

Project briefing

BUILDING BENBAN: INSIDE EGYPT'S 1.6GW SOLAR PARK

Project name: Infinity 50

Location: Aswan, Egypt

Project size: 64.1MWp

Amid reports of logistical and bureaucratic difficulties, Germany's IB Vogt earlier this year became the first company to complete and energise one of the multiple projects that will eventually make up Benban, Egypt's gargantuan solar park in the western desert governorate of Aswan.

The contract to build the 64MWp Infinity 50 project was awarded to ib vogt under the first round of Egypt's feed-in tariff programme, which offered a relatively generous 14.34c per kilowatt hour. The company endured searing desert heat, sandstorms and water shortages to bring the project to fruition, in the end taking a little over a year between starting on site to commissioning in February 2018.

Tough going

Goncalo Aleixo, who oversaw the project's execution, describes how by being at the forefront of the first wave of large-scale solar development Egypt had ever seen, ib vogt and its joint-venture partner had to work from the bottom upwards, putting in place everything needed to make the project work from scratch.

"By developing the first project in Benban, we were the pioneers, with our local partner Infinity Solar, to develop a solar market in Egypt," Aleixo says. "We had to work with the Egyptian authorities to create new procedures in, for example, logistics, also for coding the equipment that the power plants require at customs. We worked together with Egyptian authorities on the necessary documentation we would need to create in order to have all the projects at the Benban site bankable for international lenders and international legal due diligence assessments."

Added to this, adds Joachim Altpeter, ib vogt's executive director for the Middle East and North Africa, were the realities of executing a large and complex project in the extreme environment of the Egyptian desert. "They were really rough conditions," he says. "In the summertime we have temperatures up to 50 degrees and no



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shade. So it's unbelievable what people are doing under these harsh conditions. We actually had to start with construction in the morning at 4 o'clock and end around noon because it was getting too hot. We had to organise around Ramadan because this was also a challenge for four weeks, to obey the religious laws there. This was new to our company and also the Egyptians because they'd never built such large power plants in the middle of the desert. We had something like 1,000 people working on the construction side. And these all had to be managed"

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Developer collaboration

Of course, IB Vogt has not been alone in facing the range of challenges thrown up by the project; the developers working on Benban's other projects have it seems found the going similarly demanding, to the extent that earlier this year it emerged that they had formed a joint body – the Benban Solar Developers Association – to represent their collective interests to the various relevant Egyptian authorities.

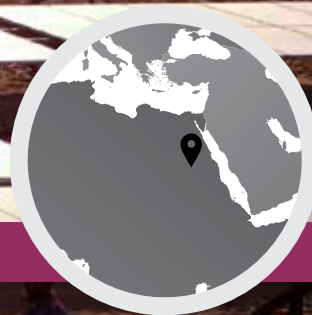
"This organisation is to represent all

the developers constructing projects in Benban," explains Aleixo. "It aims to have a common message between all the developers, Egyptian authorities and lenders. This is crucial because we have 25 projects all with different timeframes of construction...so the association aligns all the developers for the benefit and success of the full Benban complex. It was a necessity that developers had to create this. It took some time to set up this organisation, but now it is in place and we are seeing the benefits."

The main benefit, says Aleixo, is that any communication from the association carries the full weight of the collective group of developers, helping galvanise a speedier response: "For example in case an Egyptian authority receives 25 different opinions about one specific topic, they would challenge some developers and just not react or take more time to react. And in the construction of an infrastructure like solar, time is the essence of the project."

One area in which the association has so far proved beneficial is traffic management, having worked with the facility management company to optimise the site traffic plan and ensure the necessary transportation to carry workers from several local villages to the site.

As the first developer to complete a project at Benban, ib vogt has found itself in the position of being an unofficial mentor to developers building projects in the second round. "We need to learn with each other, especially we need to share knowledge and



By Ben Willis



Credit: ib vogt

we are happy to do so from our experience in round one. For round two the projects are financed by a few banks, which means there is a portfolio that is designed with the same counterparties, so in a way we exchange this information for the benefit of all projects."

Equipment choices

Clearly, given the harsh conditions at the Benban site, equipment had to be carefully chosen – modules able to withstand dust and day and night-time temperature fluctuations and inverters able stay cool even when ambient temperatures are hitting 50 degrees Celsius being two obvious examples. This required substantial quality control through monitoring of production facilities and testing of equipment.

But even then, says Aleixo, since Infinity 50 went into operation, unexpected

situations have arisen. For example, a higher than projected instance of heavy sandstorms meant the dry cleaning system used on the project was wearing out its brushes faster than anticipated.

"Due to the occurrence of more sand storms than expected in 2018, we had to adapt our cleaning methodology. We ended up not having enough brushes on site, the spares were held in the customs due to non availability of all shipping documentation, which consequently didn't allow us to reduce the soiling losses for several weeks. The cleaning technology is very good, but the point is that you can never predict accurately beforehand the site conditions you will have. You can only plan... You need to construct and operate such a machine to understand exactly how it will react with such natural conditions," Aleixo says.

The benefit of experience

Building and operating Benban's first project has clearly been challenging experience but one that will ultimately provide ib vogt with a huge amount of knowhow to draw on as it moves on to fresh challenges. The company is working on three further separate plants in Benban under the second round of Egypt's FIT programme – the 64.1MW Phoenix 50, the 64.3MW BSEP 50 and the 38MWp MMID 30 projects. All are under construction and slated to begin commercial operation in the first quarter of 2019.

And beyond Benban, Altpeter says the company is on the hunt for further opportunities in the MENA region and beyond, more of which are emerging as solar becomes still more competitive with fossil fuels.

"We're very active in the region, we're constantly looking for new opportunities," he says. "Solar energy is becoming more competitive, it can be deployed quickly and costs keep falling, especially in the MENA region where we have a lot of sun, and it makes sense from an ecological and also economic perspective. So we're currently looking very intensively at Morocco, Algeria, Tunisia and Saudi Arabia. Also West Africa is in our focus for utility-scale PV projects."

Aside from utility-scale projects, Altpeter foresees a growing role in these emerging markets for commercial and industrial solar projects to provide power to industry and agriculture in the face of rising electricity prices and falling subsidies for fossil fuels: "We are already competitive with a lot of energy sources, and I think it will be a booming industry for these countries, especially as we are not only delivering energy, we're also delivering jobs for the locals. That's very important." ■



Credit: ib vogt