METRA SCAN 3D™

R-SERIES

THE ROBOT-MOUNTED OPTICAL CMM 3D SCANNERS FOR AUTOMATED INSPECTION

CREAFORM

AMETEK®
ULTRA PRECISION TECHNOLOGIES

Accelerate your industrial inspection processes by bringing quality control as close to the part as possible. For companies wanting to get accurate results fast, Creaform has developed a robot-mounted optical CMM 3D scanner, the MetraSCAN 3D™ R-Series. Part of Creaform's MetraSCAN 3D lineup, this measuring system enables manufacturing companies harness the power of optical measurements and industrial automation directly on their production lines—and make quality control easier and more effective. In combination with industrial robots, the MetraSCAN 3D R-Series increases the reliability, speed and versatility of on-line inspection and quality control (QC) processes.

The 3D scanning device stands as an innovative robotized solution that can be seamlessly integrated into factory automation projects and guarantees optimal measurement accuracy and speed, providing increased productivity and product quality. The automated inspection solution is available in Standard and Elite versions.

FAST. ACCURATE. VERSATILE.
INTRODUCING THE METRASCAN 3D
R-SERIES SCANNERS

APPLICATIONS

INSPECTION

- On-line inspection in mass production, up to a few hundred parts per day
- On-line inspection of parts ranging from 0.5 to 3 m (1.6 to 10 ft.) in size
- Part-to-CAD analysis
- Supplier product quality inspection
- Conformity assessment of 3D models against original part or production tooling
- Conformity assessment of manufactured parts against originals

QUALITY CONTROL AND AUTOMATED INSPECTION WITH THE METRASCAN 3D R-SERIES

FAST: PERFORM INSPECTIONS OF UP TO A FEW HUNDRED PARTS PER DAY, DIRECTLY ON THE PRODUCTION LINE.

AUTOMATIC ALIGNMENT: INSTANT AND RELIABLE ALIGNMENT PHASE. OPTICAL REFLECTORS ALLOW AUTOMATIC DETECTION OF THE PART ALIGNMENT.

C-TRACK OPTICAL TRACKER: FITTED WITH HIGH-QUALITY OPTICS AND SPECIALIZED LIGHTING, IT ENABLES THE CONTINUOUS TRACKING OF TARGETS, WHICH PROVIDE INSTANT AND RELIABLE DETECTION AND TRACKING OF THE PART.
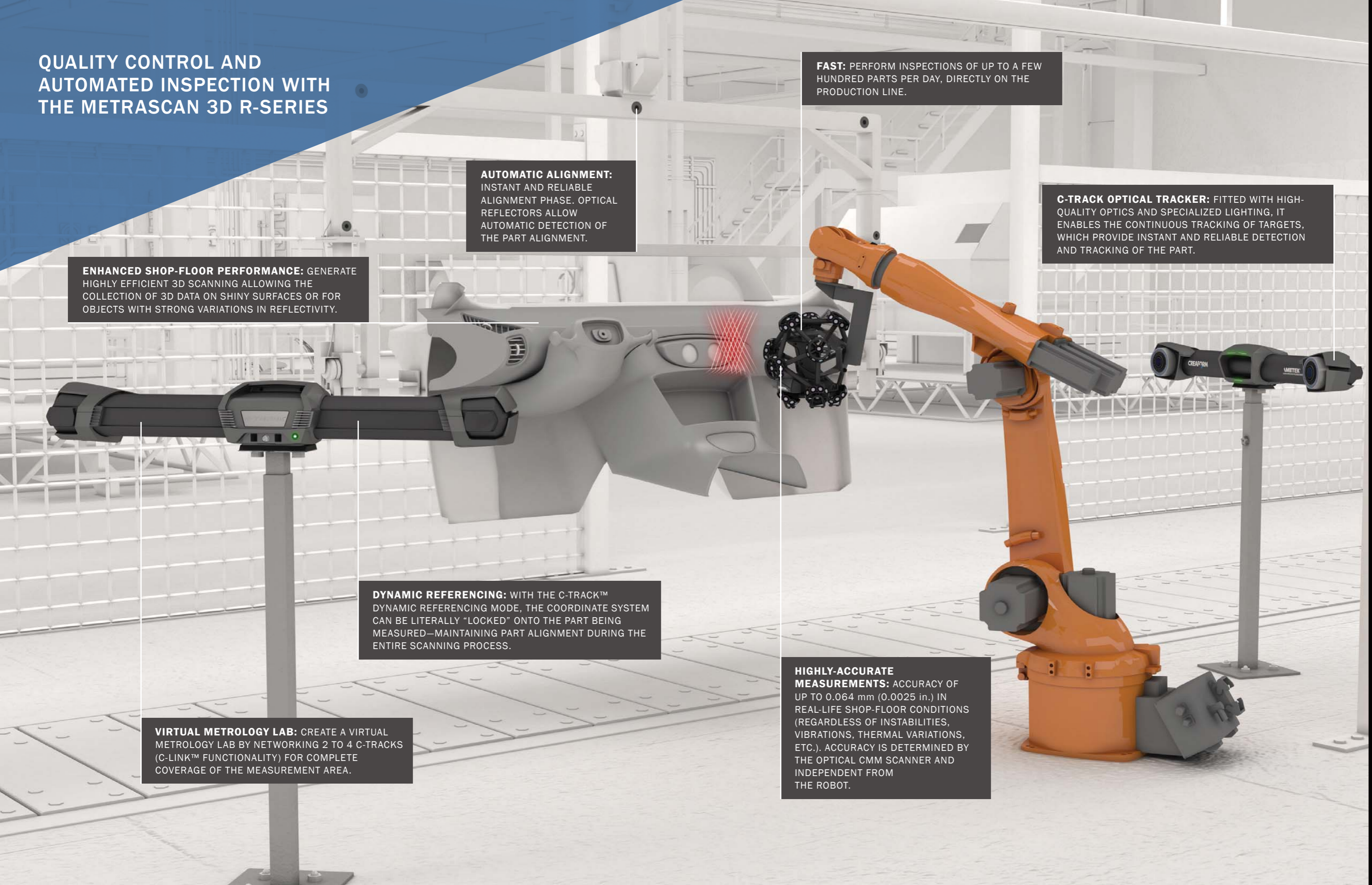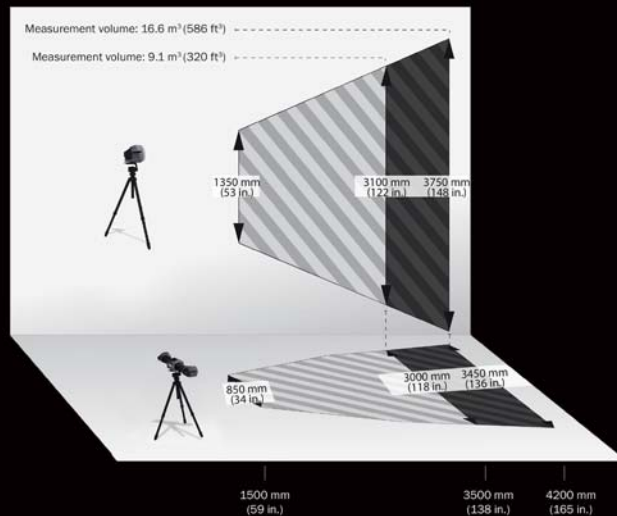
ENHANCED SHOP-FLOOR PERFORMANCE: GENERATE HIGHLY EFFICIENT 3D SCANNING ALLOWING THE COLLECTION OF 3D DATA ON SHINY SURFACES OR FOR OBJECTS WITH STRONG VARIATIONS IN REFLECTIVITY.

DYNAMIC REFERENCING: WITH THE C-TRACK™ DYNAMIC REFERENCING MODE, THE COORDINATE SYSTEM CAN BE LITERALLY "LOCKED" ONTO THE PART BEING MEASURED—MAINTAINING PART ALIGNMENT DURING THE ENTIRE SCANNING PROCESS.

HIGHLY-ACCURATE MEASUREMENTS: ACCURACY OF UP TO 0.064 mm (0.0025 in.) IN REAL-LIFE SHOP-FLOOR CONDITIONS (REGARDLESS OF INSTABILITIES, VIBRATIONS, THERMAL VARIATIONS, ETC.). ACCURACY IS DETERMINED BY THE OPTICAL CMM SCANNER AND INDEPENDENT FROM THE ROBOT.

VIRTUAL METROLOGY LAB: CREATE A VIRTUAL METROLOGY LAB BY NETWORKING 2 TO 4 C-TRACKS (C-LINK™ FUNCTIONALITY) FOR COMPLETE COVERAGE OF THE MEASUREMENT AREA.

C-TRACK OPTICAL TRACKER

Measurement volume: 16.6 m³ (586 ft³)
Measurement volume: 9.1 m³ (320 ft³)

1350 mm (53 in.)
3100 mm (122 in.)
3750 mm (148 in.)

850 mm (34 in.)
3000 mm (118 in.)
3450 mm (136 in.)

1500 mm (59 in.)
3500 mm (138 in.)
4200 mm (165 in.)

VXELEMENTS 3D SOFTWARE PLATFORM AND APPLICATION SUITE

The robot-mounted optical CMM scanners are powered by Creaform's VXelements™ 3D platform and application suite. Thanks to VXelements, the Creaform MetraSCAN 750-R™ 3D scanners generate a surface quality that compares very favourably with other high-end scanning devices on the market. Compatible with leading inspection software, Creaform's shop-floor 3D scanners represent a high-end automated scanning solution.

- Surface optimization algorithm
- Optimized meshing output
- No limitations to the scan resolution: it can be changed at any time before or after the scan
- Recreation of a meshing from raw data previously acquired
- Real-time optimization of the meshing such as hole filling, smart decimation (without definition loss on the meshing), or boundary filters
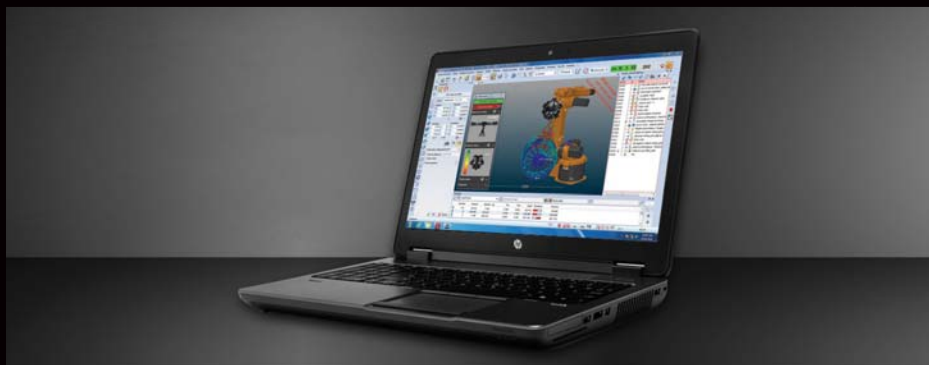
CREAFORM CUSTOMER CARE

Creaform is committed to offering first-class customer service so that you can get the most out of your system.

Our multilingual team of product specialists will provide you with assistance to answer your immediate needs. Our fleet of leading-edge calibration tools in our service centers gives you local access to faster maintenance service and repair.

Be sure to subscribe to the Customer Care Program to take advantage of worry-free maintenance and global repair coverage for all of your Creaform hardware and software. Whether you need to access our latest software releases and knowledge base or require a loaner unit while your device is being serviced, we have a plan tailored to your needs. Gain peace of mind knowing your equipment will get even better with time.

PRODUCT INTEGRATION

On-site integration of high-tech devices, such as MetraSCAN 3D R-Series scanners into automated on-line inspection processes, requires a particular expertise as well as extensive technical and support resources. For these reasons, Creaform partners with recognized robotic and automation integrators that are experienced with managing large-scale engineering projects. Through these partnerships, Creaform can guarantee that turnkey factory automation projects involving our 3D measurement solutions are carried out efficiently and that the installed solution delivers the results it is expected to.

TECHNICAL SPECIFICATIONS

		MetraSCAN 3D™ R-Series	
		MetraSCAN 750-R™	**MetraSCAN 750-R™|Elite**
ACCURACY [1]		Up to 0.030 mm (0.0012 in.)	
VOLUMETRIC ACCURACY [2] (based on working volume)	9.1 m³ (320 ft.³)	0.086 mm (0.0034 in.)	0.064 mm (0.0025 in.)
	16.6 m³ (586 ft.³)	0.122 mm (0.0048 in.)	0.078 mm (0.0031 in.)
VOLUMETRIC ACCURACY WITH MAXSHOT 3D [3]		0.060 mm + 0.025 mm/m (0.0024 in. + 0.0003 in./ft.)	0.044 mm + 0.025 mm/m (0.0017 in. + 0.0003 in./ft.)
RESOLUTION		0.050 mm (0.0020 in.)	
SCANNING AREA		275 x 250 mm (10.8 x 9.8 in.)	
STAND-OFF DISTANCE		300 mm (11.8 in.)	
DEPTH OF FIELD		200 mm (7.9 in.)	
LIGHT SOURCE		7 laser crosses (+ 1 extra line)	
LASER CLASS		2M (eye-safe)	
MEASUREMENT RATE		480,000 measurements/s	
WEIGHT		Scanner: 1.38 kg (3.0 lbs.) C-Track: 5.7 kg (12.5 lbs.)	
DIMENSIONS (LxWxH)		289 x 235 x 296 mm (11.4 x 9.3 x 11.7 in.)	
OPERATING TEMPERATURE RANGE		5–40°C (41–104°F)	
OPERATING HUMIDITY RANGE (non-condensing)		10–90%	
CERTIFICATIONS		EC Compliance (Electromagnetic Compatibility Directive, Low Voltage Directive, Radio Equipment and Telecommunications Equipment), compatible with rechargeable batteries (when applicable), IP50, WEEE	

(1) Typical value for diameter measurement on a calibrated sphere artefact.

(2) Based on the ASME B89.4.22 standard. Performance is assessed with traceable length artefacts by measuring these at different locations and orientations within the working volume of the C-Track (value = maximum deviation). Performance of the MetraSCAN 3D R-Series is dependent on the working volume in which the measurement is made: 9.1 m³ (320 ft³) or 16.6 m³ (586 ft³).

(3) The volumetric accuracy of the system when using a MaxSHOT 3D cannot be superior to the default volumetric accuracy of the chosen system and model.

CREAFORM

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