.

We shake hands with Shero Smo, who leads the camp. The organization of the trip was taken over by our German-Iraqi partners. All dates work, we are impressed. It is hot today, there are no clouds, luckily some wind, but the temperatures are still rising over 30 degrees. It is quiet, we barely see people, most of them have gone into their containers. A few kids play on the football field and walk around the yards of the school.

Although IS has been pushed back a lot in the last two years, fights are still happening in Mosul and busloads of refugees come daily from the occupied territories.

Shero takes us on a tour; we can also have a look into the containers since the mother and the father of a refugee family agree. The containers are built like a caravan, a room, right and left in a flatbed, a tilting window, a stovetop, a sink. It is tight and hot in here, the ventilation is swallowing a lot of power although it does not exist. Most of them have put up a blanket as their awning, here they store suitcases and food.

The inhabitants of Mam Rashans have been lucky. The containers were financed by an aid project of the Caritas, also readers of the Stuttgarter Zeitung donated to this camp. Thanks to this support, there is a new center in the camp i.e. therapy rooms and workshops have been undertaken for the residents to learn, for example, how to sew. Today the center is inaugurated, a big day. The hall in the center is full of camp's residents, important politicians also come from Dohuk.



Consequences of the IS occupation

Currently, around 8,500 people live in about 1,800 residential containers in Mam Rashan. Since 2014, Iraq is fighting against the terrorist militia of the "Islamic State". After IS was almost defeated in Iraq, IS is now conquering small areas. Escape and expulsion are the order of the day, and families have to keep themselves safe from the fighting and violence. Many of the refugees settled in Mam Rashan have to stay here for a long time because they cannot return to their home regions. The camp in Mam Rashan is growing steadily and for some, it is just a provisional stay, but for many, the camp represents a new home. This is the situation of most young families here: they will live here for the next few years. If they want a future, then there must be a place where crafts can be produced, children can go to school, and everyone can experience a normal social life.

In the meanwhile, the camp leaders have done a lot for this. They built two schools, a kindergarten, a hospital and also thought of a football and a playground. Greenhouses and a trauma center are also available.

For atmosfair, the journey began with a call from Stuttgart in the fall of 2016: The Development Cooperation Baden-Württemberg (SEZ) wanted to get involved in Northern Iraq. There should be a benefit for the refugees and climate protection. Our idea was the CO₂-free and self-sufficient power supply for the refugee camp Mam Rashan, which can also supply workshops with electricity and in the construction of which local artisans can train and acquire their first know-how.

I ask many questions to estimate the energy needs of the containers. We walk around a lot to find out as much as possible about power consumption, power lines, distribution boxes, etc. We are also accompanied by Hoshyar, who will lead the work on our behalf after our departure. Hoshyar has his own small company and is now trying to gain a foothold in Iraq with solar energy.

At the end of the journey we have all the information for our concept together: In the future, the energy supply during the day should be covered by a photovoltaic system with energy storage. The plant is to be built at the edge of the village in order to efficiently provide electricity for workshops and other users. The inhabitants of the camp should take care of the installation and maintenance of the facility; atmosfair will train specialists locally.

Support from SEZ / BaWü

The state of Baden-Württemberg provided a total of 400,000 euros through the SEZ foundation. With this budget, we were able to order the parts for the photovoltaic system and ship it to Iraq. Additionally, in-kind donations from numerous companies made possible to buy a 370-kilowatt solar system with a battery storage system, which can cover up to a fifth of the camp's energy requirements during the day. The goal is the full supply of the camp with solar power. The technical performance of the project was shown with its nomination for the "Top 5 Hybrid Energy News" at the beginning of 2018.



A short introduction to some of the persons on site



Hoshyar Rassam is the local project manager of atmosfair. He supports atmosfair on the communication with local authorities and will control the installation work. 17 years ago Hoshyar emigrated with his family to Sweden. Shortly after it, he returned to his homeland, which he now supports with his expertise and entrepreneurial spirit. He lives in two worlds and wants to get the best from one into the other.

Shero Smo is the head of Mam Rashan. He has been working tirelessly for over 3 years for a decent refugee accommodation and long-term viability of his camp. He was the first person in charge that acknowledged the urgent need for daily energy supply in Mam Rashan. He supports the project with his whole heart.



From left to right: Nele Erdmann (atmosfair), Sarah Mush (bw-i), Shero Smo und Dietrich Brockhagen (atmosfair)

Hazim Khdeda Mishko works as a technician at Mam Rashan Camp. As part of the project, he will be trained on the installation and maintenance of the solar system. Hazim had to flee with his family from the IS terrorist militia and found refuge in Mam Rashan, where he and his family live in one of the 1,800 containers.

Hamiz Khdeda Mishko and his family.



Nawar Eena is the site manager of the project. He has many years of experience as an electrician and electronics engineer. For his role as site manager, he was trained in Turkey at an EPC company. He had to leave his home in Karrakosch in 2014 and lived as a refugee in Erbil. Improving the living situation at Camp Mam Rashan is therefore very important. He also sees the potential of photovoltaics as a source of energy in northern Iraq and in the context of reconstruction. Therefore, he is very happy to have the opportunity to take part of this project.



Introduction of the project sponsors

- BayWa r.e. renewable energy GmbH: works globally on the areas of wind, solar and bioenergy. The project owes this company the installation of the 70kWp output.
- Brandhoff Obermüller Partner. An international commercial law firm. They have legally supported the project by auditing project contracts.
- Elin Renewable Energy Systems Inc: The daughter of the Elin Group offers EPC und O&M services for renewable energy systems in Turkey. Elin has trained the site manager on the construction of photovoltaic plants.
- Emons Logistik GmbH: This company is based in Cologne but works worldwide on the areas of logistics and transport. It has donated the storage location and trucks.
- Enerparc Power Plants GmbH: A daughter of Enerparc AG with Headquarters in Hamburg. Enerparc has supported the project with solar cables and AC:
- greentech GmbH: This company is a specialist in the operation management of photovoltaic plants. Greentech trained the team on site. It will be in charge of the operation management for one year.
- Initiative Flüchtlingsdorf Ruhrgebiet: This initiative started in 2014 with donations from the Ruhr area, but now has donors from all over NRW and other federal states; especially from Baden-Württemberg through the support of the Schwäbische Zeitung. The aim of the project is the construction of a refugee village consisting of isolated container housing with the help of donations from the entire Ruhr area. Without the contact to the camp and the people in charge, the project would not have been possible.
- Meteocontrol GmbH: This enterprise works on the development and implementation of monitoring solutions for solar plants and installation portfolios Meteocontrol has donated the equipment for remote monitoring of the plant.
- SEZ: The state of Baden-Württemberg sponsors this project through the Development Cooperation Foundation of Baden-Württemberg (Stiftung Entwicklungszusammenarbeit Baden-Württemberg). The SEZ counts with 27 years of history. Its mission is to sensibillize the population of the state about a responsible global consumption. In total, 400,000 euros are available from Baden-Württemberg through SEZ:
- Solarpraxis Neue Energiewelt AG: It organizes annually the Forum Neue Energiewelt ; which is Germany's leading conference for the innovative energy industry. Thanks to

the invitation of Solarpraxis, a large part of the project supporters could be engaged at the 18th Forum Neue Energiewelt.

- ZIMMERMANN PV-Stahlbau GmbH & Co. KG: The company supports with its expertise in the substructure for PV systems. Zimmermann has donated the substructure for the project and delivered the statics.



In addition, the following companies were commissioned for the realization of the project:

- autarsys GmbH: Within the framework of its task as the supplier of the battery storage and energy management system, autarsys is intensively involved in a functioning energy system adapted to the needs of the local area.
- Baden-Württemberg International: Assisted in the search for the components required for the construction of the plant and accompanied the tendering phase.
- Elk-Erneuerbare GmbH: The founder and managing director Jörgen Klammer carried out the engineering of the PV system and the low-voltage line on behalf of atmosfair. As a continuous contact person and consultant, he supports the project team beyond his mandate.
- pvxchange: our string inverter supplier. It is one of the world's largest switching platforms for solar modules and inverters.
- Lunaco Europe GmbH: Our module supplier. It has donated the module capacity and string inverters beyond the order.
- M. G. International Transports GmbH has organized the successful shipping of the main components as a logistics partner.
- Martany Company for General Trading: The Iraqi company carried out the earthworks and hired supervisors and installation team to handle all of the local materials and equipment.

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