



Company Profile

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Email: info@qst.ae

MISSION & FOCUS

To be one of the most trusted sources of 3D Scanning, Measurement, Designing and Imaging technology for the region within Middle East & Pakistan.

Focus On

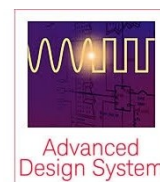
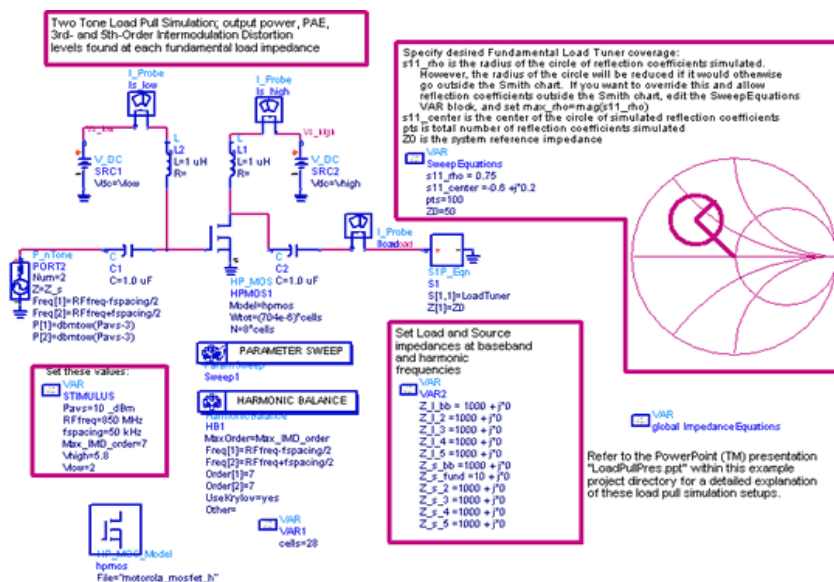
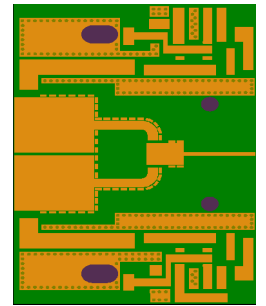
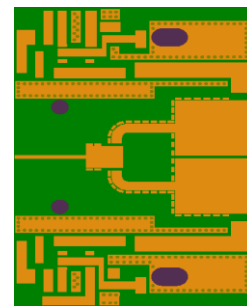
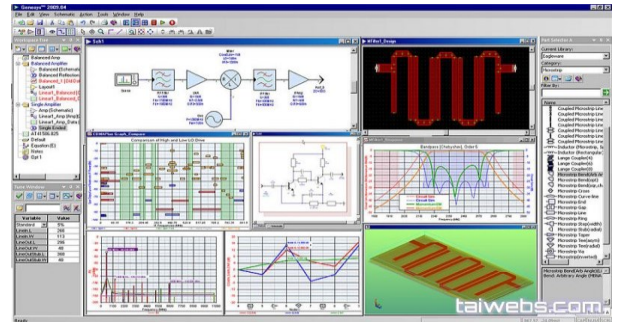
- Automotive Engineering, Design & Manufacturing facility
- Cable Harnessing, Electrical Engineering, System Integration, and PCB Design
- Digital Twin- 3D Documentations (Oil & Gas and Heritage) sectors
- Quality Inspection and Revers Engineering Solutions & Services
- 3D Printers Additive Manufacturing (Metal and Polymers SLM,SLA & FDM)

QST Offices



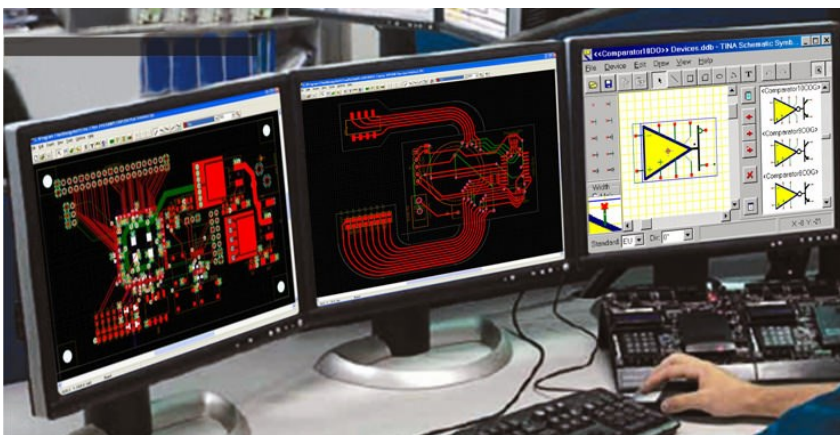
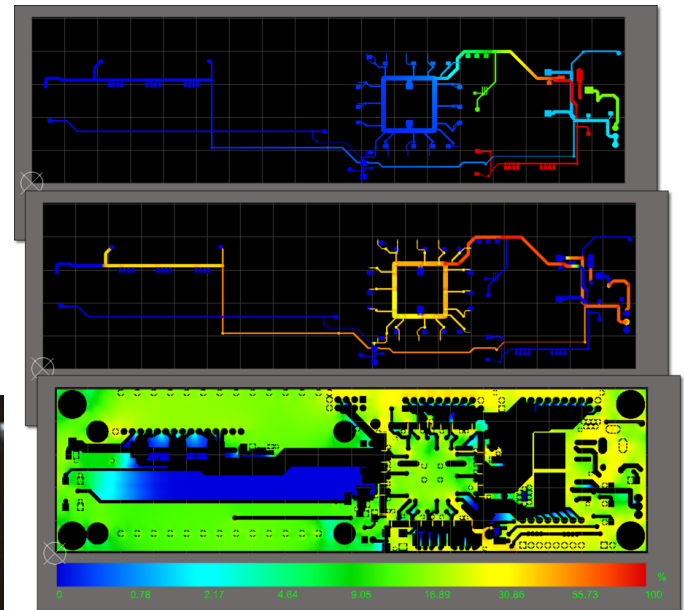
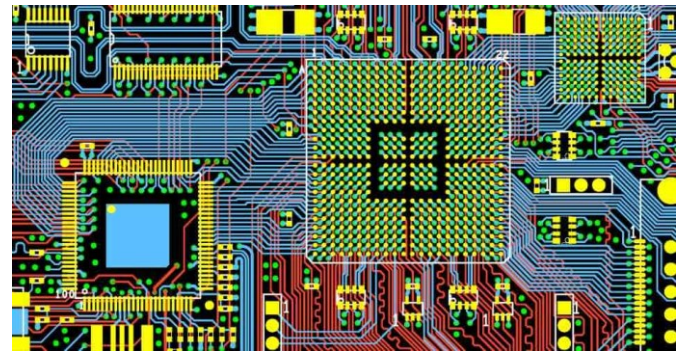
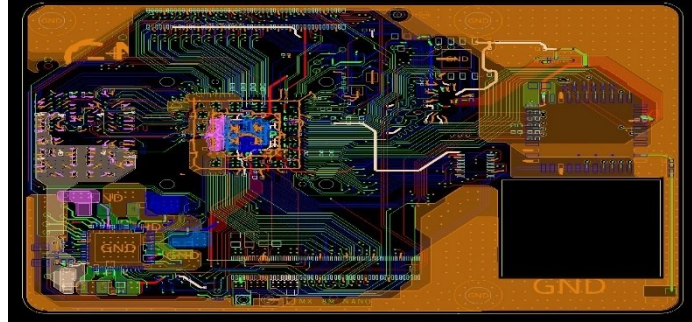
RF Systems Design Capabilities

- State of the art GaN and LDMOS-based technology for RF power amplification
- Design and development of high-power pulsed RF Amplifiers up to 1kW for UHF band, L-Band, S-Band Radar Applications
- Current, temperature, RF power status monitoring & RF open circuit protections
- Design and implementation of RF Front Ends with high-power RF switches (T/R Switch), Circulators, Pin diodes, Limiters, Filters
- Design and implementation of highly linear and sensitive receivers with Low Noise Amplifiers (LNAs), Logarithmic Amplifiers, Automatic Gain Controls (AGC), Mixers, Phase shifters, IF filters
- Design and implementation of Local Oscillators using Phase Locked Loops (PLLs), VCOs, SAW Oscillators.
- Micro-strip, Coplanar Waveguide (CPWG), Transmission Lines



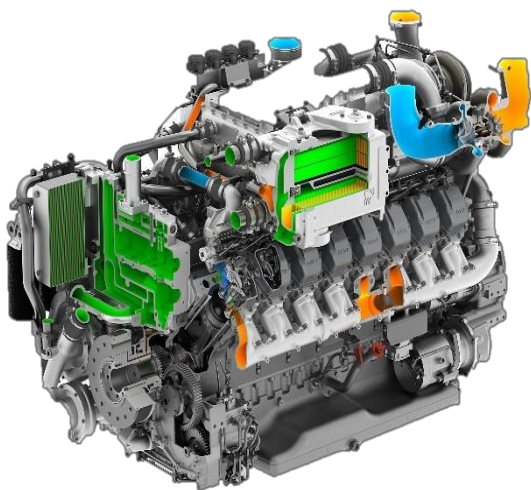
PCB Design Capabilities

- Design single-sided, double-sided and multi-layered PCBs up to 22 layers (IPC 2221 and IPC6012 Class3/A) for space and military avionics, Automotive, and Internet of things Applications.
- HDI, Rigid, metal-core, mixed dielectric, Flex-Rigid, and Flex PCB designs including digital, control, power and mixed-signal printed circuit boards and backplanes etc.
- Expertise in designing tools like Altium Designer and cadence (Allegro, DEHDL).
- Design implementation considering EMI/EMC, material selection, stackup, PDN analysis, Impedance, signal integrity and Differential calculations.
- High-density interconnects using vias in pad, controlled depth back drill, blind and buried vias.
- High current and high voltage designs.
- Schematic capture, library management and 3D modelling.
- Design for Manufacturability (DFM), Design for Testability (DFT), Gerber generation, Fabrication files Review using CAM software.



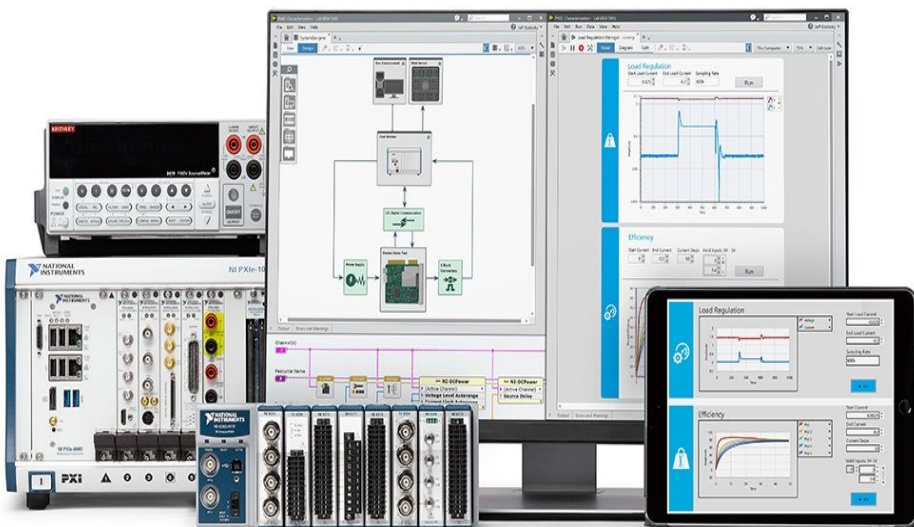
Mechanical Design Capabilities

- 3D Modeling by Using industry-led software (SOLIDWORKS and CREO).
- Finite Element Analysis: Linear, Non-Linear, modal, vibrational and impact Analysis by using Ansys Mechanical, LS-DYNA and SOLIDWORKS.
- CFD Analysis: Conjugate fluid flow analysis, Electronics Cooling, External, and Internal Fluid Flow analysis by using Ansys Fluent and SOLIDWORKS.
- Design Optimization, Rapid Prototyping, and Reverse Engineering, SWAP-C (Size, Weight, Power & Cooling).
- Design Renderings and Animations for Product Visualization.
- Test & Measurement: Testbench Rack Cabinets and Standard 19-Inch Enclosures and custom rugged standalone and backplane-based chassis and enclosures.
- Rugged Design of systems to meet various standards (e.g, MIL-STD-810, MIL-S-901, DO-460, MIL-STD-1472, IP67, IEC Design Standards).
- Cable Harness Design of simple to complex wire harnesses, optical & RF cables to provide complete connectivity solutions.



Testing and Measurement Capabilities

- Efficient usage of the Spectrum Analyzer, Signal Generators, Vector Network Analyzer, Peak Power Meter and Mixed-Signal Oscilloscopes.
- Our Automated Test Solutions are designed to help our clients test their RF/Electronics Products more efficiently and reduce test time.
- The tools we use include LabVIEW, Test Stand and PXIe. Various hardware equipment is controlled remotely through software to minimize human error.
- We conduct thorough RF testing, signal processing and optimization to ensure our clients receive high-quality products that meet their needs. We take pride in our attention to detail and commitment to quality.



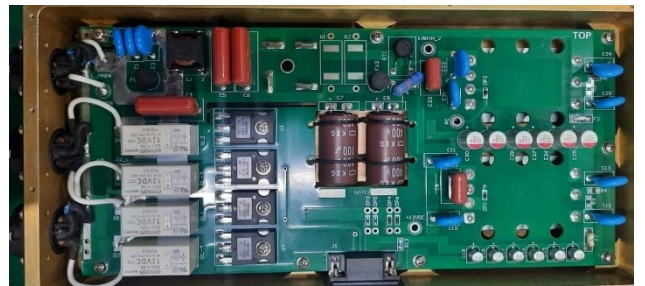
Embedded Systems Design Capabilities

- Integration and development of embedded systems for a wide range of Military, tactical and communication products.
- Middleware and Custom API Development which includes Design and Implementation of HAL, Custom APIs for peripherals, crowd-controlling systems, Vehicle Control Unit (VCU) and Customization of HMI framework.
- Implementation of Real-time Operating Systems (RTOS), drivers, middleware, and hardware security modules (HSM) with NIST and FIPS-approved standard algorithms and open-source protocols on embedded processors.
- Embedded Firmware & Software Design on VxWorks, Linux and Windows-based embedded OS.
- Network/ telecommunication/ Cyber security solutions designed with embedded systems.
- Design of digital signal processing and crypto algorithms on embedded processors i.e. Xilinx/Intel/Microsemi FPGAs and microcontrollers.
- Embedded systems firmware development using programming languages - C/C++, Verilog, VHDL, Python, Java and Assembly language.
- Capabilities in multiples IDE such as Codesys, Qt, and Visual Studio for customized application development.
- Expanding in SDRs, zynq SOCs and SOMs



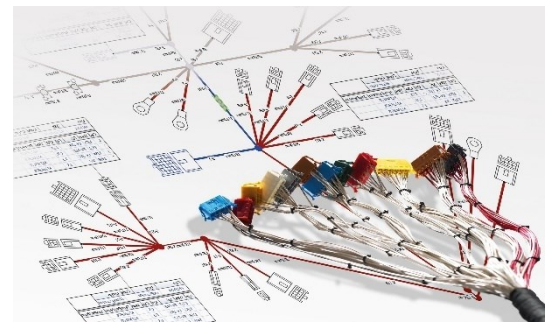
Power Supplies Design Capabilities

- High-performance custom power supplies and conversion systems for defence and aerospace applications.
- AC-DC and DC-DC power supplies for high reliability and harsh environment applications.
- Pulsed power supplies for fast and transient response designed specifically for pulsed applications, including radar applications.
- Customized Power supplies designed with a built-in test, digital control, inrush and surge protection.
- Customized design of rugged Power Distribution Units (PDU)
- Power calculations, power management and electrical routing.



Harness Manufacturing Capabilities

- **Expert Engineering & Design Capabilities**
Proficient in end-to-end harness development — including schematic design, 3D routing, loomfoil layout, tooling selection, harness flattening, and detailed assembly documentation.
- **Support for Build-to-Print & Build-to-Spec**
Whether starting from customer designs or engineering from scratch, we offer flexibility across both production models
- **Team of IPC-Certified Specialists**
Skilled in terminating a wide variety of connectors and terminal types, adhering to strict Aerospace and Defense standards. Extensive hands-on experience in harnessing for mission-critical Aerospace and Defense platforms — from UAVs to ground combat systems.
- **Advanced Testing Infrastructure**
Automated test capabilities covering continuity, high-potential (Hi-Pot), and insulation resistance to ensure every harness meets rigorous performance criteria.
- **Lean Production and Quality Systems**
Integrated with lean manufacturing principles and robust quality control, ensuring reliability, repeatability, and compliance with MIL and AS9100 standards.



Reverse Engineering & Quality Inspection Capabilities

At Quality Solutions (QS), we specialize in addressing the challenges of Reverse Engineering (RE) and Quality Control (QC) inspection. We've seen a wide range of practical applications—especially when it comes to supporting aging equipment and optimizing manufacturing processes.

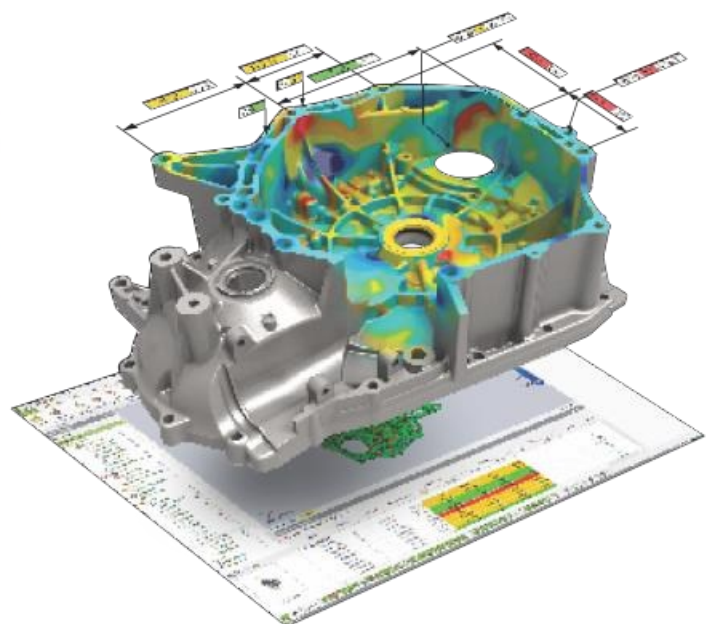
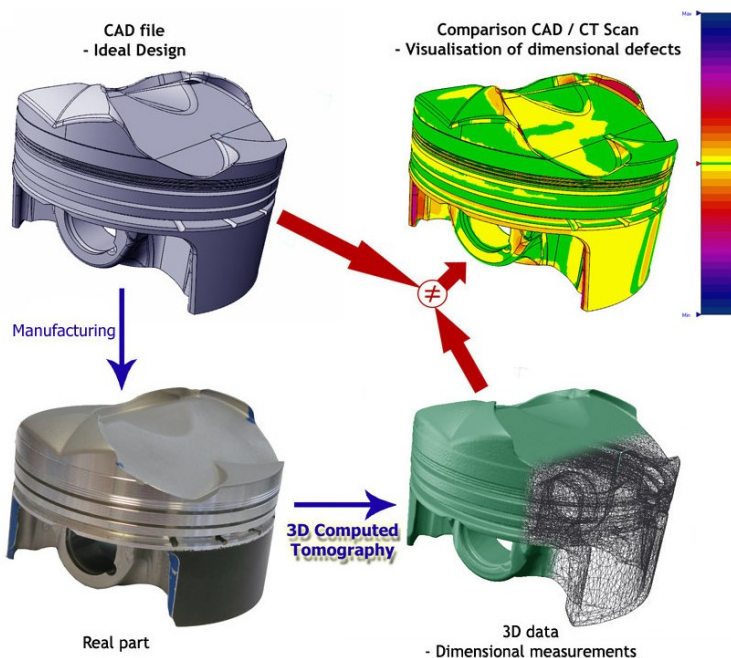
A common scenario occurs when a client's legacy machine finally breaks down, and replacement parts are no longer available due to the original manufacturer going out of business. In such cases, clients turn to QS. We step in to measure the damaged or worn component, then use CAD tools to digitally reconstruct or “heal” the part, creating an accurate 3D model or technical blueprint. These design files are then used to fabricate brand-new parts—whether through rapid prototyping or traditional CNC machining—bringing the machine back to life.

Benefits of Reverse Engineering:

- Reproduce components for outdated or unsupported equipment
- Minimize downtime by fabricating parts no longer available on the market
- Avoid high OEM replacement costs
- Digitally rebuild lost or undocumented designs
- Create accurate CAD files for future use and modifications
- Analyze and enhance existing components for better performance, durability, or efficiency
- Compare physical parts to original CAD models for deviation analysis
- Enable functional testing before committing to full-scale production

Benefits of Quality Inspection:

- Verifies that parts and assemblies meet design specifications and tolerances
- Detects issues early in the production process
- Minimizes rework, scrap, and production delays
- Meets industry standards (ISO, AS9100, etc.) and regulatory requirements
- Provides traceable inspection records for audits and certifications
- Streamlines quality control processes with automated and digital inspection tools
- Improves workflow through real-time quality feedback
- Enables root cause analysis and process optimization



3D Documentation – Digital Twin Capabilities

At **Quality Solutions (QS)**, we offer advanced **3D Documentation** and **Digital Twin** services designed to support industries ranging from **Aerospace**, **Oil & Gas** to **Cultural Heritage Preservation**. Our capabilities allow clients to visualize, analyze, and manage physical assets in the digital realm with precision and confidence.

1. 3D Documentation

High-Resolution Scanning

Capture detailed geometry of physical structures, machinery, or artifacts using laser scanning and photogrammetry

Accurate As-Built Models

Create precise 3D models for maintenance, renovation, or historical archiving

Comprehensive Asset Records

Maintain a digital archive of physical assets for long-term reference and compliance

2. Digital Twin Development

Real-Time Data Integration

Link physical systems with digital models for real-time monitoring, diagnostics, and performance analytics

Predictive Maintenance & Lifecycle Management

Use digital twins to anticipate wear and schedule maintenance before breakdowns occur

Simulation & Scenario Testing

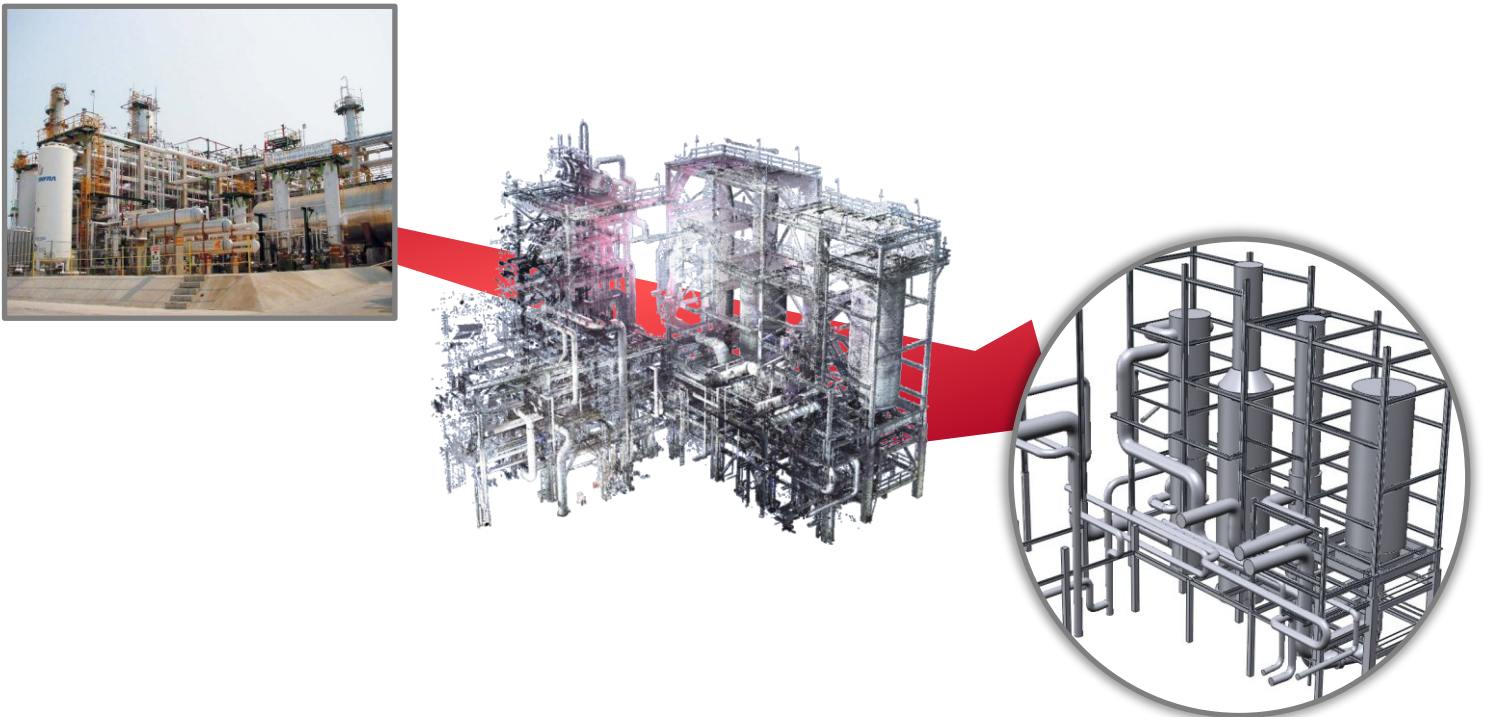
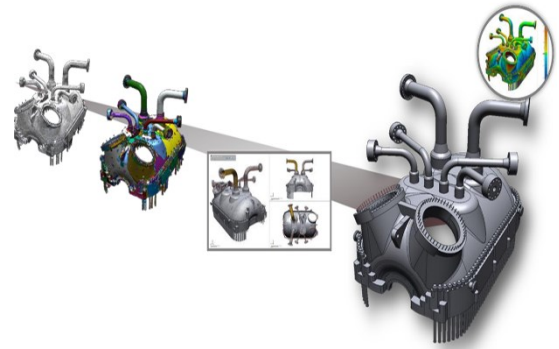
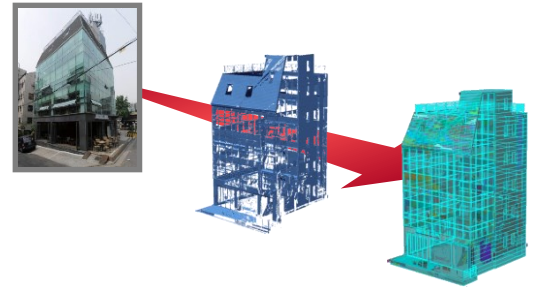
Safely test design changes, stress conditions, or operational strategies in the virtual environment

3. Industry Applications

Oil & Gas: Pipeline and refinery documentation, asset integrity checks, and remote monitoring

Heritage & Archaeology: Digital preservation of monuments and artifacts for restoration or virtual display

Manufacturing & Engineering: Virtual commissioning, layout optimization, and quality verification



Armored Vehicle Tooling Capabilities

- Specific requirements of Armored vehicle manufacturing, ensuring seamless integration into existing production processes.
- We employ cutting-edge technology and precise engineering techniques to develop tooling solutions that enhance efficiency and accuracy in Armored vehicle production.
- With stringent quality control measures in place, our tooling solutions are designed to deliver consistent performance and reliability, meeting the highest industry standards.



Engineering Automation & Robotic CNC Solutions

QST specializes in delivering high-quality **design, engineering automation, and integrated hardware/software solutions** that are **cost-efficient, timely, and technologically advanced**. With cutting-edge tools, state-of-the-art systems, and a talented team, we help clients achieve exceptional results across industries.

Smart CNC Robotic Automation for the Future

As robotic technology becomes more advanced and accessible, **automating CNC machines** is rapidly gaining traction. While some CNC machines operate with part catchers, **vertical milling centers** like the **Haas VF2** require external automation to maintain continuous productivity.

QST evaluates the two primary automation options:

- **Collaborative Robots (Cobots)**
- **Industrial Robots**

Our comprehensive analysis includes:

- **Cell Floorplan Design**
- **Risk Assessment**
- **Overall Equipment Effectiveness (OEE) Evaluation**
- **Total Cost Analysis**



Conclusion:

For machine tending applications involving the Haas VF2 vertical milling centre, **industrial robots** outperform collaborative alternatives—offering greater efficiency, reliability, and cost-effectiveness.