



RadalyX[®]

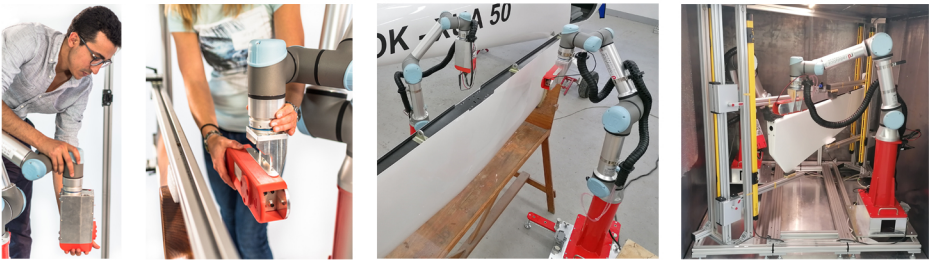
**X-ray Robotic Imaging System
Non-Destructive Inspection**

rd radalytica[®]

What we do

Radalytica is developing and producing X-ray imaging systems that combine cutting edge X-ray imaging detectors with the flexibility of collaborative robots. We are building systems that give customers the best X-ray imaging quality for a wide range of cases with strong emphasis on the aviation and automotive industries, e.g. non-destructive testing of light, advanced materials.

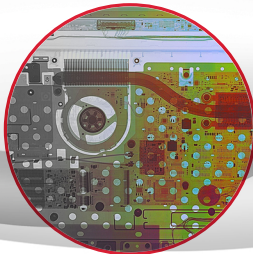
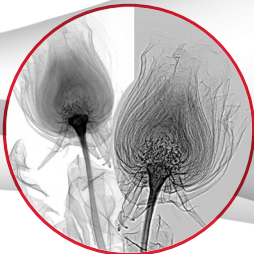
Our technologies can also be used in laboratories and research centres of companies and universities, for example for recognising different tissues in biological samples, pathological changes in small animals within pre-clinical studies, and impurities in materials and products.



Technologies

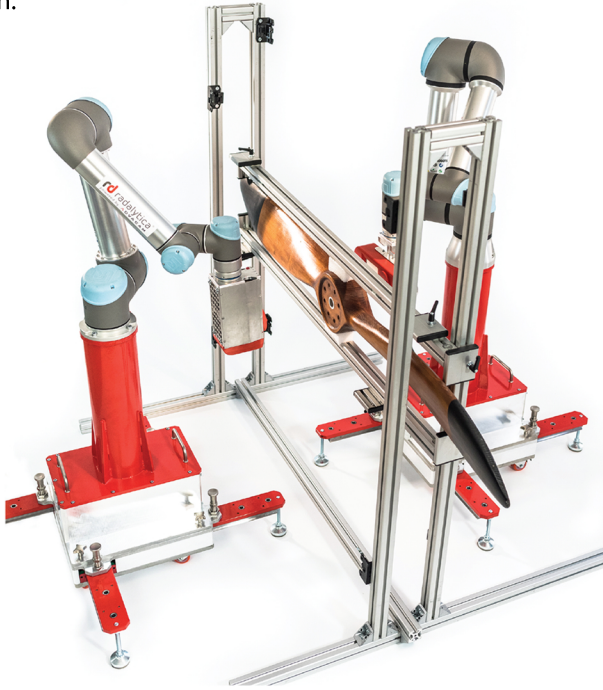
New generation of cutting edge photon counting X-ray imaging detectors from Advacam provides unprecedented image quality.

- Possibility of spectral imaging
- Pair of collaborative Universal Robots robotic arms
- Scanner control and data processing software
- X-Ray Tube from 50kVp higher
- X-Ray shielded cabinet ready for radiation safety certification



RadalyX

Innovative modular combination of imaging methods using collaborative robotic system. RadalyX enables real-time 3D scanning of objects from any angle using flexible robotic arms, intuitive handling, easy programming, and simple data interpretation.



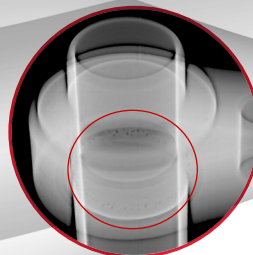
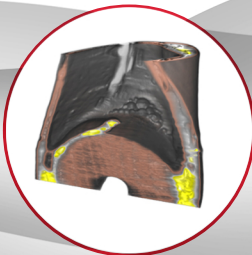
**high
resolution**

**real-time
imaging**

**modular
systems**

Robotic Imaging System

In contrast to a classic X-ray system, the Robotic Imaging System allows nearly arbitrary flexibility of view angles. Robots further allow the use of 3D imaging techniques, such as computed tomography or tomosynthesis. These are methods commonly used in X-ray imaging, but they have limited applicability on large, complex shapes. Robots can do all of this. The system supports several different scanning approaches. Each is designed for a different type of samples



Advantages

The major advantages of the X-ray scanner based on a pair of robotic arms are:

- Modular combination of imaging methods
- High resolution imaging (55 μm or better) of large objects
- Real-time imaging with immediate viewing angle and position control
- Variety of scanning modes for different sample types
- Total freedom of X-ray viewing angles
- Spectral X-ray imaging for material identification
- Air-coupled ultrasound scanning of complex curvatures
- Extendible to 3D by computed tomography and tomosynthesis
- Easy programming or intuitive manual handling using 3D Mouse Move
- Possibility to integrate into production lines or stand-alone flexible lab systems or portable systems
- Radalyx can detect even the smallest defects to tens of micrometres
- At the same time, the robotic arms allow inspection of hard-to-reach places and irregular structures from different angles
- Our technology also enables the development of advanced materials with a view to alleviating the environmental burden of air transport

3D Mouse Move

3D Mouse Move is a plugin for SpaceMouse that allows control of the system's collaborative arms in real time and in any arbitrary direction or rotation. Simply, once you shift and tilt the 3D Mouse Move, the robot tool will follow the same tilt and shift. Users position the robots easily by hand using the freedrive button. Yet, when the robots are out of the operator's reach, 3D Mouse Move replicates the same intuitive experience. Such cases happen when robots are inside another room or within areas inaccessible to the operator, which is the case for the robotic imaging system due to radiation safety. 3D Mouse Move can be used to teach the robots during programming or controlling them in real time to perform tasks



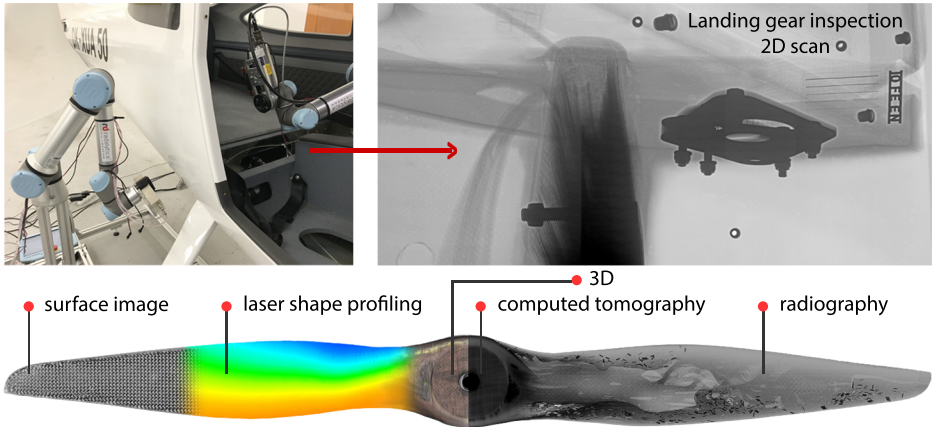
Intuitive real-time motion response

Movement in any arbitrary direction

Controlling the robot from another room

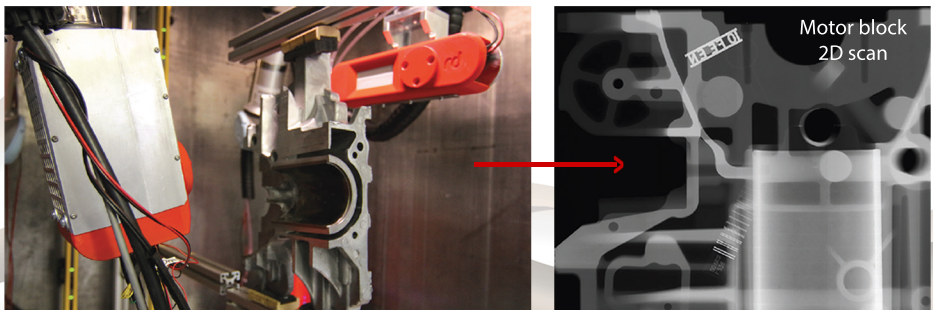
Aviation

Air transport imposes high demand on non-destructive testing to ensure safety of aircrafts. The robotic scanner combines variety of methods, each suitable for detection of different defects; X-rays for cracks, impurities, porosity, missing or excessive glue, foreign objects, etc. Ultrasound detects missing bonds or delaminations and the laser profiling measures surface shape and structure.



Automotive

The automotive industry is one of the most diverse in the world. It faces many challenges, whether technological advances, electromobility, or safety. These concern both vehicle manufacturers and component suppliers. New developments in the automotive industry require advanced non-destructive technologies. RadalyX meets these requirements with its state-of-the-art robotic imaging system, combining X-ray, ultrasound, and computed tomography. RadalyX can be used for inspection of welds, casings of engine units, bodywork, petrol tanks, braking systems, and anything else that requires special attention.



Software

RadalyX generates image or volume data compatible with all standard analysis tools such as NDTKit (Testia), VGStudio (Volume Graphics) and many other. Users can therefore continue using their favourite software and procedures certified by NADCAP and in accordance with ISO and ASTM standards.

Radalytica can also offer machine learning based tools for analysis of repetitive measurements. The machine learning is implemented on case-by-case basis.

Example of measurement: *Detection of water in honeycomb structures (3D X-ray scan - tomosynthesis)*



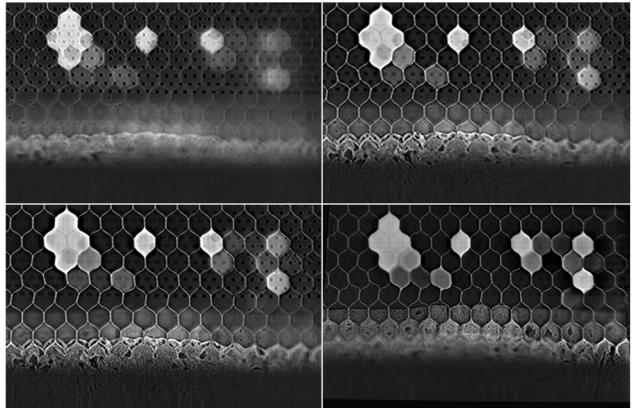
Tomosynthesis *focuses* the X-ray image into selected depth of sample.



The view cuts through the thickness of the object revealing structures inside.



The water level and potting thickness can be read directly.



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