



Gregor Reddemann

## Highest throughput and minimal space

PES asked Gregor Reddemann, CEO at M10 Industries AG, about Kubus, innovation, sharing know-how and the future and discovered many more interesting things about this progressive company.

**PES:** Welcome back to PES Solar. For our new reader would you like to introduce your company and explain a little about how you serve the solar industry?

**Gregor Reddemann:** M10 Industries AG specialise in developing and producing highly efficient, state of the art cell connecting automation equipment.

Based in Freiburg im Breisgau, Germany, in the so called Solar Valley, our young dynamic team of skilled engineers and technicians faces this challenge under the leadership of solar pioneers of Günter Schneidereit, Reinhard Willi and CEO Gregor Reddemann.

Our development and technology centre, production and material tests include preliminary acceptance, 24/7 service support and service – in order to provide our customers with ideal solutions, our performance areas are perfectly synchronised to suit each other's needs.

This is achieved through the close connection to our subsidiary, SI Module – our module manufacturer, in a cutting edge facility.

**PES:** Last year, M10 was the winner of the Intersolar Award 2016. What can we expect to see from M10 this year at Intersolar Europe in Munich and Intersolar San Francisco?

**GR:** For the second year, we are looking forward to presenting the M10 Solar Campus Freiburg, including M10 Industries and SI Module, at Intersolar Europe 2017, the world's leading specialist trade fair for the solar sector.

We will also be presenting the awarded, high-performance stringer KUBUS, as well as current trends in double-glazed modules and building-integrated photovoltaics, at our shared trade fair stand number A1.620 in Munich.

Our subsidiary, SI Module GmbH, is both a solar manufacturer and an independent technology and service centre for our stringer KUBUS. Its facilities allow system tests and training in real production conditions as well as parallel support for external maintenance processes. We are glad to have such opportunities in our company.

In Munich and San Francisco we will give 3D simulations of our new soldering machine, KUBUS MTS 5500, to interested customers. We will also discuss the 10% performance increase and the related potential savings in greater detail. We will explain that KUBUS in the production line allows our customers to achieve greater performance and quality, reduce material costs and increase sales.

**PES:** Since the middle of 2016, M10 AG has received a number of awards and accolades; can you tell us about some of

the more important ones?

**GR:** It really is an honour for us to receive awards frequently and we are very thankful for the recognition.

One highlight was the Intersolar Photovoltaics Award in 2016, for our outstanding and unique stringer conception which allows a significant cost reduction in PV production.

Additionally, in 2016 we were named in the Top 100 Innovators in Germany.

In February we won the city of Freiburg innovation award.

These exemplary awards, along with frequent recognition for our premises, mean a lot to us and encourage us to follow our vision.

Recently, in April, we were awarded with the 2017 Industry prize, in the energy and environment category, for our outstanding machine concept and our environmentally friendly premises.

**PES:** We also note the KUBUS passed the 72-hour stress test on the first attempt and is running in continuous production? Can you expand?

**GR:** Both machines were installed and commissioned by October last year and working in production ever since. Following on from that we did a major ramp up on assistance, including product changes and training, because our customer set up two brand new lines, including new staff, with a capacity of 340MW.

The equipment was on the customer's production line, in a three-shift system. Of course we know our equipment and its ability very well; however it was a great relief and good way to prove the theory in field.

Beyond that we have been amazed by the performance achieved - yield was at 99.85% and average breakage around 0.01%, connecting more than 5000 cells per hour at 100% speed.

**PES:** Please tell us about KUBUS and the importance of know-how and innovation?

**GR:** KUBUS is the fastest and first stringer in the world which is designed for uninterrupted production. Usually it is necessary to stop the machine and therefore interrupt the process just to refill the ribbon.

We know that this is absolutely outmoded and where manufacturers effectively lose money. By having four independent working ribbon supplies and only needing three ribbon supplies the customer is able to refill one ribbon supply while the machine continues to produce.

Also, we want to highlight the redundant way of manufacturing which is possible using KUBUS. While all other stringers are

built as a supply chain KUBUS can be thought of as a supply network. For example: we have two identical cell loading stations, each delivering 50% of the throughput. However, if one entire cell loading station went down, for whatever reason, the KUBUS is still able to deliver 75% of its nominal total performance.

We understand know-how as an indispensable tool. Creation from innovation and know-how happens through experience. We have been in business for over 20 years now. Our founders Günter Schneidereit and Reinhard Willi are pioneers of PV manufacturing industrialisation.

**PES:** Can you explain the recent improvements and the benefits to clients?

**GR:** We are very proud to announce that we achieve an even better performance now. Through the latest optimisation and developments, we are able to guarantee a performance of 5,500 cells per hour which equals 10% more output, achieving hereby approximately 190 MW per year. Needless to say that the already excellent total cost of ownership is getting significantly better.

**PES:** You have mentioned the total cost of ownership calculation. Can you name some key performance indicators?

**GR:** The investment in KUBUS will be paid back within the shortest time because of the better yield advantage, material usage and uptime. The uniqueness of KUBUS is that the uptime can be understood as net uptime.

Considering that a similar number of stringers are placed into production in order to achieve the performance of 190 MW per year, KUBUS produces 25-30 MW more per year because the process doesn't need to be interrupted for material refill at the same cost base.

The line, including the high redundancy, can finally be productive in the most efficient possible way. In total, the integration of KUBUS in the production line will reduce production costs significantly.

**PES:** Can we assume that training your clients' operators and technicians remains very important to M10?

**GR:** The KUBUS is a sophisticated machine however easy to operate. Nevertheless the best equipment does not pay off when it is down and people aren't able to recover it. Therefore training, on-site and optionally in Freiburg, is an essential to us because of two reasons.

First we see our customers as partners and want them to grow successfully. This mission starts with the equipment and especially the people who operate and maintain it.

Second we benefit from experienced professionals who can feedback daily and help us to improve continuously. That's why



we share our know-how very openly and transparently from the beginning.

**PES:** You are an expanding company; do you see this continuing in the future?

**GR:** Considering the general market development and the rising amount of negotiations we face: yes. We do expect to expand further in the future. However we try to grow at a reasonable rate and consider carefully who is joining us.

Our team is a good mix, experienced in automation and especially stringer technology and well harmonised. We want to keep and develop this ethos.

**PES:** Your products are aimed toward reducing production costs through uninterrupted production processes? Tell us more?

**GR:** As mentioned we deliver the highest in market available throughput combined with minimal space requirements. Considering the throughput which can be operated by one employee only, less frontend

equipment is needed and so doesn't need to be purchased and maintained.

The most significant cost reduction potential however is indeed the uninterrupted production process. The net availability of standard stringers lay between 80-86%. KUBUS delivers 98% net uptime including 2% of planned maintenance.

Furthermore ribbon cutting of strings is no longer necessary, as the ribbon length of each string can be easily adjusted, according to the desired interconnection design. This saves 75,000 – 100,000 € per year per machine.

**PES:** Moving into 2017, how are you intending to stay one step ahead of the competition in meeting the requirements of module manufacturers in the PV market?

**GR:** We will clearly follow our vision and continue our successful work in terms of improving cell connection quality, reducing costs for module manufacturers and

prepare our equipment for rising new materials and requirements.

Our subsidiary SI Module, a high quality manufacturer specialised in building integrated products, helps us a lot to understand current and future problems of PV manufacturers.

**PES:** Speaking from a global standpoint, which geographical regions do you anticipate being key for M10 as we move into 2017?

**GR:** M10 is globally active and involved when it comes to new lines starting at 100MW capacity and predestined when a company plans to exchange existing equipment while increasing the capacity.

Generally speaking we are totally convinced of the advantages of photovoltaic and after difficult years, appreciate the rising demand. We are receiving very positive signals from many countries and are glad to be considered as a supplier.

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