



Corporate Profile

HSquared, Inc. was established in 1994, providing the manufacturing industry with an alternative source for coordinate measuring machine (CMM) programming, on machine product verification, and CAD engineering services. Our headquarters are located in Albuquerque, New Mexico with a satellite office in Wilmington, North Carolina, including a growing service to the northwest region of the continental US.

HSquared, Inc. is supported by thirty-eight combined years of quality engineering, CMM part programming, 3D CAD model development, reverse engineering, data reduction/analysis, and SPC implementation experience acquired from working in aerospace, medical, and related industries. We have been highly successful helping our customers create specific metrology and process improvement solutions centered around rotating turbo machinery, airfoils, carbon graphite structures, alloy structures, investment casting, and fabrications among others.

HSquared, Inc. engineers are uniquely qualified to use a variety of industry leading engineering and production tools as well as create custom applications to increase productivity. We distinguish ourselves from our competitors by providing services that make use of a wide cross section of engineering/programming solutions rather than concentrating on just one. Our extensive experience utilizing these solutions allows us to make recommendations that would best suit our customers' particular and unique needs. All of our customer support personnel have extensive backgrounds using ASME Y14.5 its applications and proper implementation.

HSquared, Inc. offers manufacturing customers a variety of basic and custom services including:

- Tecnomatix/eMPower™ modeling and part programming.
- Custom eMPower™ VCL solutions and productivity tools.
- LK CMES/WinCMES part programming.
- Brown & Sharp MM4 part programming.
- 3D CAD modeling utilizing EDS Unigraphics®.
- 3D CAD modeling utilizing AutoDesk Mechanical Desktop®.
- Custom CAD application utilities utilizing GRIP and AutoLisp®.
- Custom CMM programmer/operator training.
- EDS IMAN® utilization consultation.

HSquared, Inc. realizes that many companies utilize their CMM equipment for tollgate inspection only. While this practice was commonplace when CMMs were introduced to industry, it has become quite expensive and nonproductive in today's manufacturing environment. In today's highly competitive concurrent engineering marketplace, it has become imperative to combine CMM, machine tool, and CAD technologies to provide up-front comprehensive engineering solutions. These solutions include taking advantage of parametric and associative modeling to eliminate repetitive part programming that occurs in the concurrent engineering environment.



Numerically controlled machine tools are also frequently under utilized. **HSquared, Inc.** can provide solutions to not only provide more accurate parts but also provide on-machine part verification thereby using the machine as an integral piece of the quality process. This solution allows the same part programs to be run on both the machine tool and the CMM. In this scenario the CMM is now utilized as audit tool rather than a tollgate inspection tool or as a planned operation.

In addition to meeting all of your basic and advanced part programming requirements, **HSquared, Inc.** is capable of offering extensive CAD modeling services. **HSquared, Inc.** offers engineering solutions utilizing your existing CAD data or can create and utilize a CAD model based on your organizations' specifications.

All part programs are written so they may be operated on a turnkey basis and are provided with sufficient documentation to be executed by operators equipped with only basic training. Most part programs can be written and completed off-site thereby minimizing valuable machine time at the customers' site.

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STANDARD SERVICES

CMM Part Program Engineering

HSquared, Inc. can engineer component part programs to meet the specifications and requirements of your company thereby maximizing the value of your CMM, machine tool, or data acquisition system. Part programs can be generated on or off-site at the customers' discretion. **HSquared, Inc.** provides prompt service and solutions with quick turn around on simple or complex component/fixture programs.

In addition to utilizing the CMM's native programming language(s), **HSquared, Inc.** offers programming solutions utilizing Tecnomatix eMPower™ Quality. eMPower™ Quality offers complete GD&T definition/analysis, gauge definition, probe path programming, machine tool interface, data post processing and stack up analysis.

CAD/CAM Engineering

HSquared, Inc. has a full complement of state of the art equipment, software, and experience to offer comprehensive CAD modeling solutions. These engineered solutions can include the following; Completion/modification of your existing CAD model, for future data analysis and/or part program generation. Fully parametric and associative CAD modeling for part family integration. Use of digitized or scanned data to construct an accurate 3D CAD model of the customers' prototype, master model, mold or product and subsequent comparison to an existing CAD model or future products (i.e., reverse engineering). **HSquared, Inc.** can quickly and efficiently generate CMM programs, for complex 3D surfaces and normal vector analysis using either supplied or constructed CAD models.

COMPREHENSIVE TRAINING SOLUTIONS

Tecnomatix eMPower™ Quality Training:

- Basic eMPower™ Quality programming and fundamentals
- Advanced eMPower™ Quality programming
- Basic shop floor operator's class
- Advanced shop floor operator's class
- VCL programming
- Customer specific programming classes available

LK CMES Training:

- Basic CMES programming and fundamentals
- Advanced CMES programming
- Customer specific programming classes available

HSquared, Inc. is committed to offering the manufacturing community quality verification part programs, training, and engineering solutions while providing a cost competitive alternative to an in-house programming, modeling, and engineering staff.

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STANDARD PRODUCTS

Universal CMM Calibration Comparison Standard

HSquared, Inc. has developed a unique process, by which, a CMM can be statistically tracked (on any periodic basis). Utilizing the Comparison Cube allows continuous tracking of the following CMM measurement uncertainties.

X, Y, & Z axis linear verification
X, Y, & Z axis repeatability
XY, XZ, & YZ squareness verification
Probe head articulation repeatability
Volumetric accuracy



All comparison cube measurements are based on an annual or bi-annual OEM factory certification, of the CMM. The comparison cube data is statistically analyzed based on a mean established immediately after B89 or VDI/VDO certification. This process eliminates the need for costly NIST certification, of the comparison cube. In addition to providing a continuous measurement uncertainty history, the acquired data can serve as an audit history as well as give indications of CMM reliability.

HSquared, Inc. can supply both the comparison cube artifact and the standard/custom CMM program. Or, as an alternative, customers may choose to build the comparison cube themselves and purchase the standard/custom CMM program separately.

Programming Utilities

For our customers using Unigraphics®, AutoDesk Mechanical Desktop®, eMPower™ Quality, or CMES we offer a custom utilities to generate X, Y, Z, i, j, k normal vector point data. The output, of this utility, can be customized to match the syntax of any native CMM language. In addition, we have a variety of custom VCL utilities designed to increase programming productivity such as automatic tolerance generation and automatic iterative alignment.

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