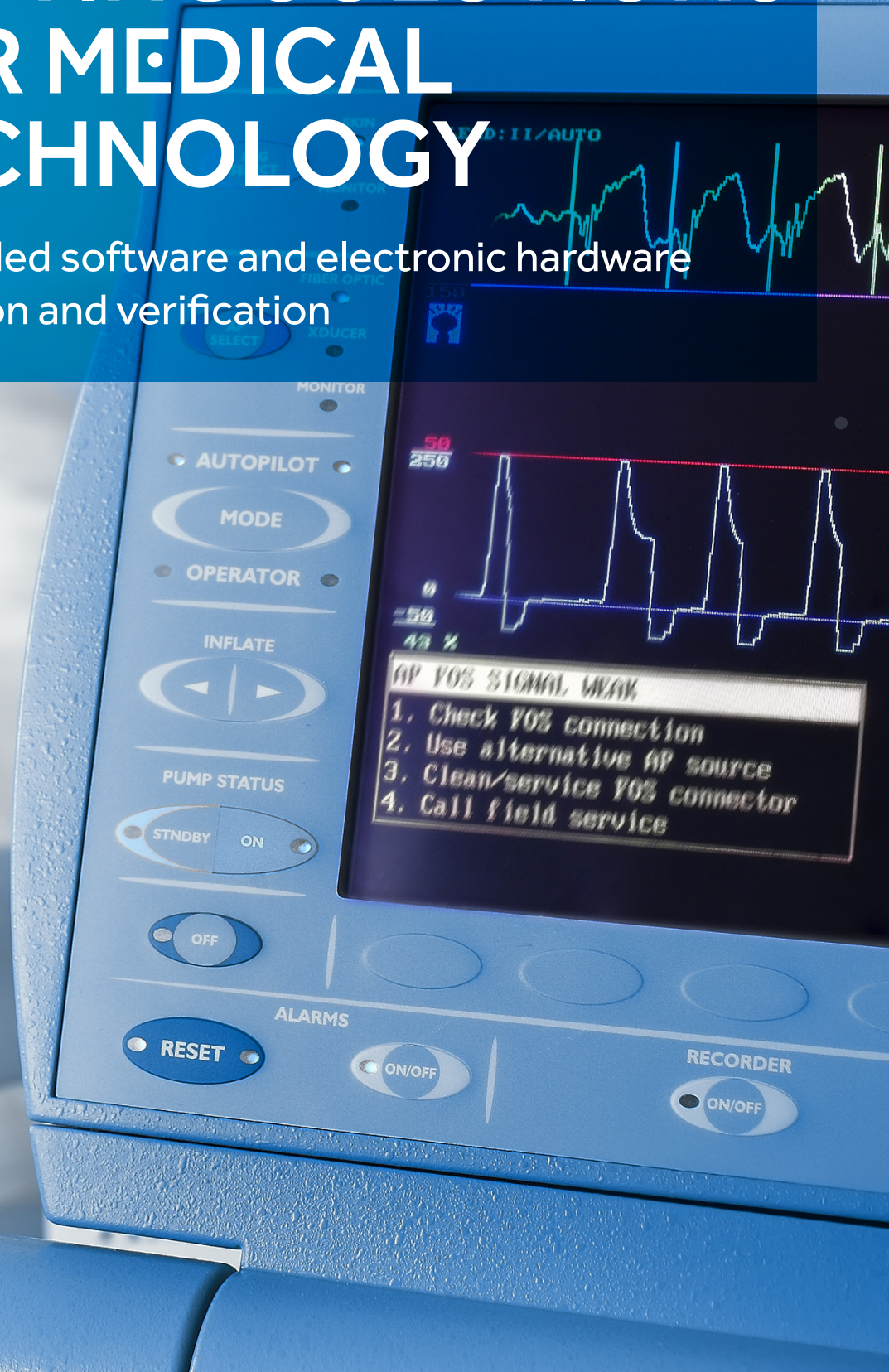# CYIENT

AUTOMATED TESTING SOLUTIONS FOR MEDICAL TECHNOLOGY

Embedded software and electronic hardware validation and verification

Cyient designs and fabricates complete turnkey Automated Testing Equipment (ATE) for use on life science and medical devices. We are currently the exclusive preferred supplier for software, hardware, and ATE for medical device manufacturers.

The Cyient Advantage

Cyient understands that both schedule and budget are at risk during the development lifecycle of a project. We can immediately put our expertise to work in order to help your team effectively plan and execute the right tasks, at the right time, and in the right order, to ensure that all objectives are satisfied as per schedule.

Our independent validation and verification (V&V) services provide a thorough analysis of your medical device to support your FDA/CE Mark submission. This is especially vital for companies who may only have a limited number of employees and are not able to provide the necessary level of independence required during the review processes. Medical device manufacturers are responsible for maintaining strict regulatory compliance during product development. Cyient assures specific standards of performance, quality, safety, and efficiency are met to save our customers time and money.

IEC 60601 and IEC 62304 Software Systems for Medical Control and Protection

Cyient provides services for projects utilizing both IEC 60601 and IEC 62304 Electrical Engineering Standards for medical applications. From developing robust software and electronic hardware requirements, to verification and validation testing, Cyient has the knowledge and expertise to support your project's entire development lifecycle from start to finish at any Safety Integrity Level. We are also compliant with ISO 13485 and CMMI Level 3.

Automated Testing Equipment

Cyient is expanding automated testing solutions into new industries while controlling cost and schedule under firm-fixed price contracts. This business model is designed to give your company a competitive advantage in validation and verification testing of medical applications.

We've developed fully automated testing equipment stations used to test complex Magnetic Resonance Imaging (MRI) components for medical device manufacturers. In addition, we have tools and test environments to verify software and complex hardware implementations against their requirements using standardized test case and procedure templates. This automation is accomplished without scripting code, which allows engineers to develop, review, debug, and execute with optimal efficiency. We can provide support in the following areas:

Reporting
Real-time reporting of data for analysis. Test reports can be custom defined to project needs.

Save Time
Save time, resources, and money with our Automated Testing Equipment platforms.

Signal
Signal detection for automated testing of complex hardware in a variety of systems.

Integrate
Configurable and flexible based on different equipment and industry requirements.

- Modular development architecture
- Expandable I/O interfaces
- Completely customizable automation
- Standardized test templates (Procedures and results)
- Upgradeable, configurable, and mobile
- Intranet and internet accessible (Remote access and batch test execution)
- LabVIEW/TestStand
- C/C++/Python/Java
- Matlab Simulink

- Upgrades to the existing systems
- Development of device drivers and integration of new test equipment
- Design of automated test cases and procedures for verification of customer requirements (Procedure, system, software, and/or hardware level)
- Risk assessment and hazard analysis consulting

Medical Industry Experience Cyient's Automated Test Equipment (ATE) – Production Testing Solution

Cyient's Automated Testing Equipment is used by a major medical supplier's production staff to test sophisticated Magnetic Resonance Imaging (MRI) devices at various stages of production, prior to liquid helium cooling and magnetic field ramping. The ATE is enclosed within a rugged, wheeled 19-inch 18U rack mount, allowing flexibility to move near the large magnet coils under construction, to perform tests. A 2x96 multiplex array and custom cable assemblies enable the ATE to perform hundreds of point-to-point resistance and diode measurements, with selectable polarity.

The automated test execution is controlled by a Graphical User Interface (GUI) allowing easy touch-screen display interaction by staff. The ATE provides the customer with a production testing solution which can quickly and conveniently test medical devices at each step in the production cycle to ensure that critical circuits are operational and meet all of their requirements.

Our ATE solution is a readily scalable and configurable piece of automated acceptance test equipment. Its architecture and form factor have many potential uses for both production acceptance testing and as a development laboratory test equipment. Cyient's ATE technology streamlines time to market completion of product testing and certification.

Cyient Test and Measurement Automation

- Design, develop, fabricate, document, and integrate fully automated test stations
- Automation of manual processes and tests
- Fully functional Graphical User Interfaces (GUI)
- Custom cable fabrication and assembly
- Integrate barcode scanners, magnetic card readers, and other equipment
- Validation, verification, qualification, and calibration
- Customize PCBs (Interface, Multiplex, Signal Switching)
- Customize Data Acquisition Systems

Medical Industry Projects

- Developed drivers for Rhode and Schwartz Spectrum Analyzers (300Mhz to 9GHz)
- Designed drivers for Agilent/HP Oscilloscopes
- Designed drivers for Agilent DMMs and Power Meters
- Designed drivers for Rhode and Schwartz Signal Generators
- Automated manual procedures for the test equipment listed above

About Cyient

Cyient (Estd: 1991, NSE: CYIENT) provides engineering, manufacturing, geospatial, networks, and operations management services to global industry leaders. We leverage the power of digital technology and advanced analytics capabilities, along with domain knowledge and technical expertise, to solve complex business problems. As a Design, Build, and Maintain partner, we take solution ownership across the value chain to help our clients focus on their core, innovate, and stay ahead of the curve.

Relationships lie at the heart of how we work. With more than 15,000 employees in 22 countries, we partner with clients to operate as part of their extended team, in ways that best suit their organization's culture and requirements. Our industry focus spans aerospace and defense, medical, telecommunications, rail transportation, semiconductor, utilities, industrial, energy and natural resources.

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