



Beyond Inspection

Purchasing PV Modules: What Should Be In Your Purchase Contract?

STS - Your Partner of Choice for Solar and Storage Quality Assurance

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EXTERNAL

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www.sts-certified.com



Pertinence



Performance



Exemplarity



Openness



Impartiality

CONTENT

- 01 ▶ Company Introduction
- 02 ▶ Purchase Agreement Requirements
- 03 ▶ Navigating a “seller’s market”



01 Who We Are



Beyond inspection

- Est. 2010
- Inspection Body accredited ISO/IEC17020
- Leader in PV Module Pre-Dispatch Inspection
- Largest fleet of inspectors in the industry
- >40GW/year client base
- >25GW of PV Modules Production Supervision track record
- >1GWh of BESS Inspection track record
- >30GW combined capacity of Supply Chain Audits track record
- >100 Conformity Assessment projects per year
- Present in 9 countries across Europe, USA, Asia
- Technical Partnerships with SEIA, Solar Power Europe, Solar Energy UK

Longest and Largest Track Record, and Global Leader for PV Modules Conformity Assessment

Roadrunner Solar Project in Texas, USA | Enel Green Power
1.2 million half-cut MBB bifacial panels, Total capacity of 497 MW

▶ Typical Cycle of Procurement

Procurement Life Cycle

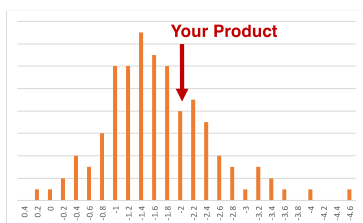
PLAN

ASSESSMENT & QUALIFICATION

COMMERCIAL CLOSING

COMPONENTS MANUFACTURING

Quality
Management Plan



Robust Purchase Agreements include:

- ✓ Product Requirements
- ✓ Assessment and Verification Plan
- ✓ Sustainability requirements

[This Webinar](#)

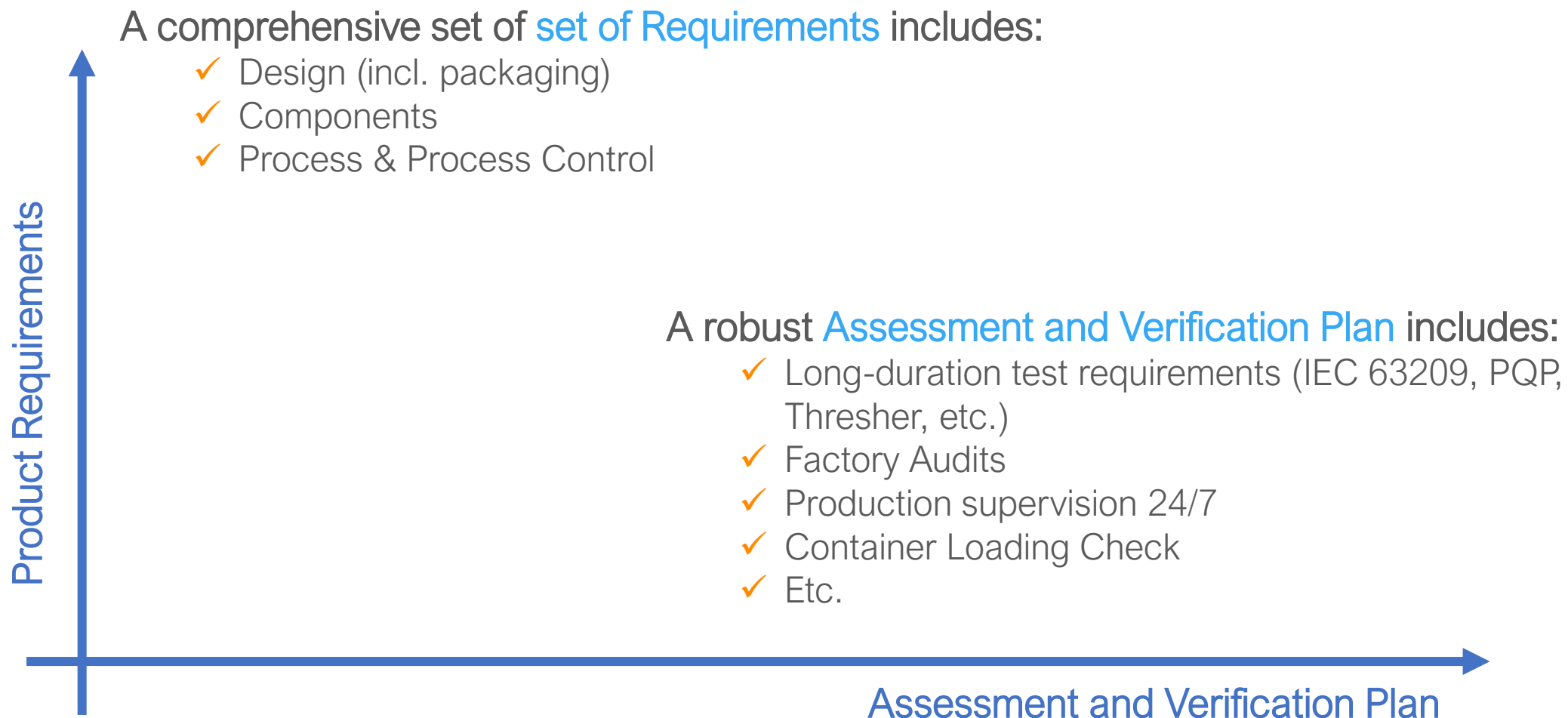




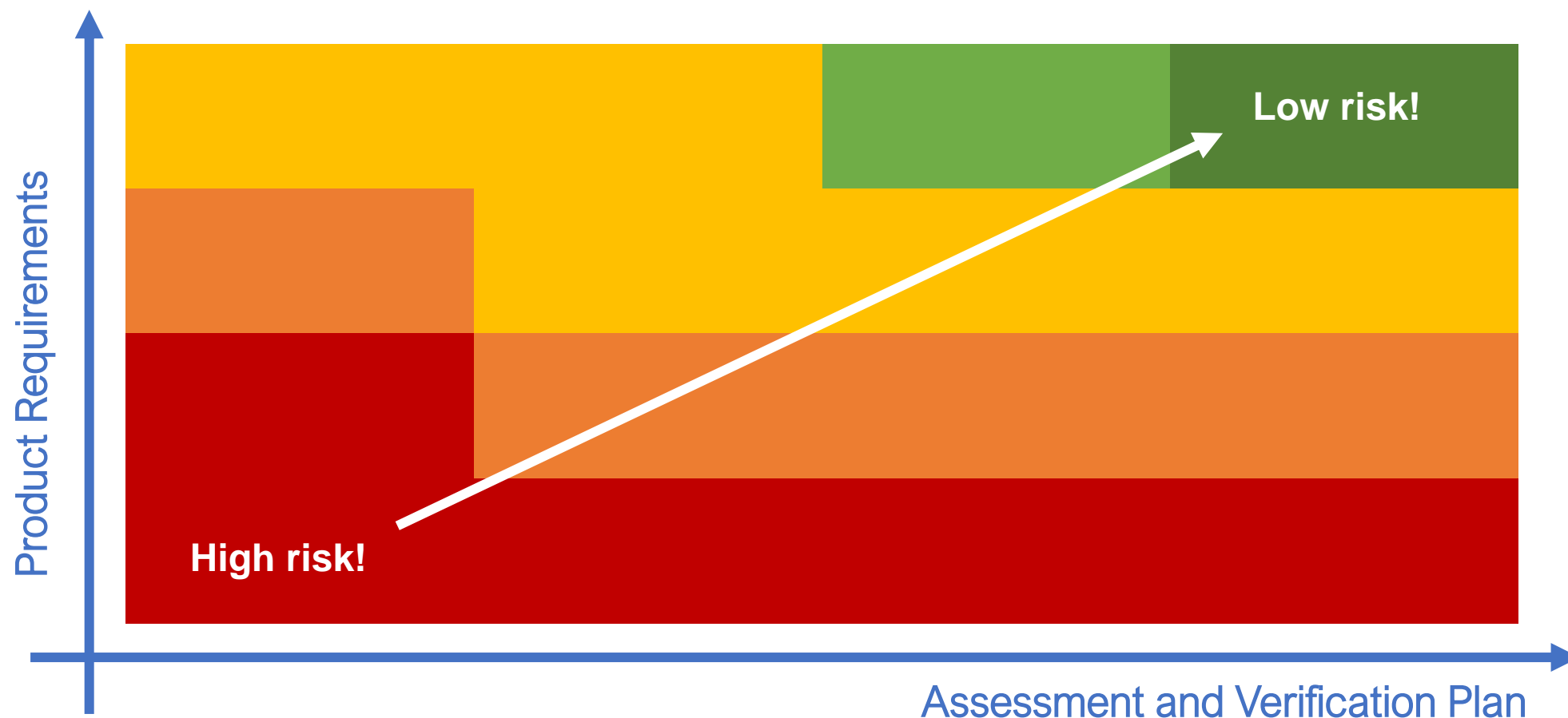
02 Purchase Agreement Requirements

STS Standard: a simple way to set robust requirements

► Two dimensions of Technical Requirements

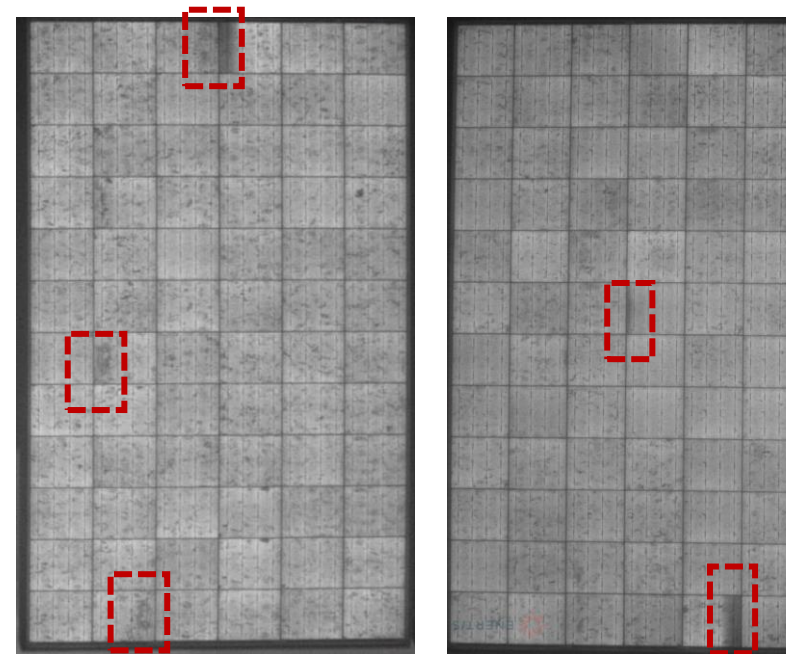


► Robust in both dimensions → satisfactory risk reduction

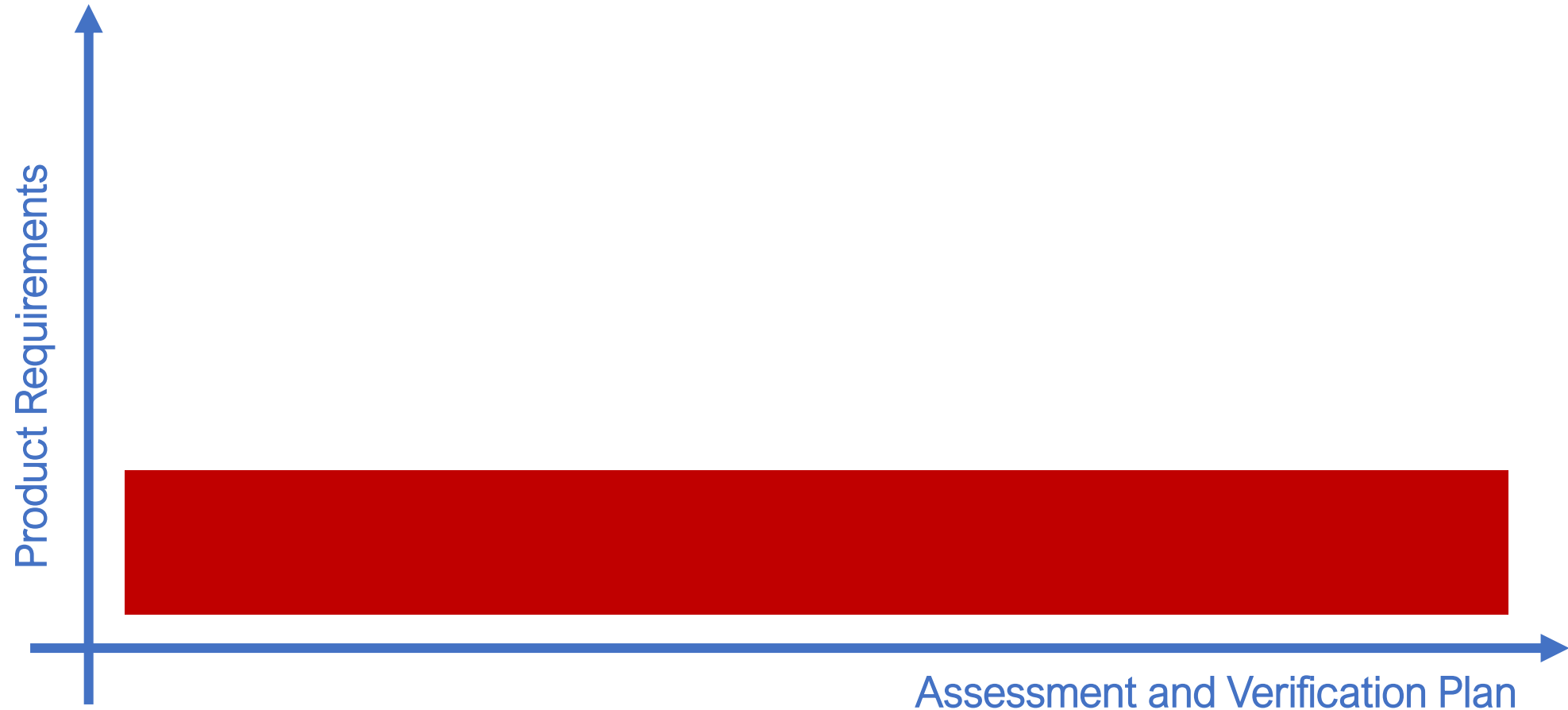


► Criteria not well defined (or not comprehensive) → High risk!

- ✓ Example:
 - ✓ North America, Q2 2021
 - ✓ A lot of failures in the field
 - ✓ These modules were a PASS
 - ✓ The Quality Control Plan allowed up to 7 such defective cells in a module
 - ✓ NB: Modules already installed when STS is brought in



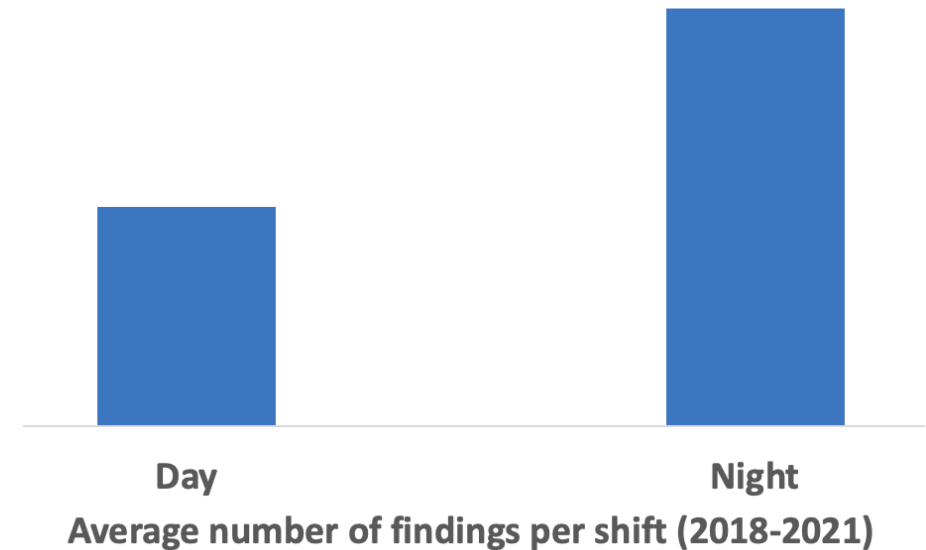
► **Criteria not well defined (or not robust) → High risk!**



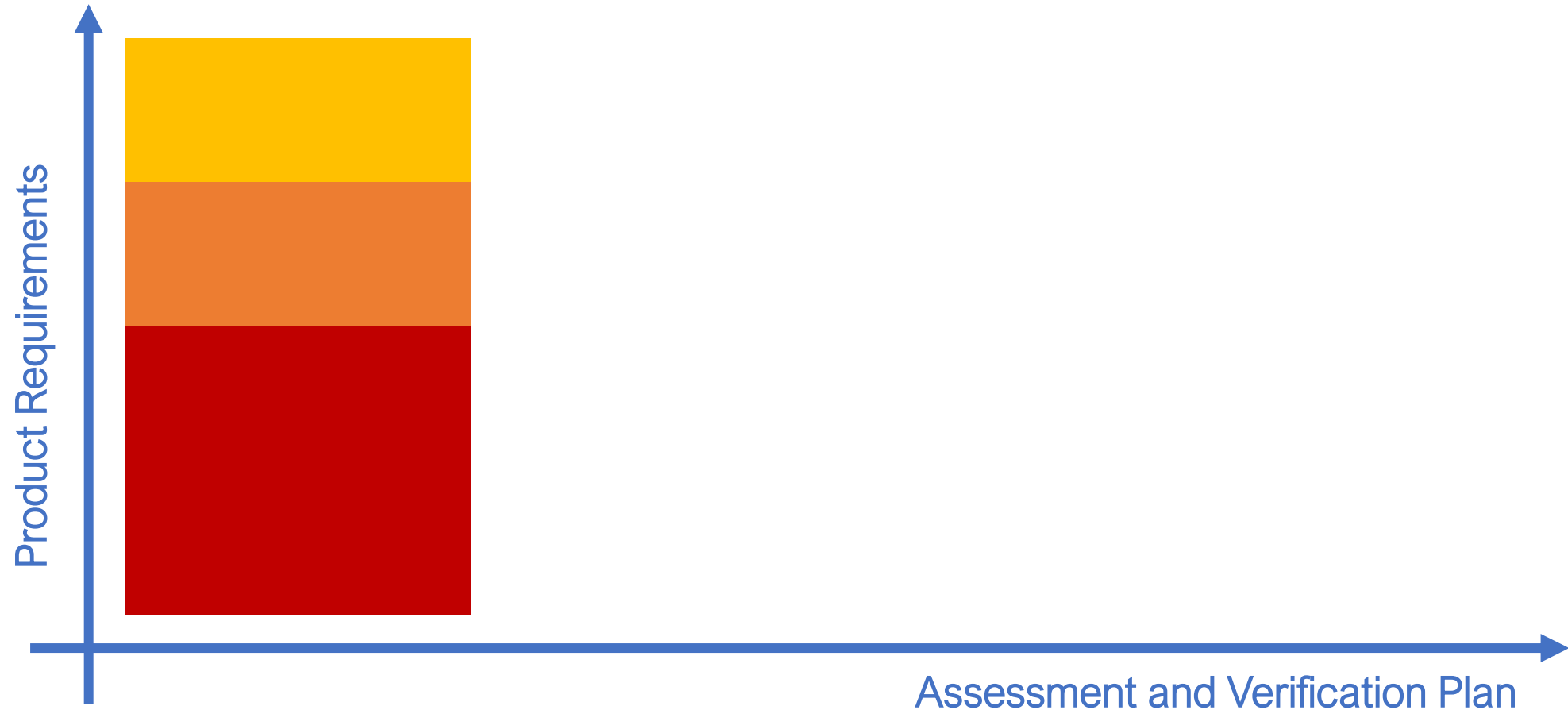
► Incomplete Assessment and Verification Plan → High risk!

✓ Example:

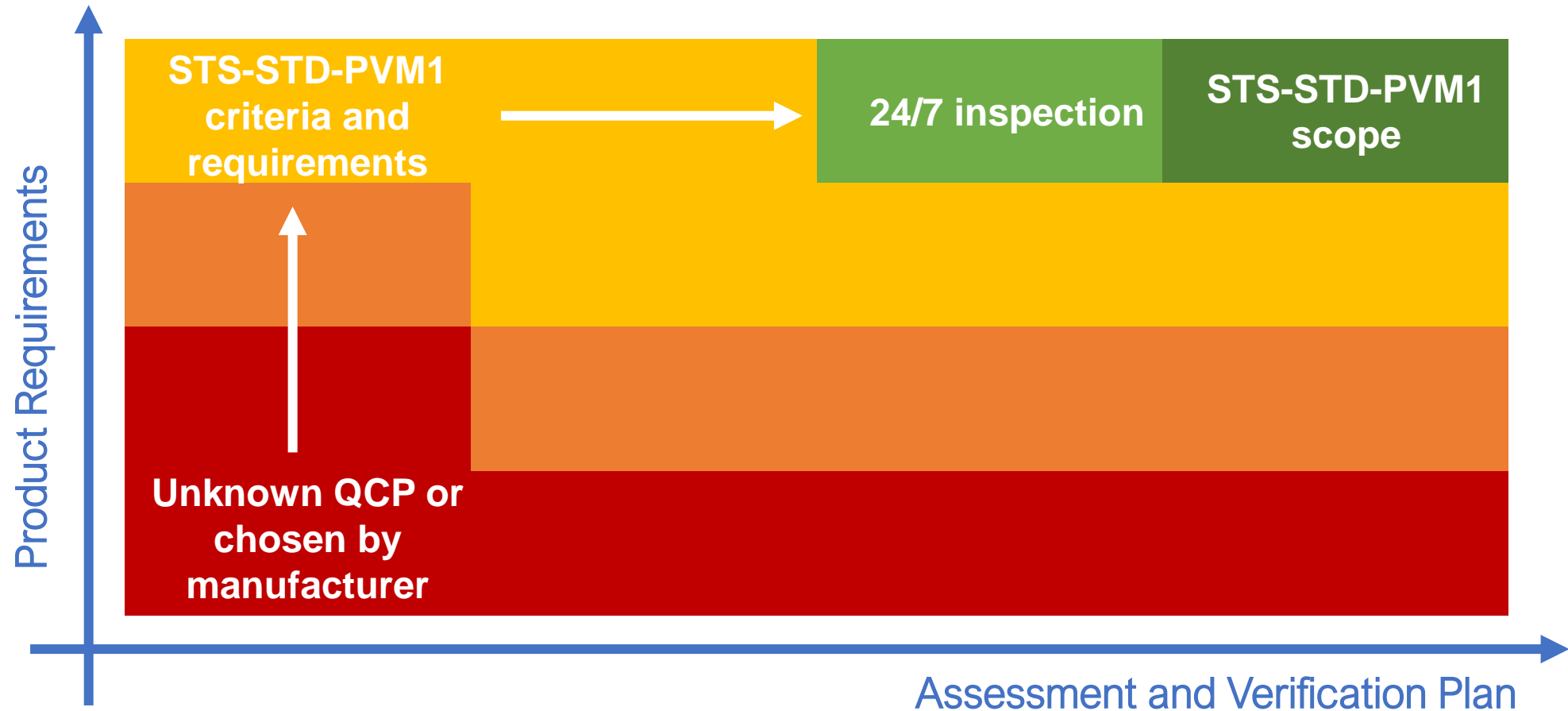
- ✓ Night-shift production more risky than day-shift production
 - ✓ More difficult to find (and keep) good operators for the night shift
 - ✓ Issues with qualification, training, etc.
 - ✓ No/fewer supervisors during night shifts
 - ✓ Fewer issues are escalated
 - ✓ More relaxed working conditions (E.g. may have music playing, etc.)
- ✓ Our database shows that findings in night shifts are twice more likely than in day shifts



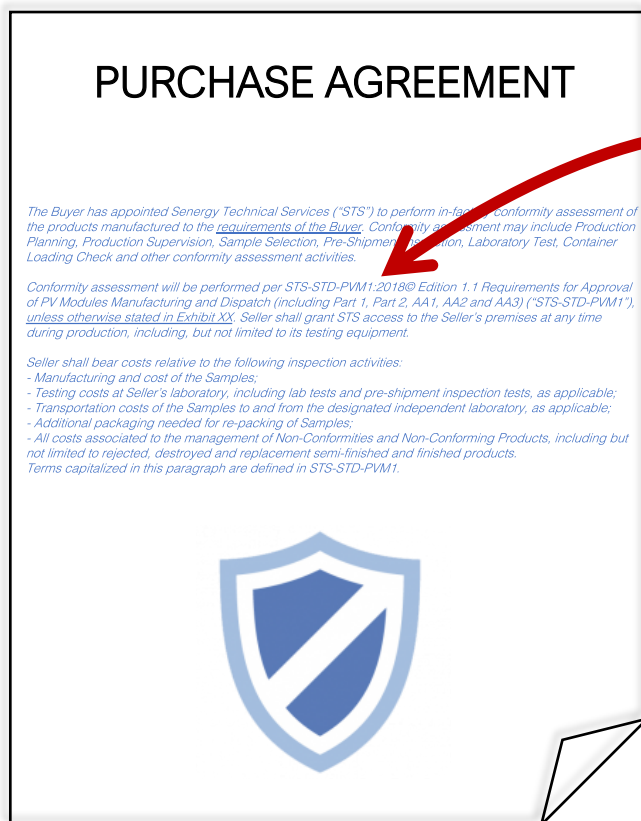
► Incomplete Assessment and Verification Plan → High risk!



► Robust in both dimensions → satisfactory risk reduction



► One simple way of ensuring quality: referring to a standard



✓ Simple paragraph referring to the STS Standard offers protection in both dimensions

- ✓ Similar, to IEC/UL 61215
- ✓ Scope of inspection described
- ✓ >150 requirements and criteria listed and described
- ✓ One single reference

✓ Certificate of Conformity upon completion of inspection

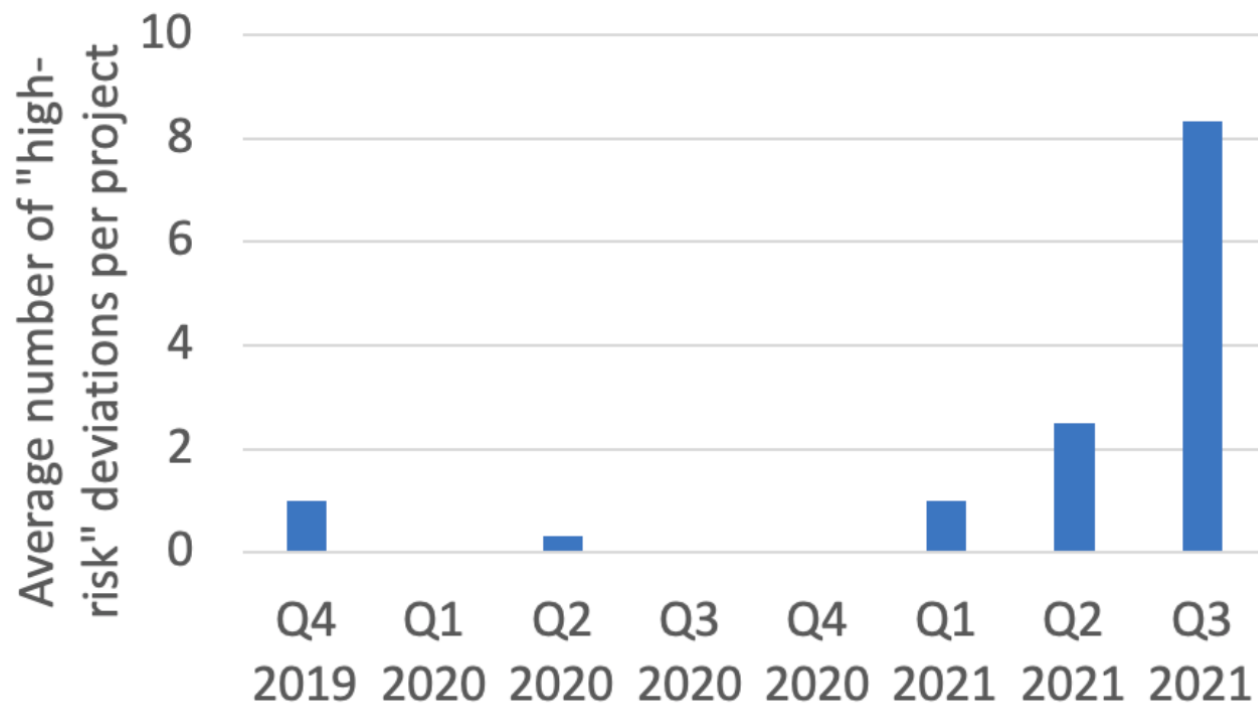
- ✓ Buyer's assurance
- ✓ Lender's assurance
- ✓ Value of asset increased



03 Navigating a 'Seller's Market'

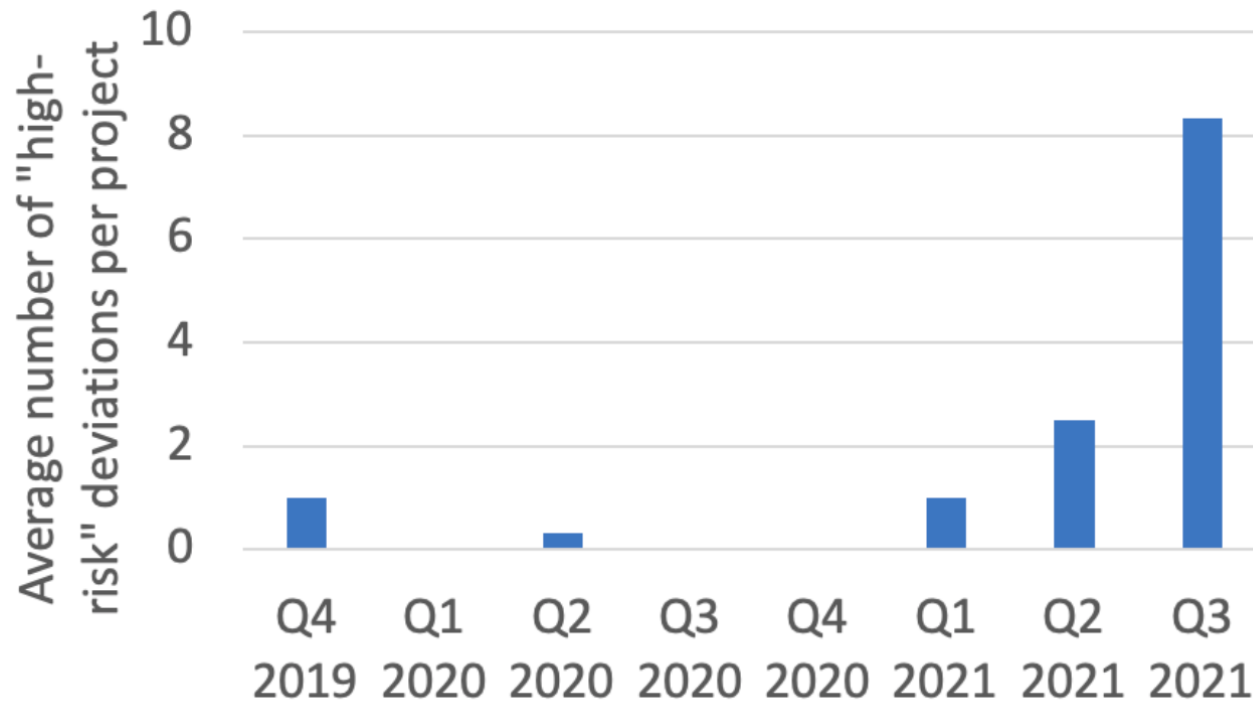
How to navigate the current uncertainties on PV supply chains?

► Seller's market → recent push to lower quality requirements

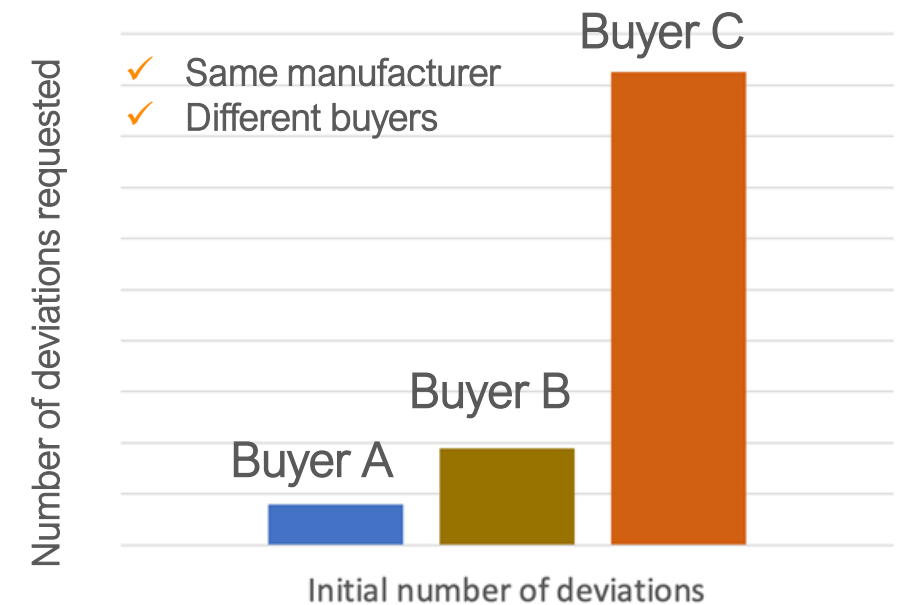


- ✓ Average requests for deviations to the STS Standard have increased significantly in 2021

► Seller's market → recent push to lower quality requirements



- ✓ Average requests for deviations to the STS Standard have increased significantly in 2021



- ✓ ...Sometimes from the very same manufacturers...

► Seller's market → examples

Example 1: Critical Defect Allowance

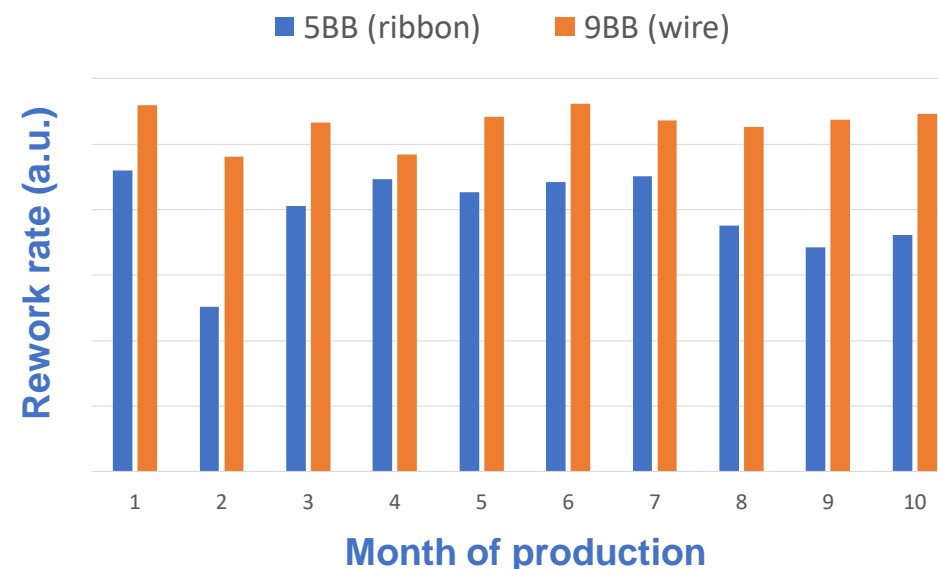
标准组件成品检验判定标准
Inspection criteria of standard module

Acceptable Quality Limits:

- Critical: 1.0
- Major: 2.5
- Minor: 4.0

- ✓ Buyer may receive up to 1% of modules with “Critical defects”
- ✓ Critical is defined as:
 - ✓ Safety hazard
 - ✓ Non-compliance

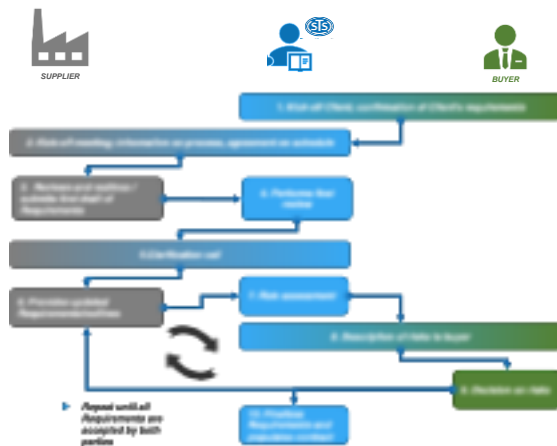
Example 2: De-soldering



- ✓ Supplier requests to reduce the pull test strength criteria compared to the STS Standard
- ✓ Less re-work means higher throughput, which is favorable to the supplier

► STS supports today advanced Technical Exhibit negotiations

- ✓ Risk-mitigating process to converge towards acceptable product and conformity assessment requirements
 - ✓ Based on risk evaluation of each deviation (“risk priority number”)
 - ✓ Full Technical Exhibit → ~40 pages of requirements



STTS	STATUS	Risk Priority	Risk Description	Deviation	Deviation	Deviation	Deviation	Deviation	Deviation
...
...
...
...



► Take-Aways

- ✓ Purchase contracts should have relevant and actionable set of technical requirements
 - ✓ Robust Assessment and Verification Plan (including 24/7 inspection)
 - ✓ Comprehensive set of Product Requirements
- ✓ The STS Standard (STS-STD-PVM1:2018) solves both issues by simply referencing it into a purchase agreement
- ✓ In a “Seller’s market”, suppliers may request deviations to the STS Standard
 - Risk assessment for unbiased opinion and right decision
 - Stick with a comprehensive contract

► Coming up: the experience of a major European developer

PV-magazine webinar

Quality assurance in PV module sourcing

October 27th – Jan Vedde

 EUROPEAN
ENERGY

Agenda

- About European Energy
- Trends in PV module sourcing
- Quality requirements:
 - *Product properties*
 - *Production process*
- Contract negotiation
- Transparency

Focus on Quality Assurance
and Quality Control
No commercial issues
No legal/contractual details

► Coming up: Embedding sustainability in purchase contracts



Triple Bottom Line (3BL)

Supplier Agreements:

- Reference compliance to Supplier Code of Conduct and specific sustainability/traceability requirements
- Specify documentation needed to demonstrate compliance
- Secure access for third party inspections

THANK YOU!



Beyond inspection

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