Bankability and quality

Olivier Haldi

Olivier Haldi, Global Business Development Photovoltaics and Alternative Energies, met up with PES to share the reason behind the recent rebranding from Multi-Contact to Stäubli Electrical Connectors and the importance of using high-quality components.

PES: Welcome back to PES Solar/PV magazine. Thanks for talking with us. For the benefit of our newer readers, would you like to begin by explaining a little about the background of Stäubli and the importance of the Solar/PV industry to you?

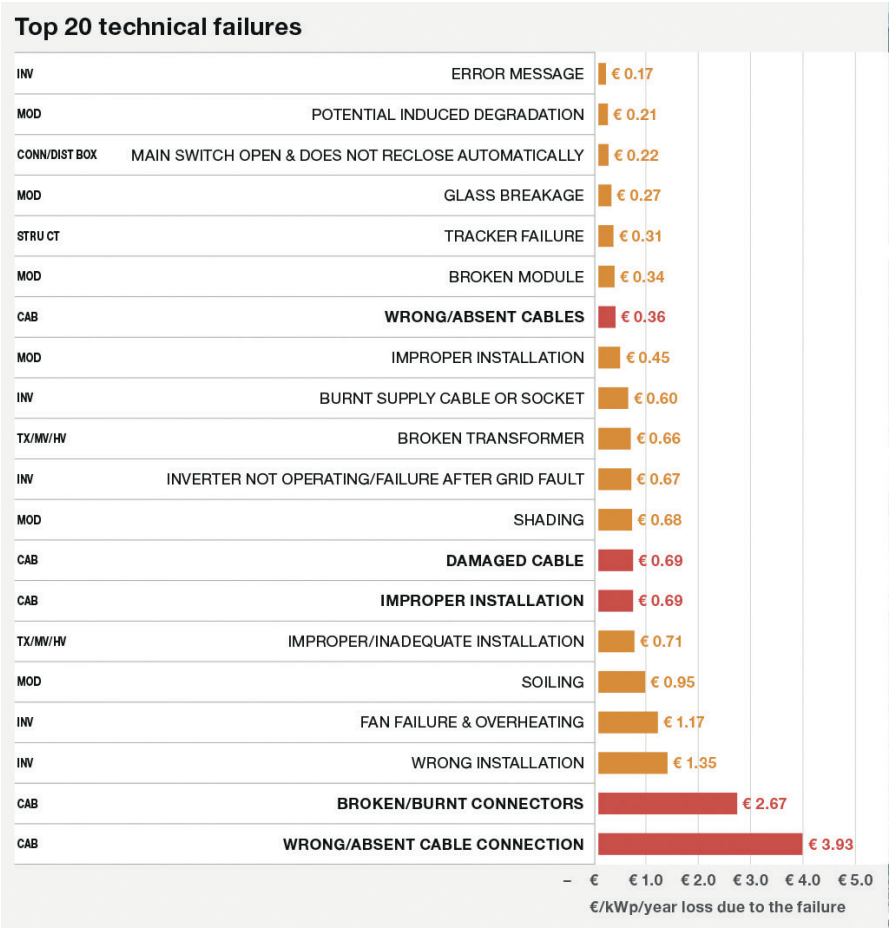
Olivier Haldi: Originally founded in 1892 as a small workshop in Horgen/Zurich, today Stäubli is a multi-national group headquartered in Pfäffikon, Switzerland. We are a global mechatronics solution provider with three dedicated activities: fluid and electrical connectors, robotics, which are also used in PV panel production lines and textiles. We serve customers who want to increase their productivity in many industrial sectors.

We are an international group that currently operates in 29 countries, with agents in 50 countries on four continents. Our global workforce of 5000 shares a commitment to partnering with customers in nearly every industry to provide comprehensive solutions with longterm support.

Stäubli Electrical Connectors, formerly Multi-Contact, was founded in 1962 and is part of the Swiss Stäubli family. We have over 55 years of practical experience in producing reliable electrical connectors for different industries. We have been the pioneer and market leader for electrical connectors in photovoltaics for more than 20 years.

The first industrial photovoltaic connector (MC3) was introduced by Stäubli in 1996 followed by the original MC4 in 2002 setting the industry standard ever since. The exclusive MULTILAM advanced contact technology raised the bar in terms of consistent quality and outstanding dependability. We never compromise when it comes to quality, long-term reliability or our partners' success.

Today, we have more than 200 GW of installed photovoltaic capacity, amounting to nearly 50% of the global cumulative PV capacity that had been successfully connected using our Stäubli photovoltaic connectors. This figure demonstrates the reliability and highest quality of our products. They guarantee proper operation over their whole lifetime, >25 years, defy harsh environmental influences and have a positive impact on the bankability of photovoltaic projects. Our position on the global market is the result of our continuous efforts to meet and exceed our customers' demands.



Calculation of the economic impact: Solar Bankability is a project funded by the European Commission's Horizon 2020 program (www.solarbankability.org). According to their 'Cost Priority Number' (cost-based failure mode and effects analysis) of the top 20 technical failures in PV systems, cables and connectors can have a huge financial impact (€/kWp/year loss due to the failure).

PES: What was behind the rebranding of your connectors from Multi-Contact to Stäubli Electrical Connectors? How has this been received thus far?

OH: Multi-Contact has been part of the Stäubli Group for more than 15 years and became Stäubli Electrical Connectors as of January 2017. The Multi-Contact logo has always featured a reference to the Stäubli Group. To ensure that Stäubli Electrical Connectors will be henceforth recognised as the former Multi-Contact, the transition is accompanied by a co-branding communication phase. The two companies are united by shared values such as quality and innovation, strong customer orientation and production designed to optimally meet the needs of the market. These are both driving force and basic precondition for an even more impressive international market activity.

Taking on the Stäubli brand underlines our belonging to this innovative group. We are convinced that this step will help us establish a more effective presence on the market. Together, we can advance the development of cutting-edge products and customer-specific solutions to an even greater degree. We will now offer the entire spectrum of highly reliable connection technology, which in such a manner is unique on the world market, under the Stäubli brand.

By taking over the name and brand identity of the Stäubli Group, we ensure access to expanded research and development resources in the long term and thus ensure the innovative strength needed to develop convincing, future-oriented solutions for customer requirements in the future.

PES: Are you still experiencing growth in this market?

OH: At the moment, we are growing with the market in different regions. The outlook is promising, PV will become the major source for energy generation. We have been increasing our production capacities and will do additional investments to cover the market demand.

Maintaining the economic growth at the same time is challenging. The race for low-cost solar shows no sign of halting, with developers and IPPs increasingly quoting aggressively low prices, particularly across growing solar regions such as India, Latin America and MENA. Record-low PPAs squeezing profitability and under this tough financial climate, the question is, if there is a mismatch between what solar owners and investors want, and what diligent EPCs can realistically deliver.

How to maintain quality, profitability and reliability in the grip of such financial squeeze? We have to be cautious, the run for even lower prices can be dangerous; you get what you pay for. So we have to be competitive without compromising quality and this remains our highest priority.

PES: We are interested in hearing more about your concept of bankability; please could you explain what this means to Stäubli?

OH: The demand for safe, clean reliable renewable power is growing at an ever increasing rate. Today, PV technology is not only ecologically, but also economically a sensible alternative for power generation. With troubles on the financial markets and photovoltaics' advancing independence from governmental subsidies, financing of PV projects has become a relevant topic.

We have seen the increasing potential, but investors only choose the most trustworthy and bankable projects. Generally speaking, in the solar industry, bankability is a term used to describe the degree of financial risk. The degree of bankability of any project, solution, technology or supplier will affect the availability and cost of capital.

Bankability is a multi-dimensional construct and is perceived differently among stakeholders. There is no standard for bankability; each bank may have its own definition of bankability. In order to assess the investment risk of a PV project, technical, economical and legal aspects need to be evaluated.

The quantitative economic evaluation focusses on the balance between total initial costs, total operating costs and levelised cost of energy. Stakeholders are assessed regarding their bankability in order to improve chances of a positive financial decision and to manage the associated technical risk. It is mandatory to work with bankable/solid partners and Stäubli with its background, track record, experience, financial strength, deliverables in products and services, is the bankable partner for cabling and connectors in the PV industry.

At the same time careful selection, this means a lot more than just checking the data sheet and the certificates, of bankable products and components to be built into the system, is also a core topic, as these have considerable impact on the bankability and the economic success of a PV asset.

Today, 200 GW PV capacity relies on more than 1.5 billion original MC4 connectors globally.

The guiding principle for bankability is to minimise risk while maximising the return. This can only be achieved through secured efficiency in the long term on the basis of high-quality components. Wrong choices in planning, due to lack of knowledge or low quality components, can cause unexpected loss of production or potential safety issues during the lifecycle of a PV system.

Less attention is being paid by buyers and especially owners and investors to solar balance of systems (BOS) components and their quality. Maybe the majority would not expect that, but results of third party studies as well as our own experiences show that cabling/connectors have a major influence on the efficiency, the return on investment and, at the end of the day, on the LCOE of a PV system. Small components, but big impact.

PES: Bankability appears to run through everything, does this include training?

OH: Absolutely, through everything – the company, people, products and services. So the main goal is to create awareness that in a quite complex PV system details and also small components, such as connectors or cabling, really matter, raising the issue of quality. In the end, it is not only about the quality, but also about the correct handling and installation of these components.

Therefore, you have to make the right decisions during the planning, construction and operation period of a PV system to mitigate the risks. We have to stress the fact that their impact on the efficiency and the economic success can be huge and that they are absolutely systematically relevant. That is why we started to ramp up trainings through our global team for the different stakeholders in the PV industry.

PES: Please can you expand on the influence of connectors on the long term efficiency of a PV system?

OH: As mentioned, third party studies show that cabling/connectors can have a huge impact on the yield of a PV plant, too. The arising questions are now: What is the root cause of these issues? Why can connectors have such an impact on the overall yield and is there an economically feasible way to reduce the associated risk?

Basically, connectors are used in PV systems and in solar parks to ensure constant transmission of the generated power from the modules by connecting them to strings, combiner boxes and inverters. Connectors are therefore used in large numbers: for instance, in a 20 MW solar park, around 140,000 connectors are installed.

The key to efficient operation and energy feed-in is long-term reliability and a constantly low contact resistance. Vice versa an increasing contact resistance inside the connectors will induce higher temperatures and power loss, which will have negative impact on the contact resistance again, thus creating a spiral resulting in a high risk of partial connector failure. So the consequences caused by these failures lead to power loss due to downtime, expenditure on service hours, costs for spare parts and reconstruction measures and in a worst case scenario to legal costs – altogether: higher operation/maintenance costs (OPEX) and lower energy yield.

In this context and with having the focus on the components and not on the handling, it is interesting to note that components for cabling comprise only around 1%, for connectors only 0.003%, of the overall total initial cost (CAPEX) of a PV system and price savings among component choices rarely amount to more than 30%. Therefore, it is really appropriate to ask if a saving of only 0.001% of the total initial cost, gained by using cheaper components, is justified when considering the additional safety risks during operation and decreased efficiency or return on investment in the long-term such a choice might bring.

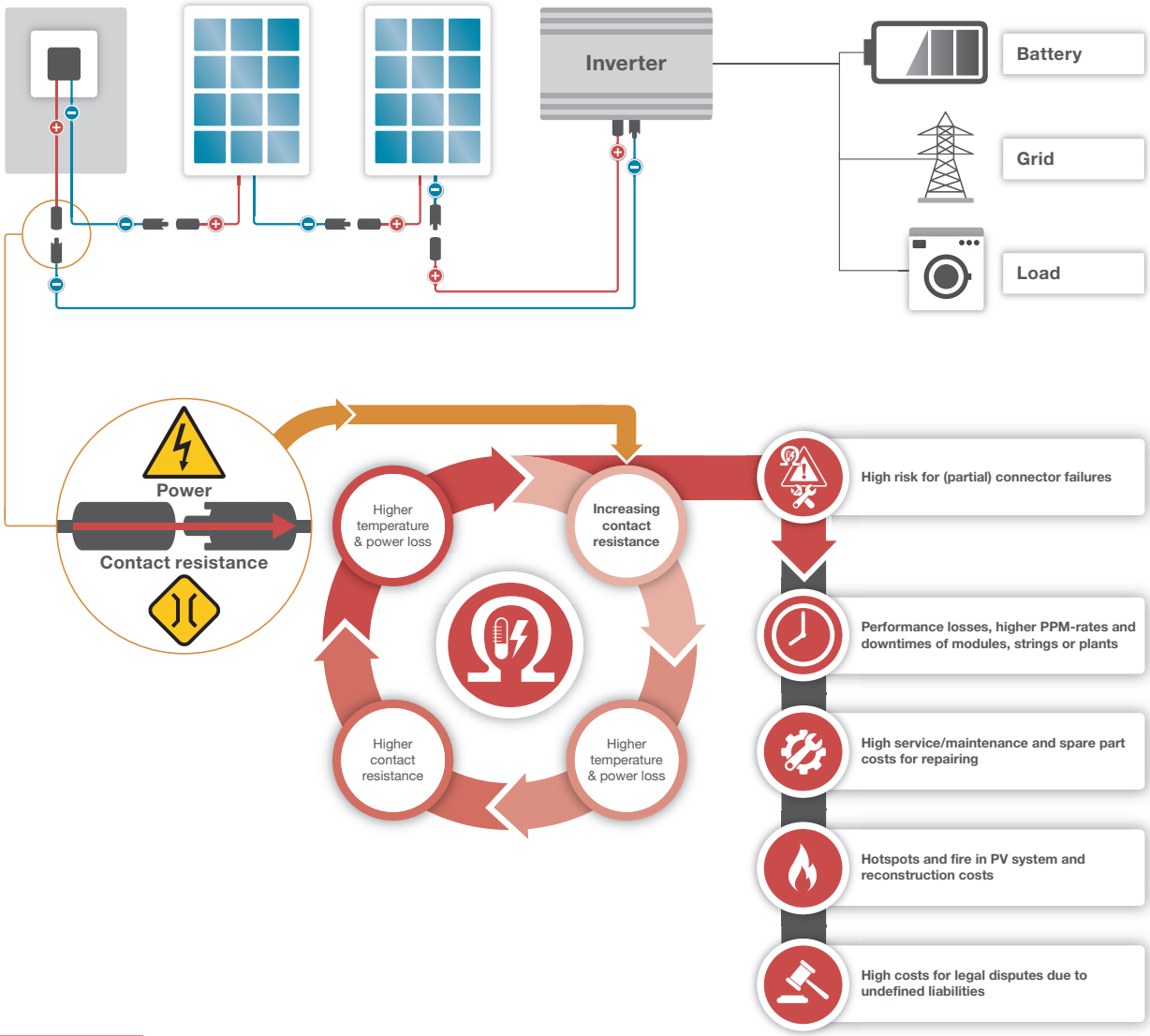
When we break this down on the LCOE we know today, it is all about balancing CAPEX and OPEX and an optimised energy yield. Of course the involved project stakeholders might have a slightly different view regarding their respective intentions. So in order to lower the CAPEX, one may try to lower also the asset costs of cabling and choose low-quality products or cheap workmanship.

But as already shown, we can clearly say that the potential for optimising CAPEX by using low-quality connectors/cabling is very low. At the same time, failures of these small components can have a significantly negative impact on OPEX as well as on the energy yield. To mitigate these risks/failures and maximise the return in the long term, we really recommend paying attention to cabling/connectors of a PV system and mainly to the quality of the products, not to neglect the quality of the installation and handling as well.

PES: Is this something that you believe can help further strengthen Stäubli's position in the International or Chinese PV market?

OH: We have experienced many cases where wrong decisions on products and their handling have been taken. Quality issues with PV systems can affect the whole industry or even the technology in a negative way, and can lead to doubts on the long-run reliability in the investor community.

You cannot manage the unknown; we have to educate and share knowledge. We are still a young industry and we have to work together, upstream and downstream players, with the goal of making PV become



Cabling of PV systems - constantly low contact resistance ensures long-term reliability and efficiency of a PV system. Low quality of components and/or incorrect handling/installation leads to increasing contact resistance, failures and extensive consequences.

an even more competitive, but also sustainable industry. So it is all about LCOE and the long-term view.

All of us across the value chain have to do homework to mitigate and minimise risks in PV systems. Some more mature markets learned their lesson, but there is still a lot potential for improvement, to an even greater extent in the more price sensitive markets like China. But we see more and more of a development that sets value on quality and shares the conviction that quality pays off. Quality saves!

Of course we want to strengthen our position in the market as this has to be a given goal for every company. With our approach to quality/bankability we help increase the quality of PV installations worldwide and yes, at the same time we believe that this will expand our market share and our position as the partner of choice when it comes to safe cabling/ connectors in the PV industry.

PES: What is the single biggest challenge facing the market today?

OH: We have already broached this topic: from our perspective, it is about delivering a stable high -quality product in times of high pressure on prices and margins from the market, but simultaneous increasing costs for raw material and investment in new production capacities to cover the greater demand of the market. This is a big challenge and you have to find the right balance. Quality is of utmost concern and you can see through all our activities: we do not play with it. In future, Stäubli wants to expand its position on the global market and, frankly speaking, we believe that this goal can only be reached by pursuing a quality approach.

www.staubli.com

www.staubli-alternative-energies.com/Bankability/bank.php

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Olivier has been with the Swiss-headquartered Stäubli Electrical Connectors, formerly known as Multi-Contact, for more than three years. In his current function as Global Business Development Manager Photovoltaics and Alternative Energies, he is responsible for global key account management, leading strategic projects and coordinating activities in subsidiaries. Before joining Stäubli, Olivier studied economics in Basel, Switzerland and has gained over 12 years of professional experience in marketing and sales in the medical technology industry.