



BULLFROG

In-process NDT for Composites Manufacturing

The Bullfrog Mission

Deliver rapid, low-cost inspection technology that enables the next generation of high-throughput composites manufacturing.

In August 2025, Easol obtained funding from the ATI SME Programme to develop automated in-process NDT inspection for high-rate and low-waste composite manufacturing. TRL6 by summer 2027.

Introduction

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Chief Scientist

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Where it started



Our Position

The new dawn isn't new physics – Active Thermography is a proven 30 year-old technology.

Advances in supporting technologies – cameras, excitation, robotics, AI – combined with Bullfrog software, makes thermography deployable at scale to deliver fast and effective results.

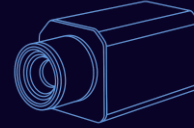
‘...traditional NDT methods can become less effective...This may require completely new inspection methods or novel ways of applying and/or processing existing method.’

BINDT Workshop 2026, call for papers

Modular approach to **high rate, cost-effective inspection**

01 Small, modular hardware

Compact sensing and automation blocks can be configured for bench-top use, integrated cells and robotic deployment.



02 Rapid, non-contact methods

Built for in-process applications where speed and cost constrain the use of inspection.



03 Inspect awkward geometries

Robotic deployments include 3D modeling of part geometries prior to inspection, allowing application to a wide variety of parts types.

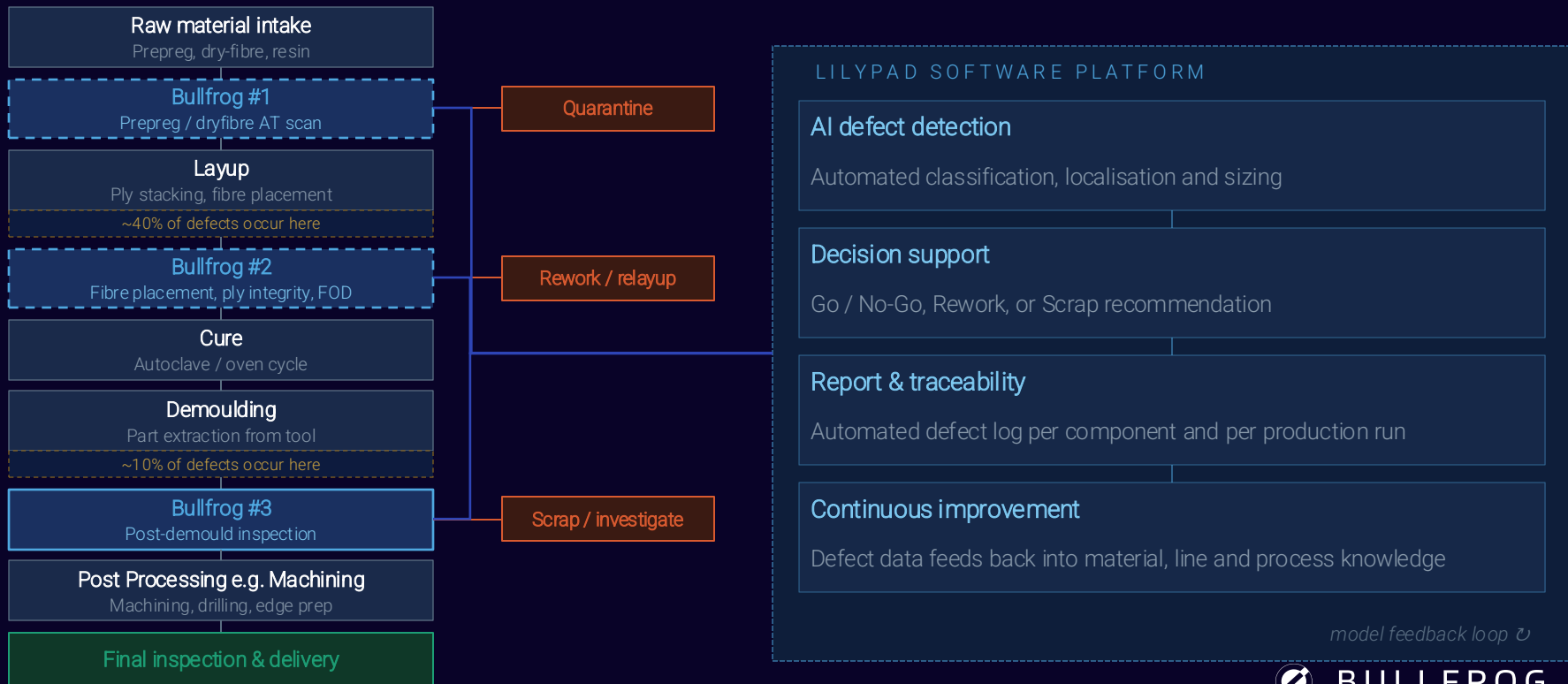
Process Scope:

- Initial development for post-cure
- Active R&D strands to extend to pre-cure

Software Configuration:

- Simple in-line notifications
- Powerful offline analysis
- Defect detection to 7mm depth
- Automated characterisation and classification
- Reporting and decision support

In-process inspection at key points prevents waste



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Where we are

TRL STATUS

TRL 4

Lab validated

Detection demonstrated on seeded benchmark samples

TRL 5

Simulated env. validated

Lilypad trained and tested; multi-process confirmed

TRL 6

Production env. demo

Q3 2026: Brookhouse Aerospace live production floor

TRL 7

Pilot with manufacturers

April 2027 target. Sector-specific pilots



Bullfrog Iris: excitation head, IR camera, and computer integrated onto a Universal Robots cobot arm.

Bullfrog Sense – Iris + Lilypad

HARDWARE

Iris : modular scanner

- Thermographic + visual camera and excitation sources in one modular housing
- Handheld + Robot-agnostic: custom couplers for any cobot, industrial arm, or track.
- Operational training only: no NDT qualification or specialist knowledge required to run it

SOFTWARE

Lilypad : Defect Detection

- Real-time image processing, detecting defects up to 7mm depth
- Automated characterisation, classification and localisation as standard
- Go/No-Go output for operators
- Ai assistance on image processing capabilities

SOFTWARE

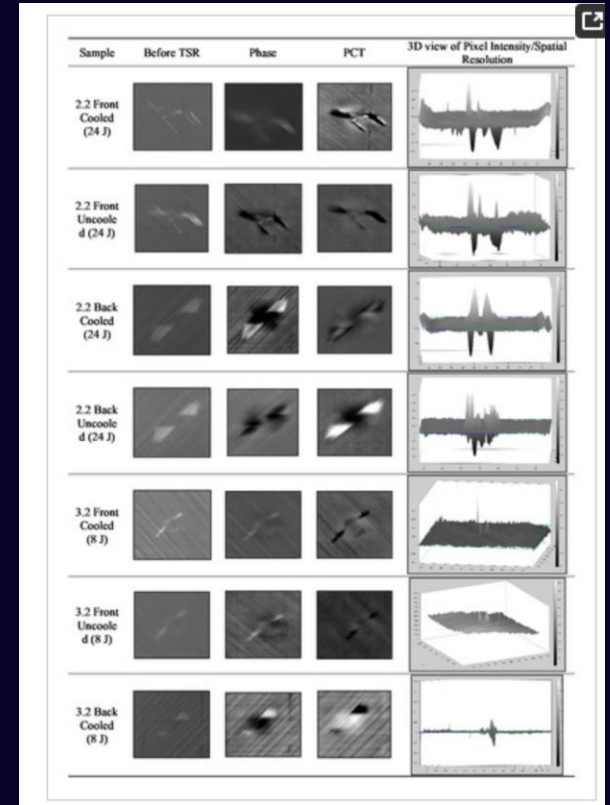
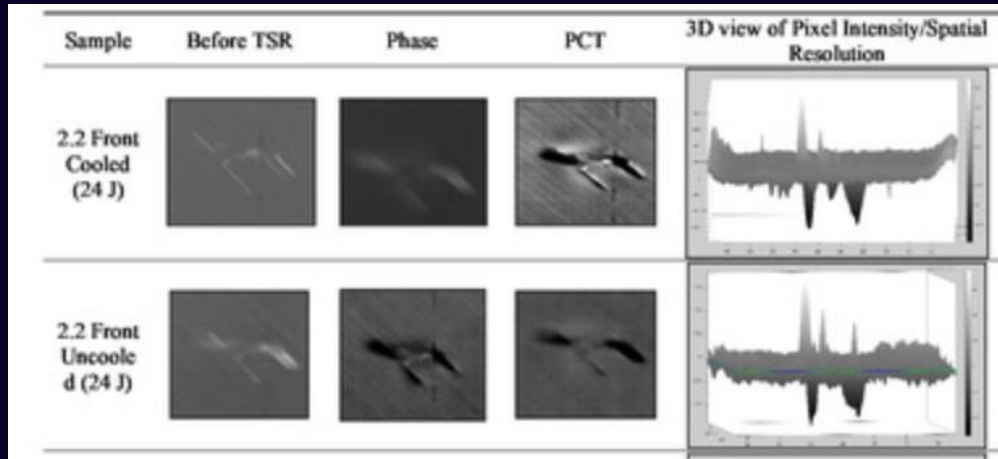
Lilypad : Decision Support

- New material feasibility simulation
- Multi-scan management and predictive maintenance/defect detection for new parts & material
- Full decision support for specialists in the form of defect/scan reports and separately the ability to view part, material and production line trends

Cooled Vs Uncooled Validation



aerospace-grade uni-directional CFRP



Matt Test1
CP-2024-001 · 9hz 40, 30, 2, 20cm
Used 2 times


New setup

ACTIVE SCAN
None
Queue is clear

RECENT SCANS
10
In the last 10

PARTS
13
In the library

PROFILES
14
Saved scan recipes

Quick actions


New scan
Start a new inspection


View scans
History & results


Manage parts
Library & details

System status

Hardware Status Updated 8:56:23 pm

 **Camera** Connected
Capture Service running - all hardware ready

 **Excitation Relay** Connected
Heat source control

 **Robot Arm** Connected
Mock Motion Service running

Overall System: **Healthy**

 **EMERGENCY STOP**

How Bullfrog can help

Now: Provide technology + consultancy to test non-contact inspection in customer R&D projects.

Future: Embed high-rate inspection into customer process via configurable products and services.

1 R&D

Standalone R&D projects to assess how Bullfrog can support inspection of novel processes or products.

Typical outputs: feasibility studies, test plans, trials, evidence packs and recommendations for next steps.

2 Products

Modular hardware / software combinations configured to fit into a production cell in line.

Supports both inline inspection alerts and offline inspection analytics.

3 Services

People and products to support process set-up and certification using thermography.

Ideal where you need hands-on support to establish the method, the workflow and the evidence base.

Come build with us



Advisory Board Member

We're continuously and actively looking for organisations to join our advisory board and to run side-by-side trials with their existing workflow and help influence what we are building.



Demos and R&D

We have a portable prototype we can bring to your facility.

Thank you.

Questions very welcome.

Dr. Shakeb Deane

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