



EMPIRE OF THE SUN

President and CEO of Enviromena Power Systems, **Sami Khoreibi**, discusses his company's role in creating the Middle East's largest solar plant and paving the way for a regional solar industry



This month, the 10MW solar power plant at Masdar City – the biggest of its kind in the Middle East – will flick silently into action, as it not only starts providing the power required to build the Masdar City development, but all excess production will go back into the main grid, providing a little clean energy for every home across Abu Dhabi.

It's an exciting time for the Emirate, Masdar and, in particular, for Enviromena. The company was incorporated in October 2007 inspired by and in direct response to the Masdar Initiative. Originally just four founder members, we have now grown the company to 25 employees in a very short time. And that should tell you all you need to know about the potential we see in solar.



CASE STUDY

"The Abu Dhabi government has set the Emirate a goal of 7% clean energy by 2020. In real terms, that means between 1 and 1.5GW of renewables. In this environment, that means solar."



▲ Thin Film modules (left) line up next to the smaller crystalline modules (right).

There's huge interest in sustainability and renewables right now, especially after President Obama announced his green jobs goal. The number of delegates that attended the World Future Energy Summit in January demonstrates the height of interest that there is in the subject, Abu Dhabi and the region on the whole. The Abu Dhabi government has set the Emirate a goal of 7% clean energy by 2020. In real terms, that means between 1 and 1.5GW of renewables. In this environment, that means solar.

Each region needs to play to its own clean energy strengths. For some countries that means wind; for others, it may mean a combination of various sources. In the UAE and GCC, we only have sun but it is so consistent that it makes solar the obvious choice. There's a huge amount of arid land and high solar resource – access to grid connection points – making the region tremendous for solar.

Solar is still very much in its infancy in the region and in the local marketplace but the potential is there for all to see. Quite simply, there's an energy shortage and we have the optimum conditions to become a solar tech leader. Enviromena is trying to set an example and that is why our involvement with the Masdar plant has been so important.

MASDAR'S 10MW SOLAR PLANT

A total of 87,777 solar modules

Covers an area of 212,000m²

Has a 25+ year lifespan

Powers construction of Masdar City but also puts green energy into every Abu Dhabi home via grid

Saves 15,000 tonnes of CO₂ emissions per year

Equivalent of taking 4,500 cars off the road

Could provide power for 4,861 Masdar residents

THE PLANT TAKES ROOT

Masdar provided us with the 212,000m² area required for the 10MW plant. The largest single components there are the modules themselves and we were absolutely unwavering on our commitment to use only the best technologies available.

Therefore, we turned to the two largest suppliers. Half of the plant employs modules by Suntech, a Chinese company that is the largest provider of crystalline technology; the other half utilises Thin Film semiconductor photovoltaic modules from a US energy company called Firstsolar.

We decided to use two types of modules as this project is the first of its kind and we wanted to both showcase the two technologies and see which one works best in these conditions. Each has its pros and cons; Thin Film, for example, is less affected by extreme heat but modules are larger and require around 50% more space.

Using renewable energies is very much like having a farm with different crops available. Even within solar, there are different technologies available and it could well be that using a variety of these provides best results throughout different times or conditions. Concentrated, photovoltaic, concentrated photovoltaic...there are a lot of options.

Part of our mandate was to foster local growth and that is exactly what we did with the Enviromena design team. As a new industry, there was little existing knowledge in Abu Dhabi, so we brought in experienced experts and took on local talent to learn from them – we successfully built Abu Dhabi's first solar design team. Masdar insisted that all aspects were as environmentally friendly and carbon-neutral as possible throughout. We're already a carbon-neutral company, off-setting our emissions, but this meant that we had to use all local suppliers. The racking, for



▲ Enviromena CEO and president, Sami Khoreibi, is proud of the Masdar solar plant.

▲ Providing the energy required to build the ambitious Masdar City project, the plant will also feed clean electricity back into the Abu Dhabi grid.

example, came from here in the UAE. Through this, local suppliers and contractors now have direct experience in solar – we feel as though we've begun building a regional solar industry with specific and relevant expertise.

There were other challenges too. In order to ensure best sustainable practice, all materials used had to correspond with Masdar's approved list. This meant using recycled materials, such as concrete; but these measures have resulted in one of the most effective plants and systems in the world.

A GREEN ECONOMY

Masdar is one of the biggest developments and initiatives of its kind anywhere in the world and, from an international perspective, it is taken very seriously. As for other developers, there's a broad range of sincerity on their part when it comes to

investing in solar. We work with some who are very focused on it and are leading by example. With the introductions of guidelines and regulations, like LEED and Estidama, developers have set targets to achieve and they are looking to achieve points towards these, which requires using a percentage of clean or renewable energy. We're also increasingly finding that clients for marquee developments – corporate HQs, for example – are dictating that renewables are used and that environmental principles applied in the design, construction and technologies – maximum implementation.

Of course, while the issue of climate change is a major one at the moment, there is also the question of the economic slowdown to consider and it is impossible to deny that it has impacted on every area, renewables included. However, it's important to highlight the role that green energy can play at this time. In essence, it can solve two problems at once. With such interest in the industry at the moment, governments can invest in green-collar jobs – as Obama has vowed to do – which not only stimulates the economy but also helps to prevent climate change.

For an energy-centric region like the Middle East, a move away from fossil fuels towards re-

newables is a logical progression; many of the skill sets in which the region has excelled in the past can now make the crossover and be reinvested into clean energy. Cost has always been a barrier to the widespread introduction of environmentally-friendly energy sources and techniques but solar costing has come right down and there's real momentum behind that now.

As more and more people come to realize that, we hope to continue our work with developers, governments and the likes of Masdar, based on the successful implementation of this solar plant; however, if there's one lesson that we hope for the Middle East to learn from this project, it is that technology can be sustainable while also being economical.

Operational, management and maintenance costs are minimal – there are not even any moving parts involved – so, in the Middle East where solar is the obvious choice, it can provide the lowest cost returns as a percentage of initial cost.

As time goes by, and we surpass the 2020 goal of 7% clean energy, the increase in energy demand teamed with the reduction in costs will lead us to a point where clean technology is directly comparable to existing fuels. Then the sky is the limit! **MED**