Frequency of high-risk quality concerns found in module purchase contracts has increased 20x from ‘20H1 to ‘22H1

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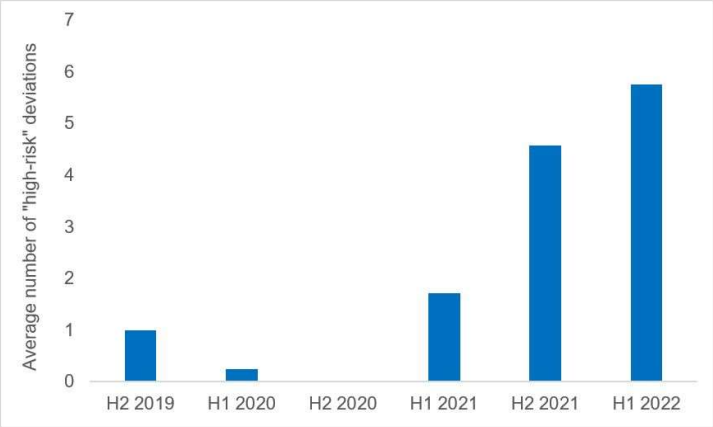
The PV quality assurance community is witnessing an “earthquake” of module quality issues. The number of high-risk deviations requested by suppliers during the contracting process has gone up by a factor of 20 in the last two years. These requests by module suppliers intend to waive quality controls from their module purchase agreement with buyers. As a result, it is hard to imagine that there will be no impact on field degradation and failure rates over the next few years; The question remains: will this “earthquake” trigger a tsunami, or just a little ripple on the slowly rising sea of risks taken by developers today?

During contract negotiations, STS advises procurement teams through a diligent risk assessment process. STS has established “best practice” quality requirements (STS-STD-PVM1 Standard) and records the deviations away from this safe zone, labeling each risk as “low”, “medium” or “high” based on the nature of the risks, their probability, severity and detectability (Risk Priority Number). While in the first half of 2020, the number of high-risk deviations requested by suppliers was on average of 0.25 per contract (one every four contracts), this average reaches 5.75 high-risk deviations per contract in the first half of 2022; a 20 times increase compared to two years ago. These additional high-risk deviations may have a significant impact on the performance of the modules in the field. For instance, modules with more cracks or more soldering defects (which happen to be the two main high-risk deviations observed recently), are more likely to develop hotspots, which require immediate replacement, and expose owners to safety risks.

Because of the current “seller’s market” conditions, some manufacturers have lowered the quality specifications of their products. STS clients are made aware of the additional risks associated with these deviations, and may therefore push back. Many other developers, however, may end up at an increased risk of purchasing low quality items.

Figure 1: Average number of “high-risk” deviations requested by manufacturers during the negotiation of the module purchase contracts[1]



Today’s supply chain situation parallels the shortage between 2010 and 2012. The PV module industry demand was growing faster than the supply of materials, cornering manufacturers into using new, unproven materials in their modules. Quality checks were dropped, and risks were taken to quench the thirsty demand. One example is the Isovoltaics AAA backsheet. Used in an estimated 12GW worth of modules, this backsheet had an 88% failure rate in the field at the 10-year mark.

Unfortunately, the story seems destined to repeat itself, and the quality assurance community is bracing for what may be the next module quality tsunami, unless developers are able to course correct by introducing more rigorous inspection plans to the procurement process.

[1] STS 2022