lightsource bp

Testing and quality assurance from a buyer's perspective and the different approaches

PV Module Tech – ES- Dec'2025

About Lightsource bp

Lightsource bp is a leading developer, construction manager and operator of global utility-scale onshore renewable and energy storage solutions. Our purpose is to deliver affordable and sustainable power for businesses and communities around the world. Operating across three global regions, with approximately 12GW developed and a 55GW+ global development pipeline, we are focused on advancing the energy transition.

Leveraging our in-house expertise, we safely deliver integrated end-to-end renewable energy solutions, from initial site selection, financing and permitting, engineering and construction management, through to long-term management of assets and flexible energy solutions to our clients.

Lightsource bp is a bp company.

For more information visit lightsourcebp.com, view our LinkedIn page or follow us on X, YouTube, Facebook and Instagram.

Key global stats

- Development track record: 11.9GW
- Team members: 1,000
- Active global markets: 19
- Operational and under construction portfolio*: 5.3 GW
- Global development pipeline: 55GW+

Quality policy

Lightsource bp Quality Policy

Our Commitment to Excellence and Customer Satisfaction

At Lightsource bp, part of bp's diversified energy portfolio, we are dedicated to delivering high-quality renewable energy solutions that meet the evolving needs of our customers and contribute positively to a low-carbon future. Our commitment to quality is built on proactive, customer-focused practices that ensure our projects are delivered right the first time, on schedule, and within budget. Aligned with ISO 9001 standards, our quality management principles emphasise accountability, continuous improvement, and operational excellence across all aspects of our business.

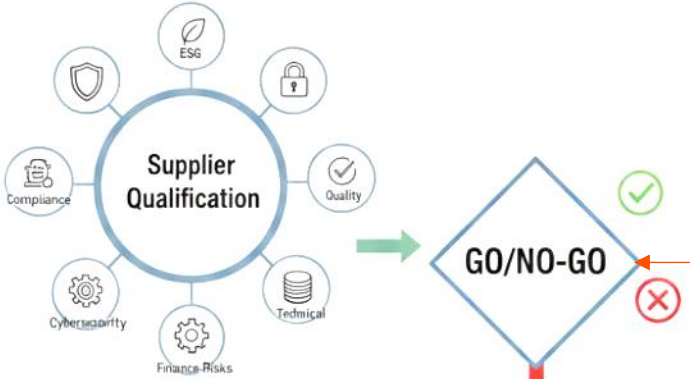
Through this Policy, we are committed to:

- **Supply Chain Quality & Manufacturing Assurance**
  We are dedicated to procuring fit-for-purpose equipment and materials that meet our quality standards, specifications, and project-specific requirements. This is achieved through an approved supply chain that has been carefully assessed for its ability to deliver reliable, high-quality products.
- **Project Development & Pre-Construction Rigour**
  We work with competent and trusted contractors who are evaluated against industry best practice and international standards, for their ability to deliver high-quality solutions and workmanship. Our contracts are designed to include clearly defined quality requirements from the outset to ensure mutual understanding and alignment.
- **Construction Monitoring & Oversight**
  Quality monitoring and oversight are applied proportionately, based on project-specific risks. This approach ensures our quality standards are maintained while supporting efficient and reliable project execution that meets or exceeds customer expectations.
- **Incident Investigation, Escalation & Tracking**
  We implement a robust system for investigating, sharing, and learning from quality-related incidents and events. Our procedures prioritise the identification of root cause(s), enabling the implementation of corrective and preventive actions to improve outcomes.
- **Performance & Evaluation**
  We utilise a range of quality tools to gather precise data, analyse project performance, and inform decision-making. These tools help us drive continuous improvement activities and foster a culture of accountability and responsiveness, ensuring our projects consistently improve in quality and efficiency over time.
- **Information Management**
  We maintain an effective and up-to-date Information Management System (IMS) to facilitate the secure storage, retrieval, sharing, and control of project documents and organisational information. This supports effective communication, informed decision-making, and compliance with regulatory requirements.

We are fully committed to continuous improvement, enhancing our quality management system and evolving our practices to meet customer needs and keep pace with industry advancements. Our aim is to exceed customer expectations, build a long-term reputation for delivering fit-for-purpose, high-quality assets, and ensure these assets perform reliably throughout their design life. This commitment underpins our position as a trusted leader in the renewable energy industry.

Joaquin Oliveira,
Group CEO, Lightsource bp

Supplier Quality – what we do



Pre-contractual Risk
- BOM Audit
- Pre-Production Factory Audit
- Quality Requirements

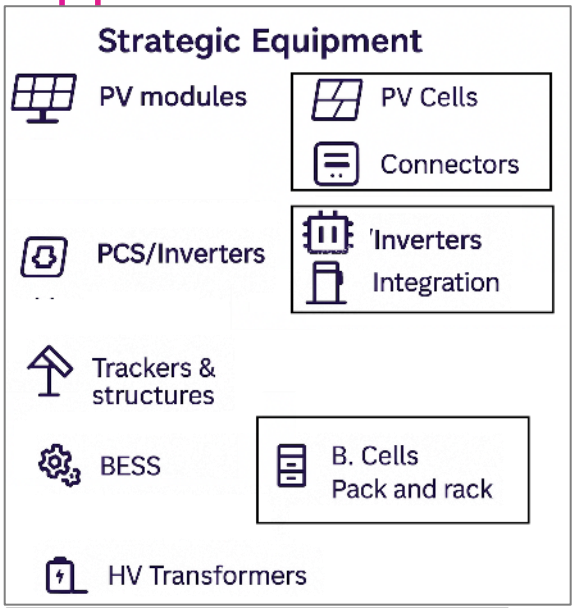
Manufacturing and Testing
- Pre Inspection Meeting
- Manufacturing Supevision
- Product Validation

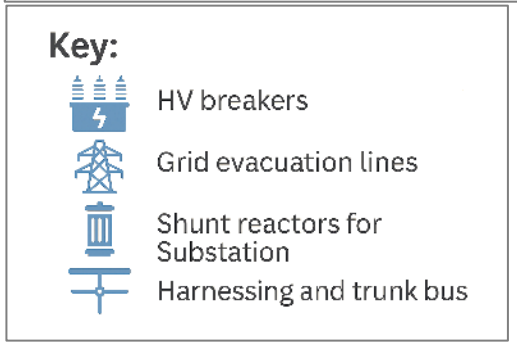
Releasing and Delivery
- Product Rleasing
- Product Preserration
- Delivery and Aceptance

Warranty Claims (Cycle)

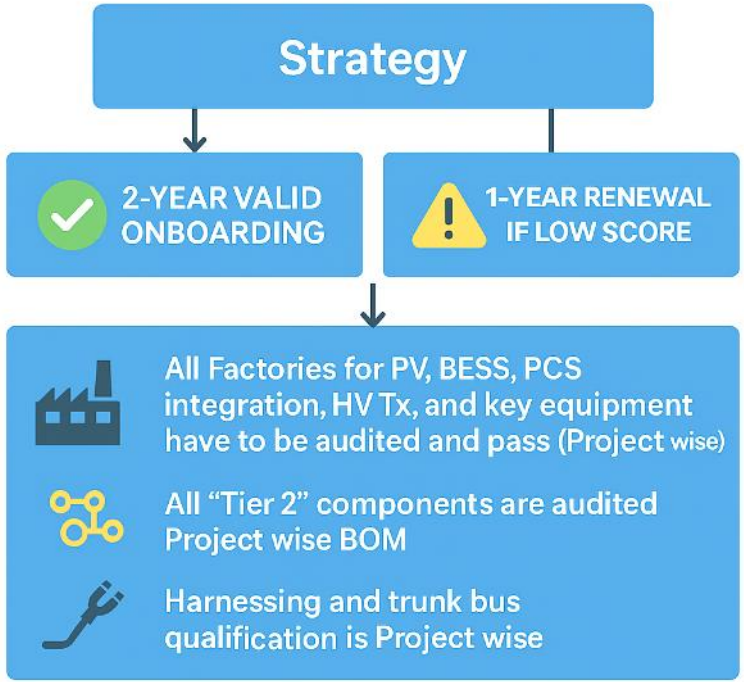
Performance
- Supplier
- Inspection Agencies

Supplier & Product Onboarding





SUPPLIER AUDIT & QUALIFICATION STRATEGY

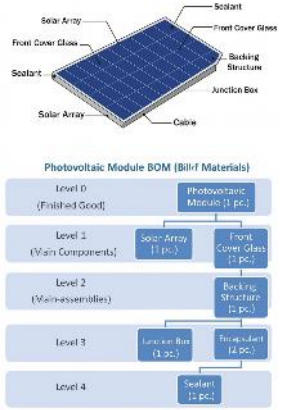


Pre-contractual Risks

Input

+

BOM Audit



Factory Audit

Output

Manufacturing Quality

Use of AI – misperceptions and challenges.

Misconception 1: Manufacturing is just an assembly line

- Employees are only doing repetitive work.
- Manufacturing is so technical and rigid

New concepts:

Manufacturing processes but are multidisciplinary evolving. New digitalisation and AI automations and robotics will replace the human in-line inspections. We are moving towards AI and machine learning (DIGITAL TWIN)

Challenges: New technologies need learning from all stakeholders:

- Ramping up reliable processes is not that easy. E.g. Supplier's immaturity (wrong calibration).
- Lack of knowledge in AI techniques by TPIs
- Cybersecurity risks and data management

Use of AI – misperceptions and challenges.

Misconception 2: Manufacturing is a dirty industry.

- Dirty environment, old and dusty.

New concepts: New factories are so clean. Lack of human interaction reduce the PV cell break and so the debris all around. Use of smart tools and automation in precise, often sterile processes. Image of smoky factories doesn't match with today's reality, being pioneers of clean-tech innovation.

Challenges:

PV module factories have a learning opportunity from Cell factories.

Integration from Cell to module (AI & Robotics)

Temperature and humidity controlled conditions improvement.

Use of AI – misperceptions and challenges.

Misconception 3: Manufacturing doesn't move with times.

New concepts: Manufacturing processes are so different than 15 years ago. It is in constant evolution from human assembly to a combination of human expertise with technology comes together.

Challenges: Legacy systems (older, established technologies and software that are still in use on manufacturing lines) are still essential for smooth operations. AI can be useful here too:

- **They lack connectivity for real-time data exchange.**
- **Often use proprietary protocols or outdated interfaces.**
- **Difficult to integrate with cloud-based AI platforms or advanced analytics tools.**
- **Upgrading them can be costly and risky, since they are critical for smooth operations.**

Use of AI – misperceptions and challenges.

Misconception 4: **Manufacturing doesn't prioritize Quality and Sustainability**

New concepts: **Clean sources of energy, Sustainable supply chain, tighten efficiency and circularity to make sure sustainability is a priority ensuring top quality is provided.**

Challenges:

Lack of reliable Integrated Auditor firms impede performing Integrated audits.

Supplier to increase transparency and data availability (we still face issues with Tier 2 and above)

Conclusions - Highlights

Conclusion - Highlights

Strengths and key focus areas:

Most suppliers align with **Lightsource bp's specific requirements and core values (safety, integrity, respect, sustainability, and drive.)**

There is a strong emphasis on quality and sustainability through clean energy sources, sustainable supply chains, and improving efficiency and circularity.

AI is to stay and to boost product Quality and Reliability.

Conclusion - Highlights

Supplier Areas for Improvement

Alignment with LSbp Requirements: Ensure full compliance and understanding of LSbp standards.

Transparency in Commitments: Avoid agreeing to all requests without feasibility checks; demonstrate realistic capabilities.

Automation Enhancement: Increase automation levels to improve efficiency and consistency.

Effective Use of AI: Optimize AI applications to add value rather than misapply technology.

Consistency in BOM Quality: Reduce variability and maintain high-quality standards across all Bill of Materials.

Third-Party Inspection (TPI) Areas for Improvement

Client-Tailored Approach: Actively listen and respond to client needs and expectations.

Alignment with LSbp Requirements: Ensure inspection practices fully adhere to LSbp standards.

AI Competency Development: Strengthen skills in AI-based assessment and analytics.

Integrated ESG + Quality Solutions: Implement reliable, unified systems for ESG and quality compliance.

Resource Strategy: Minimize reliance on freelancers to ensure consistency and accountability.

Q&A