



Gregor Reddemann

All round optimisation

PES was pleased to have the opportunity follow up and find out about the latest updates to KUBUS and the M10 Solar Campus, with Gregor Reddemann, the CEO at M10 Industries AG. Things are still looking good, with expansion and innovation continuing well in to 2018.



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: We know solar/PV is a growth industry, is this having an impact on your business?

GR: Of Course. We do see a lot of movement and investment activity in the market and do benefit from this. However, there is a continuous growth in the market, module prices are continuously decreasing.

This fact sometimes makes decisions slow and customers uncertain regarding their investments. But only a high technology production is fit for this price competition. Our customers pre-calculate their later production costs very precisely.

PES: We have spoken about KUBUS before, so could you bring us up to date on developments and technical benefits of KUBUS MTS 5500?

GR: Firstly, we are happy to announce that we have achieved an even better performance. Through the latest optimisation and developments, we are now able to guarantee a performance of 5,500 cells per hour with our new model, which equals 10% more output, reaching approx. 190 - 200 MW per year.

By reducing our manufacturing costs the already excellent total cost of ownership calculation is significantly better and makes KUBUS the most profitable machine on the market.

Due to its concept KUBUS is the first and fastest stringer in the world to ensure an uninterrupted production. Traditionally it is necessary to stop the machine and therefore interrupt the production process just to refill ribbon. We know that this is the absolutely outmoded point where manufacturers effectively lose a lot of money.

By having four independent working ribbon supplies and needing only three, the customer is able to refill one ribbon supply, while the machine continues production.

Also, we want to highlight the redundant way of manufacturing which becomes possible by using KUBUS e.g. we have two identical cell loading stations, each delivering 50% of the throughput during standard operation. However, if one entire cell loading station is 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 to create innovation and know-how must be earned by experience – we have been in this business for over 20 years now. Our founders Günter Schneidereit and Reinhard Willi are pioneers of the industrialisation in PV manufacturing.

PES: Can you tell us how KUBUS became the most profitable machine on market?

GR: The investment in KUBUS will be paid back within shortest time because of the advantage of better yield, material usage and uptime.

The uniqueness of KUBUS is that the uptime is net uptime. Considering that a similar number of stringers are placed into production in order to achieve 190 – 200 MW per year, KUBUS produces 25 - 30 MW more per year. The process doesn't need to be interrupted for material refill and the cost starts from the same base line.

The line is finally close to being 100% productive in the most efficient way, including the high redundancy. In total, the integration of KUBUS in the production line reduces production costs significantly.

The cell contacting process on KUBUS costs approx. 0,37 \$-Cents/Wp in a total cost of ownership calculation. While it costs approx. 0,50 \$-Cents on other stringers.

PES: Are there any technical developments in the module branch, if so we would like to hear about them and their benefits to the end user?

GR: There are interesting technological innovations like gluing or back contacting where we are closely connected to leading institutes in Europe and the United States.

We do accept that there are some technologies which will be implemented in about 3 - 6 years. The main benefit to the end user on all these innovations will be cost reduction and higher usage and efficiency of the modules.

We have a similar approach at M10 with the KUBUS as well as our subsidiary SI Module and aim to reduce the cell to matrix loss to a minimum, while making the production processes as lean and simple as possible. For both companies we are absolutely on track with this mission.

PES: Is this as far as it goes for KUBUS or are their other advances in the pipeline?

GR: KUBUS is ready for the leading large-scale technologies of the future. 6 Busbar is accomplished and tested. The fluxing station is already prepared and tested for adhesive gluing. Busbar back contacting, multi wire, shingling etc. is theoretically possible and designed.

All this is possible because we didn't only focus on a busbar stringer, but also recognised latest technological developments and always want be one step ahead and ready for all requests.

Nevertheless, we expect the busbar technology to be leading the next 8 – 12 years for sure. Even though this would mean changes we make sure that all delivered KUBUS are backwards compatible.

PES: Welcome back to PES Solar/PV magazine. Thanks for talking with us. For our new readers would you like to begin by explaining a little about the background of M10 and how you currently serve the solar/PV industry?

Gregor Reddemann: M10 Industries AG specialises 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 face this challenge under the leadership of solar pioneers of Günter Schneidereit, Reinhard Willi and myself Gregor Reddemann.

Our M10 Solar Campus incorporates our development and technology centre, production and material testing, including preliminary acceptance, 24/7 service support and service.

This enables us to provide our customers with ideal solutions. Our performance areas



PES: Do you have a report on how KUBUS is running at Emmvee after 6 full months of production?

GR: Fortunately the report remains the same as the last time. The machines are running smoothly 24/7 without any on-site support from M10.

We are very happy and pleased to see that all developments and functionalities are working as planned. When parts turned out not to be sufficient, we improved immediately.

We did conservative estimations on our wear parts, however the performance and lifetime has often been much better than expected. On the other hand this is not a big surprise to us, as we only use uncompromising materials and exclusively work with very experienced professionals.

If material was deemed as good enough we went for the even better solution. This is now paying off.

PES: We have followed the M10 Solar-Campus with interest, what is the latest on this?

GR: The concept of the campus works as we hoped and expected. We do benefit from each other a lot by knowledge and experience exchange. At M10 we are able to produce modules for real life circumstances for our subsidiary, SI Module and test the latest material.

At SI Module they benefit from stringer experts and minimal repair. SI Module has been able to firmly establish itself as a premium manufacturer for customised modules, building integrated modules and glass/glass modules.

PES: Can we assume that most of your clients come for training at the campus? If not what do you think of onsite training in comparison?

GR: First of all training makes the difference to whether a line concept turns out great or not. The people need to know in detail how to handle the equipment in order to produce the highest yield efficiently.

Therefore our training varies from other companies. We are very open minded and transparently share our knowledge with our

customers. Our customers can expect all time full support and backwards compatible updates, since we strongly believe and experience shows that we're only able to grow as long as our customers are successful too.

Training at the campus brings a lot of benefits also on general module know-how. However, we always insist on on-site training of key staff as well because each line is different and it is essential to prepare people for the job on the spot.

PES: Has your company expansion continued and how do you see the rest of 2017 for M10?

GR: Indeed the expansion has been on-going in 2017. We are always looking for the right people to join us and this will go on for the rest of 2017 and especially 2018. We are in close touch with leading solar institutes and are working on further equipment functionalities and adaptations.

We will be able to report in detail on this within the next 6 months. The most important thing to us is to stay one step ahead of the industry and continuously improve and develop new features of our equipment.

Commercially we are part of the final round of some huge projects. Our main problem will be the delivery time.

PES: There has been a lot of publicity about President Trump pulling out of the Paris climate agreement what are your thoughts on this?

GR: We honestly did hope the situation would take another direction using the slogan 'Make America great again'. The support of the huge leading companies in the United States shows clearly that the majority of the Americans do not agree with the latest announcement, especially on climate protection.

Denying global warming is not only old fashioned but simply not true. From our point of view the pulling out of the Paris climate agreement is a disappointment and step back for the States, which also isolates them.

A positive effect we feel is that the rest of the world has this at the forefront and therefore more than ever will be united on this issue.

We keep our fingers crossed that the rest of the world keeps and enriches promises and we're heading towards a clean and safe future at least regarding energy.

Also hopefully President Trump will recognise the PV-Industry as the big chance for the US economy and ecology.

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