

# Pipecheck✓™

3D SCANNING SOLUTION  
FOR PIPELINE INTEGRITY  
ASSESSMENT





Pipeline operators and NDT service companies are facing an increasing pressure from regulation authorities and environmentalist groups to guarantee pipeline networks integrity, while wanting to keep maintenance costs as low as possible. Field crews are experiencing pressure to complete inspection as quickly as possible so the excavation site can be backfilled, and the pipeline, put back into service in the shortest time. Thus, the use of surface inspection tools that are reliable, efficient and user-friendly is of paramount importance.

Creaform has developed the Pipecheck™ solution for pipeline integrity assessment. The solution includes a HandySCAN 3D™ portable handheld scanner and the Pipecheck software. Thanks to this unique 3D scanning technology and innovative software, surface inspection has been reinvented completely!

**RELIABLE. EFFICIENT. EASY. INTRODUCING PIPECHECK.**

## PIPECHECK SOFTWARE MODULES

### CORROSION

Pipecheck's pipeline corrosion software module offers very fast and reliable data processing that generates instant, on-site results. In comparison with traditional measurement methods, this software offers accuracy and repeatability that are beyond expectations.

### MECHANICAL DAMAGE

As its name states, this software module has been developed specifically for pipeline mechanical damage analysis. This module features numerous key functionalities that increase dent understanding and facilitate the decision making process.

## ADVANCED FUNCTIONALITIES

### CORROSION IN MECHANICAL DAMAGE

Being able to separate material loss depth from a mechanical damage deformation is no longer a dream. Pipecheck software is the one and only solution on the market to offer sophisticated tools able to extract corrosion depth that is located within a mechanical damage.

Being able to measure accurately both types of damage contributing to pipeline integrity will directly increase the level of confidence of the user in the pipeline integrity management program.

This confidence will result in a lower maintenance cost and in a reduced risk of costly failure.

### STRAIGHTENING OPERATION

Traditional methods for depth measurement (pit gauge) on field bends can't be used accurately since the pipe curvature often introduces depth values that do not represent the material loss or pipe geometry deformations. In order to solve this issue and to improve efficiency and confidence in results, Pipecheck features a built-in straightening tool.

The tool uses powerful algorithms that extract the pipe's center-line and straightens the full segment. The material loss and/or mechanical damage can then be assessed with the virtual Pipecheck's pit-gauge tool to report depths reading free of any pipe curvature.

### ILI CORRELATION TOOL

The ILI Correlation tool is used to correlate in-line inspection data with the Pipecheck 3D scanning inspection data. The user's interface has been optimized to compare depth, length, width and burst pressure.

To properly assess the performance of the ILI tool, pipeline operators need to carry out statistically significant population analysis with a device offering better accuracy than the magnetic-flux leakage (MFL) technology. The HandySCAN 3D scanners quickly capture metal loss and damaged areas. They also help building a larger and acceptable population for statistical analysis.

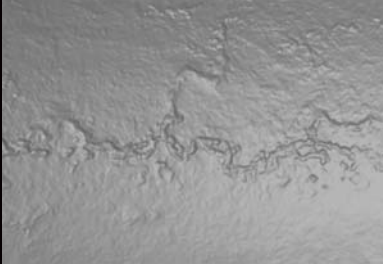
Operators can assess ILI performances by comparing pig data against Pipecheck data to help them determine with more precision the sites that actually need to be dug.



# PIPECHECK SOLUTION: YOUR BEST ALLY AT ALL STAGES OF YOUR PIPELINE INTEGRITY MANAGEMENT PROGRAM

## SCAN

### CORROSION



- High resolution capture of all corroded areas
- Fast surface acquisition to increase efficiency
- Improved scanning performance for small features such as pitting

### MECHANICAL DAMAGE



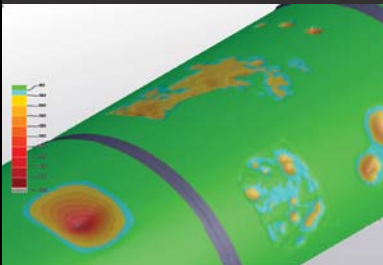
- High resolution organised mesh file to enhance analysis capabilities
- Fast measurement on any surface finish

### ILI CORRELATION

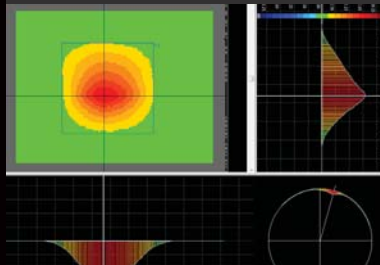


- Highly repeatable measurement independent from operators' skills to increase correlation accuracy
- Improved performance to capture larger areas and extract more accurate statistical trends

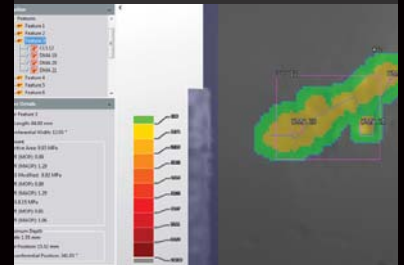
## ANALYZE



- Feature detection using real pipe geometry
- Automatically applied interaction rules
- Estimated burst pressure calculation
- Enhanced virtual pit gauge capabilities near welds and obstacles

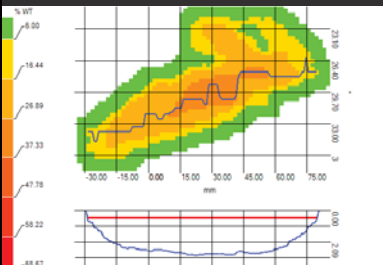


- Automatic maximum depth detection
- Automatic creation of 2D cross-sections in both directions at maximum depth
- Maximum depth measurement using straight edge technique in both directions
- Shoulder section available

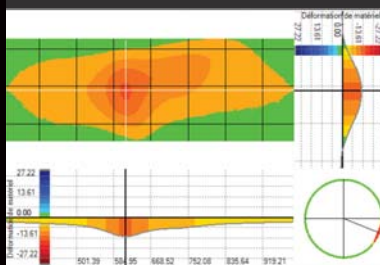


- Automatic match detection through surface overlay
- Manual match available
- Axial and circumferential offsets for optimal overlay available

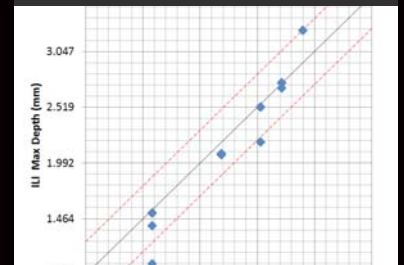
## REPORT



- Excel report including worst-case-profile and predicted failure path
- Export to CSV available for further analysis
- Mesh export available
- Pass/Fail criteria customizable
- Snapshot tool for 3D reporting



- Cross-section (axial and circumferential) details
- CSV depth grid export
- Mesh export available
- Excel report with ovality measurement (diameter with caliper):
  - Dat deepest point
  - Dat 90° of deepest point
  - Dmax



- Visual representation of overlay between ILI data and detected features from scanned areas
- Unity chart to assess tool performance for features dimensions, maximum depth and estimated burst pressure
- List of matched and unmatched features



**CREAFORM PORTABLE 3D SCANNERS FEATURE INNOVATIVE AND EXCLUSIVE TECHNOLOGIES:**

**TRUaccuracy™**

ACCURATE MEASUREMENTS IN REAL LIFE OPERATING CONDITIONS

**TRUpotability™**

3D SCANNING WHEREVER YOU NEED TO GO

**TRUsimplicity™**

VERY SIMPLE 3D SCANNING PROCESS

**USER-FRIENDLY:** THE SCANNING PROCESS AND ANALYSIS ARE INTUITIVE AND ACCURATE, REGARDLESS OF THE INSPECTOR'S SKILLS.

**SCANNING SPEED:** 80 TIMES FASTER THAN PIT GAUGE TECHNIQUE.

**HIGH QUALITY RESULTS:** WITHIN A  $\pm$  50 MICRON ACCURACY.

**REAL TIME VISUALIZATION:** THANKS TO VXREMOTE, THE CREAFORM OPTIMIZED REMOTE DESKTOP APPLICATION, DATA ACQUISITION CAN BE VIEWED IN REAL TIME.

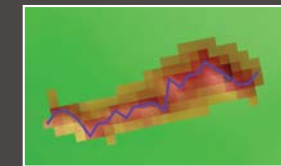
**ON-THE-GO SCANNING:** TAKE IT FROM PLACE TO PLACE. USE IT IN-HOUSE OR ON-SITE.

**LIGHTWEIGHT AND SMALL:** WEIGHS 0.85 KG, CAN REACH CONFINED AREAS. FITS INTO A CARRY-ON CASE.

**TRUaccuracy ON THE PIPE:** ENHANCED VIRTUAL PIT GAUGE CAPABILITIES. PIT GAUGE CONFIGURATION AUTOMATICALLY ADAPTS NEAR WELDS TO ENSURE THE MOST ACCURATE MEASUREMENTS.



**CORROSION DEPTH INSIDE A MECHANICAL DAMAGE:** UNIQUE AND SOPHISTICATED TOOLS TO EXTRACT CORROSION DEPTH INSIDE A MECHANICAL DAMAGE.



**FOLLOWS CODE REGULATION (ASME B31G)**



**IN-LINE CORRELATION:** ASSESS ILI PERFORMANCES BY COMPARING PIG DATA AGAINST PIPECHECK DATA TO HELP DETERMINE WITH MORE PRECISION THE SITES THAT ACTUALLY NEED TO BE DUG.



## HANDYSCAN 3D PORTABLE SCANNERS

HandySCAN 3D handheld scanners have been optimized to meet the needs of engineers in pipeline integrity assessment, looking for the most effective and reliable way to acquire 3D measurements of physical objects.

Creaform's flagship metrology-grade scanners underwent a complete re-engineering, building on their core assets. They are now more portable and even faster at delivering accurate and high-resolution 3D scans, while remaining very simple to use.

The Creaform Pipecheck solution has two different 3D models of laser scanners to choose from, depending on the required level of accuracy.

### WHEN ACCURACY MEETS PORTABILITY. INTRODUCING THE HANDYSCAN 3D SCANNERS.

#### HandySCAN 300™:

Looking for the most efficient way to accurately digitize material loss and mechanical damage? The HandySCAN 300 is a reliable tool that will help you get there.



#### HandySCAN 700™:

The HandySCAN 700 offers increased accuracy and resolution. It is the most versatile 3D scanner on the market for inspection. The acquisition speed of the HandySCAN 700 will simply blow your mind.

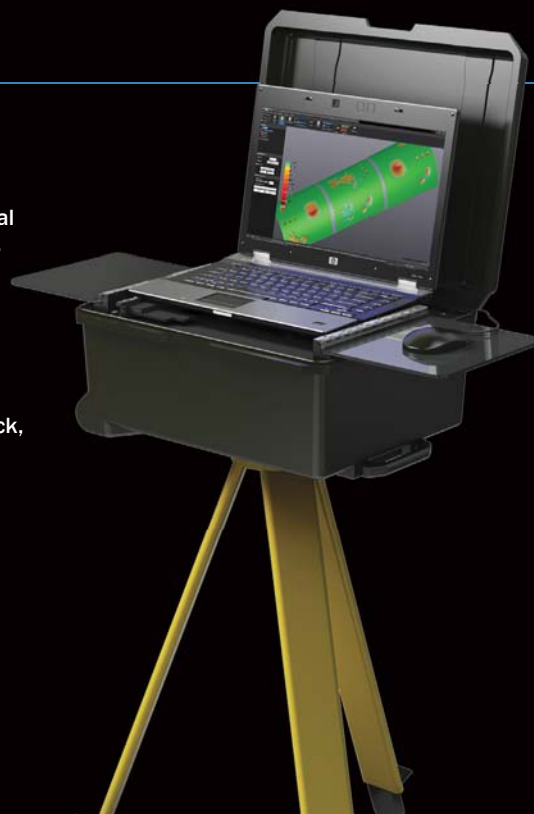


## RUGGED FIELD PACK WITH WIRELESS TABLET

For companies looking for an optimal field performance, Creaform has designed a complete accessory package. Our Rugged Field Pack includes a wireless tablet for real time visualization of the scanned surfaces.

It also has 3 compatible power sources to choose from: Creaform battery pack with charger\*, 110/220V direct input or car battery.

\*When used with the Creaform battery pack, the Rugged Field Pack offers 8 hours of autonomy.



#### INCLUDED:

- Wireless tablet power by VXremote
- Pelican rugged laptop casing
- Creaform battery pack with charger
- Magnetic support for scanner
- Magnetic support for tablet
- 8-m USB 3.0 cable

#### OPTIONAL:

- Car battery cables for emergency power

## THE COMPLETE SOLUTION INCLUDES:

### INCLUDED

- HandySCAN3D laser scanner
- Pipecheck software license
- Calibration plate
- Reference arrow with protective case
- 4 m USB 3.0 cable
- Power supply
- 4 x 500 positioning targets
- 1-year warranty on parts and labor

### OPTIONAL

- Certified laptop computer
- Pipecheck reference part



## EXTEND THE POWER OF YOUR PIPECHECK SOLUTION

### Pipecheck Analyze: When all you need is the analysis power of Pipecheck

Offered at a discount price, this software combines the Pipecheck corrosion and mechanical damage modules. Perfect for projects where assessment is done on-site by a senior technician, while a junior technician focuses on data acquisition. The analysis can also be done off-site by pipeline integrity engineers when on site teams are facing complex cases. Pipecheck Analyze can open any Pipecheck session, change parameters, re-process analysis and export a report.



### 3D scanner external batteries: Portability got to a whole new level

With three hours of autonomy, the 3D scanner lightweight external battery increases data acquisition efficiency. Ideal for short-term projects, it provides easier than ever access to confined spaces, when combined with the HandySCAN 3D! Even rope access projects can benefit from this new level of portability.



### Pipecheck Viewer: An unprecedented amount of data available to pipeline integrity engineers!

Pipecheck Viewer offers new demonstration and reporting capabilities. Service companies wanting more information about Pipecheck can download real case studies and visualize the results in 3D. Companies already using Pipecheck can provide complete Excel reports displaying the analyzed 3D model to all of their customers.



### VXremote™: Remote access software application

VXremote improves your efficiency in the field by providing fast and easy remote access to Pipecheck. It offers quick activation and set-up, without any hardware. You can have all its data acquisition functionalities at your fingertips... Available only with the Creaform Certified Rugged Tablet!



## CREAFORM CUSTOMER SERVICE

When you purchase a Creaform 3D measurement solution, you can rely on the CreaCare™ customer service program. We find it important to help you simplify your work, increase your efficiency and make the most out of your Creaform device.

You want to make sure to start things right? For a small fee, you can ask a qualified expert to come over to your workplace to help you get started with your system, and to train your staff on specific applications.

Of course, we offer readily available, multilingual technical support on all continents, ensured by knowledgeable, proactive and committed product experts.

To protect your investment further and keep you on the technological edge, you can also subscribe to a CreaCare Maintenance Plan, offered in various protection packages. Depending on the package selected, you could get instant downloading access for every new release of our proprietary data acquisition software or get a free loaner unit while your device gets serviced, for instance.

## CREAFORM METROLOGY AND 3D ENGINEERING SERVICES

Convinced of the quality and possibilities of Creaform technologies... but not quite ready yet to commit and buy? Know that Creaform offers a wide range of metrology and 3D engineering services. Our experts are known worldwide for their effectiveness and professionalism. Whether you need a hand with 3D scanning, quality control, reverse engineering, FEA/CFD simulations or with product and tool development, or simply require training services, you can count on the responsiveness and the adaptability of our experts.

## TECHNICAL SPECIFICATIONS



**HandySCAN 300™**



**HandySCAN 700™**

<b>WEIGHT</b>	0.85 kg (1.9 lb.)	
<b>DIMENSIONS</b>	77 x 122 x 294 mm (3.0 x 4.8 x 11.6 in.)	
<b>MEASUREMENT RATE</b>	205,000 measurements/s	480,000 measurements/s
<b>SCANNING AREA</b>	225 x 250 mm (8.8 x 9.8 in.)	275 x 250 mm (10.8 x 9.8 in.)
<b>LIGHT SOURCE</b>	3 laser crosses	7 laser crosses (+1 extra line)
<b>LASER CLASS</b>	2M (eye-safe)	
<b>RESOLUTION</b>	0.100 mm (0.0039 in.)	0.050 mm (0.0020 in.)
<b>ACCURACY</b>	Up to 0.040 mm (0.0016 in.)	Up to 0.030 mm (0.0012 in.)
<b>VOLUMETRIC ACCURACY*</b>	0.020 mm + 0.100 mm/m (0.0008 in. + 0.0012 in./ft)	0.020 mm + 0.060 mm/m (0.0008 in. + 0.0007 in./ft)
<b>VOLUMETRIC ACCURACY (WITH MAXSHOT 3D)*</b>	0.020 mm + 0.025 mm/m (0.0008 in. + 0.0003 in./ft)	
<b>STAND-OFF DISTANCE</b>	300 mm (11.8 in.)	
<b>DEPTH OF FIELD</b>	250 mm (9.8 in.)	
<b>PART SIZE RANGE (RECOMMENDED)</b>	0.1 – 4 m (0.3 – 13 ft)	
<b>SOFTWARE</b>	Pipecheck	

\*Based on the ISO 10360 standard, volumetric accuracy is defined as a size-dependent value.

# CREAFORM

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**AMETEK®**  
ULTRA PRECISION TECHNOLOGIES

Authorized Distributor

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