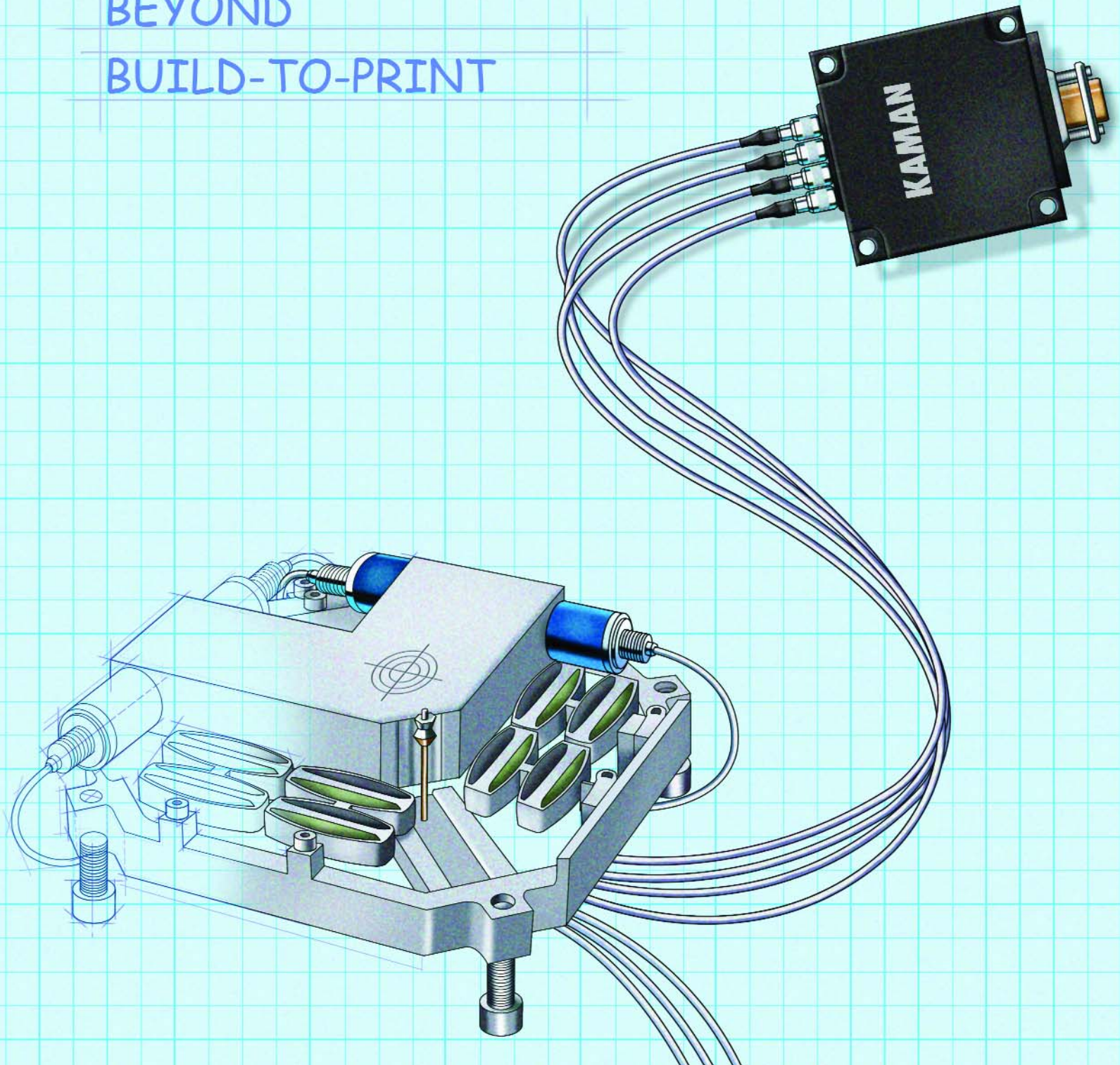


KAMAN

HIGH-PRECISION
ELECTRO-MECHANICAL
ASSEMBLY

BEYOND
BUILD-TO-PRINT



WE HAVE MET THE CHALLENGE FOR RAYTHEON, BALL AEROSPACE, DRS OPTRONICS, AND APPLIED MATERIALS. LET US DO IT FOR YOU.

Welcome to Kaman Measuring System's high-precision, electro-mechanical contract manufacturing segment. An operating unit of Kaman Aerospace, Kaman Measuring Systems has been producing high performance non-contact displacement sensors for over 45 years, solving difficult applications in a wide variety of industries including aerospace, semiconductor manufacturing equipment, optics, energy, and medical.

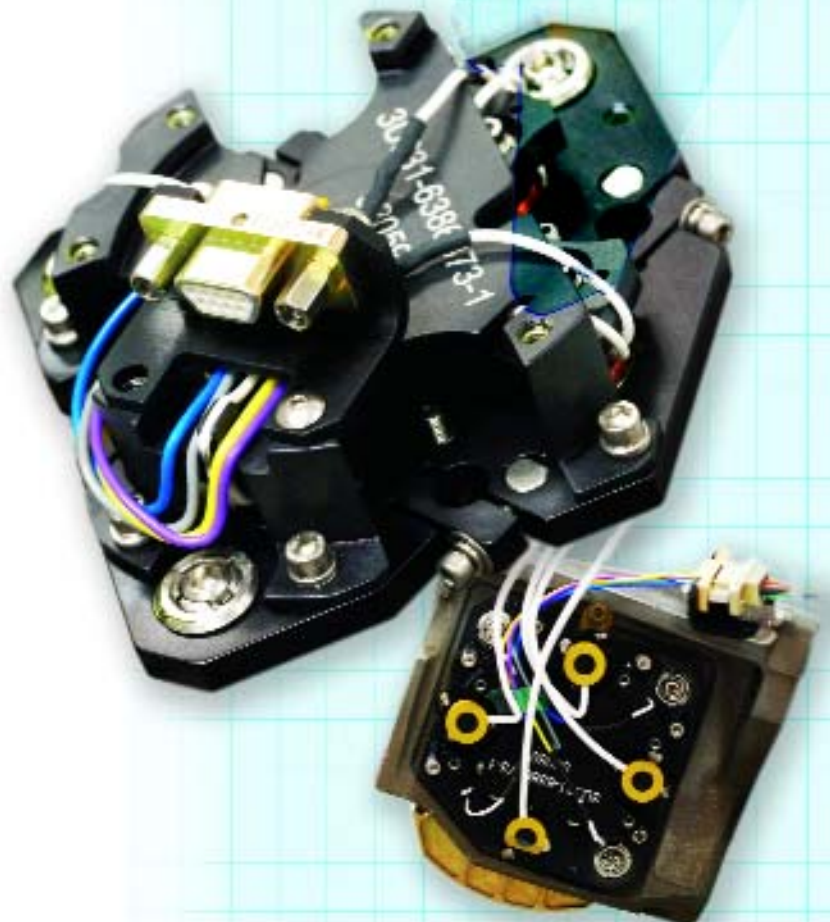
Founded in 1945 by Charles H. Kaman, recipient of the 1997 National Aeronautical Society's Wright Brothers Memorial Trophy, Kaman Aerospace has infused that founding entrepreneurial spirit into every business segment under its cognizance. With Kaman Measuring Systems, this has resulted in the formation of an elite group of highly skilled engineers, technicians and support personnel dedicated to producing your design, in volumes large or small, with repeatable performance that meets both the design specifications and schedule requirements.

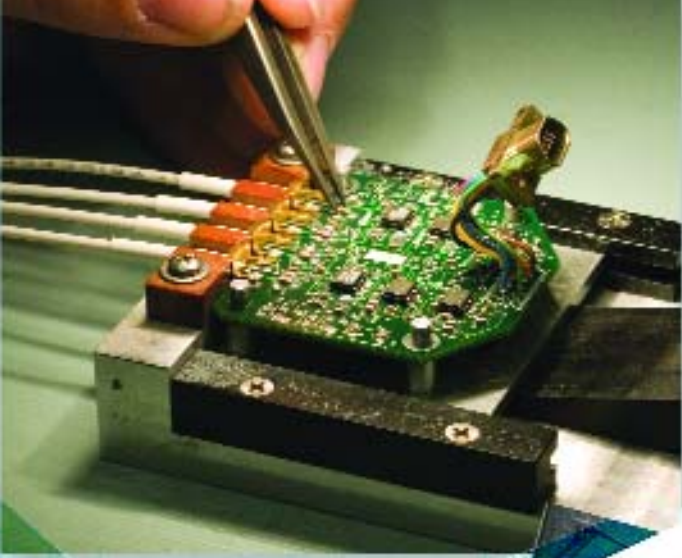
Using means and methods proven on programs for companies that include Raytheon, Ball Aerospace, DRS Optronics and Applied Materials, our engineering, production, and management staff work closely with your materials management team to ensure that everything runs smoothly from first article to end-of-life buy.

Whether you have experience outsourcing critical high-precision assemblies, or if this is the first time you've considered doing so, Kaman's Build-to-Print (BTP) group offers an experienced, professional team of manufacturing technologists and logistics experts that will work with you in all phases of the outsourcing process.



THE KAMAN STEPS TO SUCCESS





Clockwise
~ Electronic assembly and test
~ Full CNC machine shop
~ Class 100 clean room



FACILITY

- › Certified AS9100, ISO 9001
- › Class 100 cleanroom
- › 215,000 square foot facility on 36 acres of land
- › 150,000 square feet of manufacturing area
- › 220 employees

EQUIPMENT / CAPABILITIES

- › Program management
- › Laser interferometer calibration
- › Optics testing and optical assembly calibration
- › Laser, electron beam and gas-tungsten welding
- › Automatic test equipment
- › CNC machining
- › CMM inspection
- › Thermal testing
- › Shock testing
- › Microscopic inspections

**OUR ASSETS ARE MANY,
BUT WE ARE ALWAYS UPGRADING.**

**IF YOUR PROJECT NEEDS NEW
EQUIPMENT, WE'LL ACQUIRE IT.**

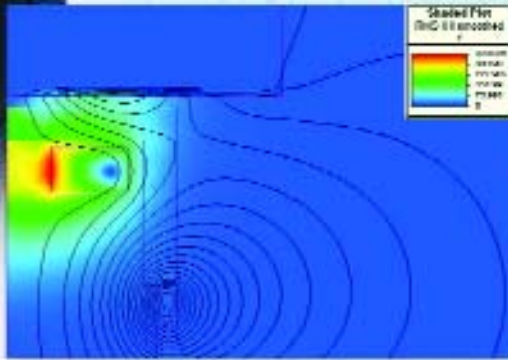


Theodolite incident angle measurement for optical assembly linearization calibration



RFQ/RFP REVIEW

The first step at Kaman BTP is a detailed analysis of the customer's design. This includes a check to establish what equipment will be needed to serve the project and whether manufacturing capacity would need to be expanded in the future. In other words, this is where we cover all the bases to ensure there are no bumps in the road to production.



PROPOSAL GENERATION

Success is in the details. A BTP proposal from Kaman covers more than price and delivery. We typically provide:

- › Vendor information, as applicable.
- › Process flow chart.
- › Details on any/all assembly and test equipment to be used.
- › Lead time for first article and detailed ramp-up schedule.
- › Any requirements in the RFQ/RFP that significantly impact the unit price, along with suggestions for cost-cutting alternatives.
- › Detailed information on key contacts in sales, production, and management that are committed to building a strong, working relationship.



CUSTOMER ACCEPTANCE

Kaman encourages dialogue. We invite you to visit our facility and meet face-to-face with the management team that will make your project happen. Together, we will carefully review our proposal, modify it, if necessary, and develop an agreement satisfactory to all.

FIRST ARTICLE

This is critical to ongoing quality and delivery. We need to know that we have produced exactly what you expected. At this point, anything that does not meet expectations is reviewed and corrected until everyone in your organization is on-board with moving forward.



Fast steering mirror assembly



Optical assembly final test

IN PRODUCTION

Production at Kaman uses the work cell approach. After first article acceptance, production of your assembly moves into its own work cell. Any dedicated tooling, fixtures, manufacturing, and test equipment also moves to the cell. The resulting “mini manufacturing facility” ensures consistent quality as well as on-schedule shipments.

At Kaman, the involvement of our engineering staff doesn't stop with winning the order. Engineering continues to be available to support the work cell with any design, materials, or process issues that may arise.

CONSIDER US A PARTNER

Kaman truly believes in partnering with our customers, and you can call on our depth of experience. We provide design for manufacturing, concurrent engineering, prototype testing, and other services. The benefit of involving Kaman as early as possible is shortened time-to-market.



Automated laser interferometer calibration



Steering mirror testing



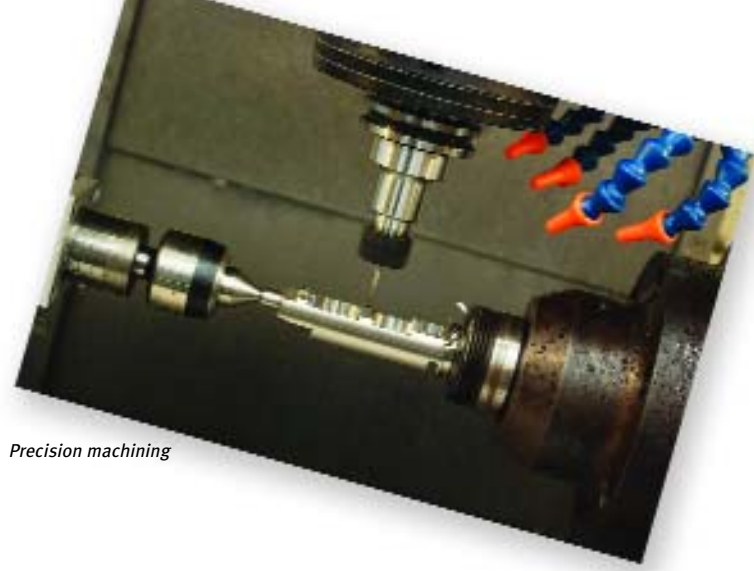
Above ~ Laser welding

Left ~ CNC machining





Thermal testing



Precision machining

WE'RE PART OF YOUR TEAM

Schedule slips can be one of the most costly events in the launch of a new product. We are always available for on-site support during initial integration of the provided assembly. Kaman's dedication to teaming with our customers is an advantage in keeping the schedule moving forward.

TAKE THE NEXT STEP

All of Kaman's Regional Sales Managers have hands-on experience in applications engineering, and they will be your initial point of contact. Please call or e-mail us at www.kamansensors.com to arrange a face-to-face meeting. We will discuss taking the first steps towards your successful relationship with the build-to-print specialists at Kaman.



X-ray analysis



Sensor assembly

PCAD design



KAMAN AEROSPACE CORPORATION

MEMORY & MEASURING SYSTEMS

MIDDLETOWN, CT, USA

www.kamansensors.com

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