GEN3
PRECISION AS STANDARD

AutoSIR2+ CASE STUDY

Advancing SIR and Electromigration Testing Through Automation

SolderKing assembly materials ltd

BACKGROUND

SolderKing Assembly Materials Ltd is a leading UK solder and flux manufacturer. The company develops and manufactures an advanced portfolio of innovative solder pastes, cored solder wires, liquid fluxes, and rework gels. Backed by an in-house team of engineers, SolderKing works directly with contract electronics manufacturers (CEMs) and OEMs to optimise assembly processes

SolderKing's testing experience dates back to early industry standards such as Bellcore TR-NWT-000078 and ANSI IPC-SF818, with surface insutlation resistance testing being the fundamental starting point. Originally SIR testing was conducted using hand-soldered cables and custom-built rigs. While these approaches were sufficient for earlier requirements they relied heavily on manual processes and operator skill, limiting efficiency and repeatability.
As standards progressed to more demanding specifications, including GR-78 CORE and IPC J-STD-004, testing requirements became significantly more complex. Continuous monitoring in particular, emerged as a critical requirement—rendering traditional manual setups impractical.

AT A GLANCE

Problems our customer faced

- Manual, hand-soldered setups created high labour demands and inefficiency.
- Custom rigs limited repeatability, scalability, and consistency.
- New standards required continuous monitoring that manual systems couldn't support.
- Increasing complexity made compliance with traditional methods difficult.

CHALLENGE

As industry standards evolved into more rigorous and complex requirements—such as those introduced in later revisions like GR-78 CORE and IPC J-STD-004—manual testing approaches became increasingly impractical. A key shift was the introduction of continuous monitoring requirements, which made traditional setups not only inefficient but effectively unworkable for compliance.

The customer needed a solution that could:

- Meet stricter and evolving testing standards
- Provide continuous, reliable monitoring
- Reduce manual workload and variability
- Support both SIR and electromigration testing for ongoing development projects

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SOLUTION

The adoption of automated SIR testing systems marked a turning point. Transitioning first to a rack-based AutoSIR system, and later to the AutoSIR2+, significantly improved testing efficiency and reliability. These systems enabled continuous monitoring, streamlined workflows, and ensured compliance with modern standards.

Key upgrades included:

- **Automated data acquisition and monitoring**, eliminating the need for manual observation
- **Rack-based architecture**, allowing scalable and organized test setups
- **Improved connector design in newer racks**, enhancing durability and reliability over long-term use

AT A GLANCE

Benefits

- Automated, continuous monitoring ensured full standards compliance.
- Significant reduction in manual workload and human error.
- Improved reliability and consistency of test results.
- Scalable rack-based system supporting long-term development and testing.

I have been performing SIR tests for over 35 years to older standards like Bellcore TR NWT 000078 and ANSI IPC SF818 the forerunners to Bellcore GR78 Core and IPC JSTD 004, hand soldering cables and using home made SIR rigs. This was before the requirement for constant monitoring,

Life not only became much easier with the rack system of the Auto SIR but would have been impossible to meet the requirements of the later versions of the standards. The AutoSIR2+ has performed well and performing SIR and Electromigration tests has become the basis for most development projects to build on.

The newer rack with what seems to be a more robust connector has proven to be excellent. Hopefully it will give me many more years reliable service. GEN3 have also been very good, spending the time to answer any technical questions for any unfamiliar tests. Thanks GEN3!

Chris Ward - Chemist

Solderking

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RESULTS

The implementation of automated SIR systems transformed the testing process:

- **Efficiency Gains**: Tasks that were previously labor-intensive became streamlined and repeatable.
- **Standards Compliance:** Continuous monitoring requirements were fully met without added complexity.
- **Reliability:** The AutoSIR2+ system demonstrated consistent performance over extended use.
- **Development Enablement:** SIR and electromigration testing became foundational tools in product development workflows.

The newer rack system, featuring a more robust connector design, further improved operational stability and is expected to support many more years of reliable service.

SUPPORT AND COLLABORATION

Choosing an electronics reliability solution requires more than just capable equipment—it requires a partner who can provide ongoing technical support. GEN3 ensures a smooth transition from legacy systems to modern automated testing, with responsive expertise that helps customers confidently implement, adapt, and maintain complex SIR and electromigration test programmes.

CONCLUSION

This case highlights the evolution of SIR testing from manual, custom-built setups to advanced automated systems capable of meeting modern industry demands. By adopting AutoSIR technologies, the user not only overcame the limitations of earlier methods but also established a reliable and scalable testing foundation for future development work.

The combination of robust equipment and strong technical support has proven critical in maintaining high standards and long-term operational success.