C-thrue Product Presentation

Applicant Name: Leica Geosystems Ltd

Product Name: C-thrue

Specification:

- Number of Antennas: 4 (dual antenna)
- Number of Radar Channels: 2
- Display modes: B-scan and C-scan
- Extended handle and remote display

- **Core Functions:**
  - Accurately detect and locate first and deeper layer of concrete structure
- **Technology Used:**
  - Dual antenna polarization
  - Automatic position and navigation system
- **Construction Process involved**
  - To locating rebars, voids, post-tension cables, cavities, conduits, and any other object embedded into the structure, before cutting or drilling the concrete
- **Key Improvement in Construction Process:**
  - Productivity
  - Quality
  - Safety
  - Environmental
- **Job Reference:**
  - SAN DONATO CHURCH (PISA) in 2020

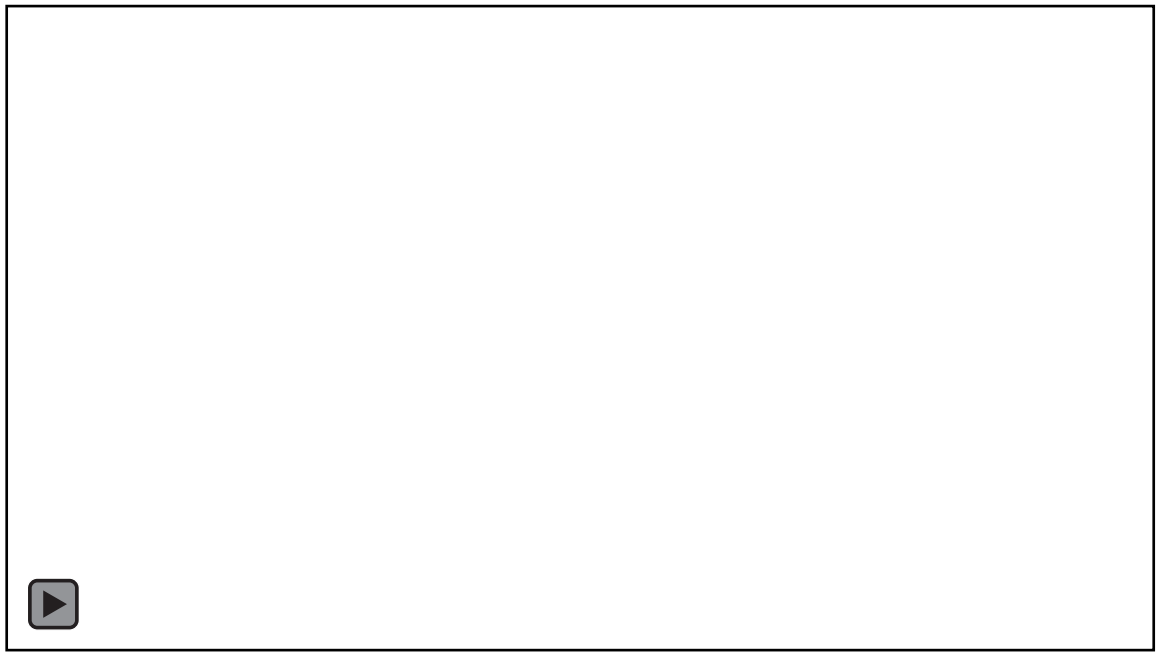
    https://georadar.vn/en/cthrue-survey-in-san-donato-church-pisa.html

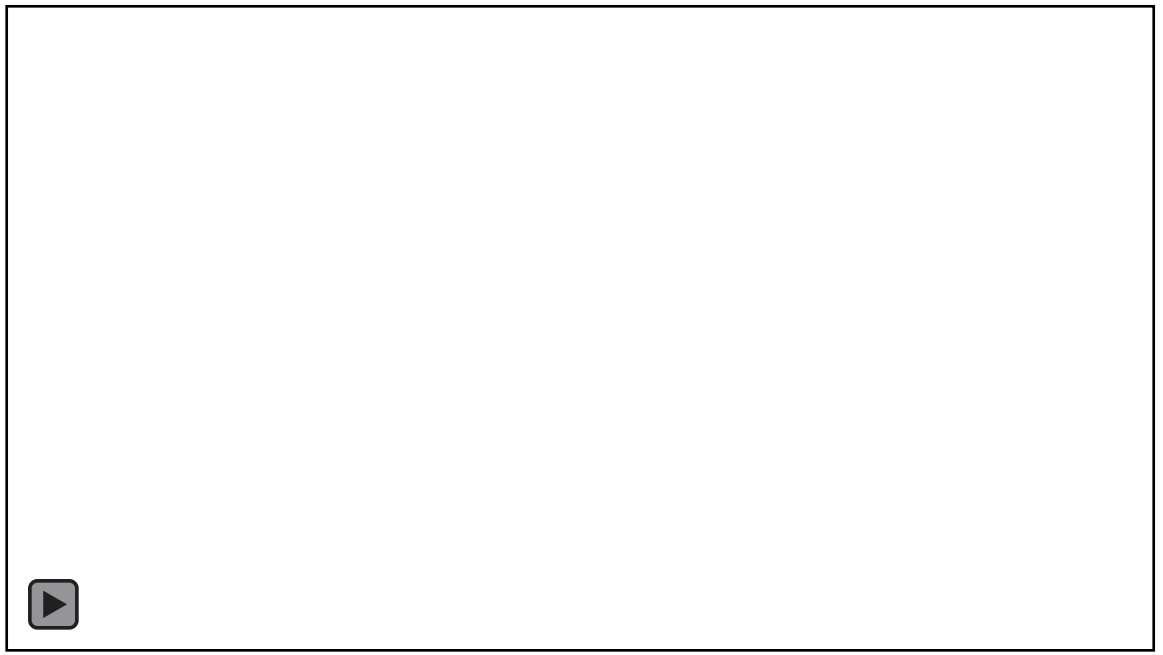
Innovative Features

- **Core Functions:**
  - Accurately detect and locate first and deeper layer of concrete structure
  - To locating rebars, voids, post-tension cables, cavities, conduits, and any other object embedded into the structure, before cutting or drilling the concrete
- **Technology Used:**

Video >>>

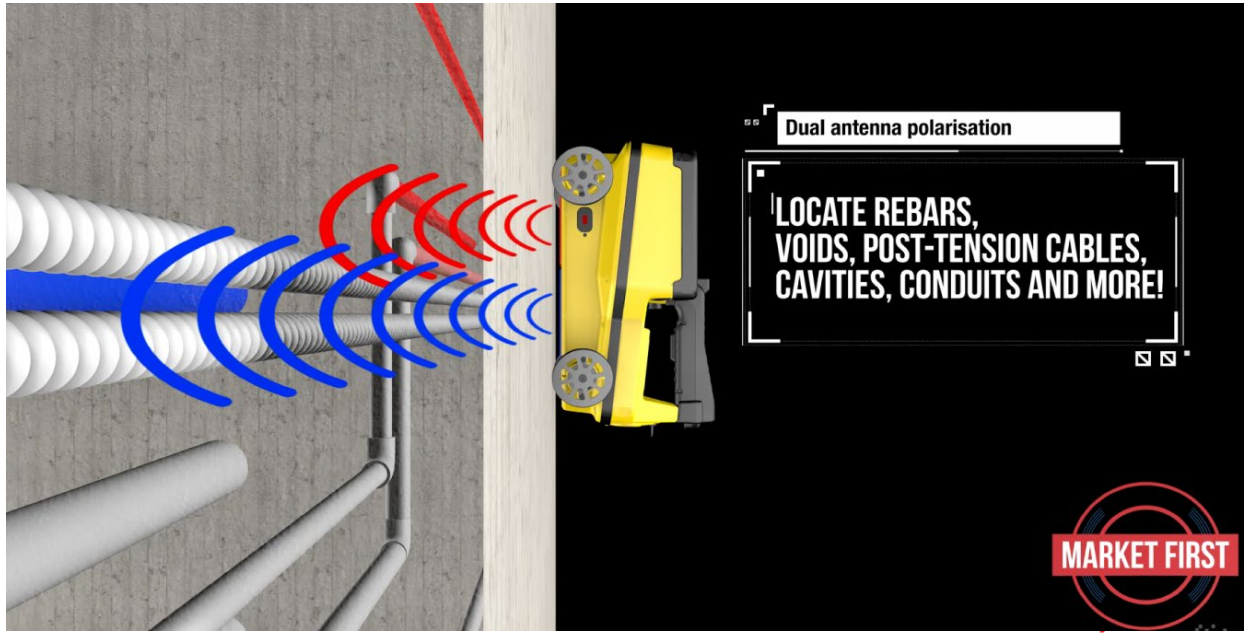
  - ***** Dual antenna polarization *****
    - ✓ Reduce time for data acquisition
    - ✓ C-thrue visualization
    - ✓ Locate rebars and void
  - ***** Automatic position and navigation system *****
    - ✓ Reduce time for setting up paper grid
    - ✓ Quick and accurate
    - ✓ Prevent error caused by manual positioning





Benefits - Productivity

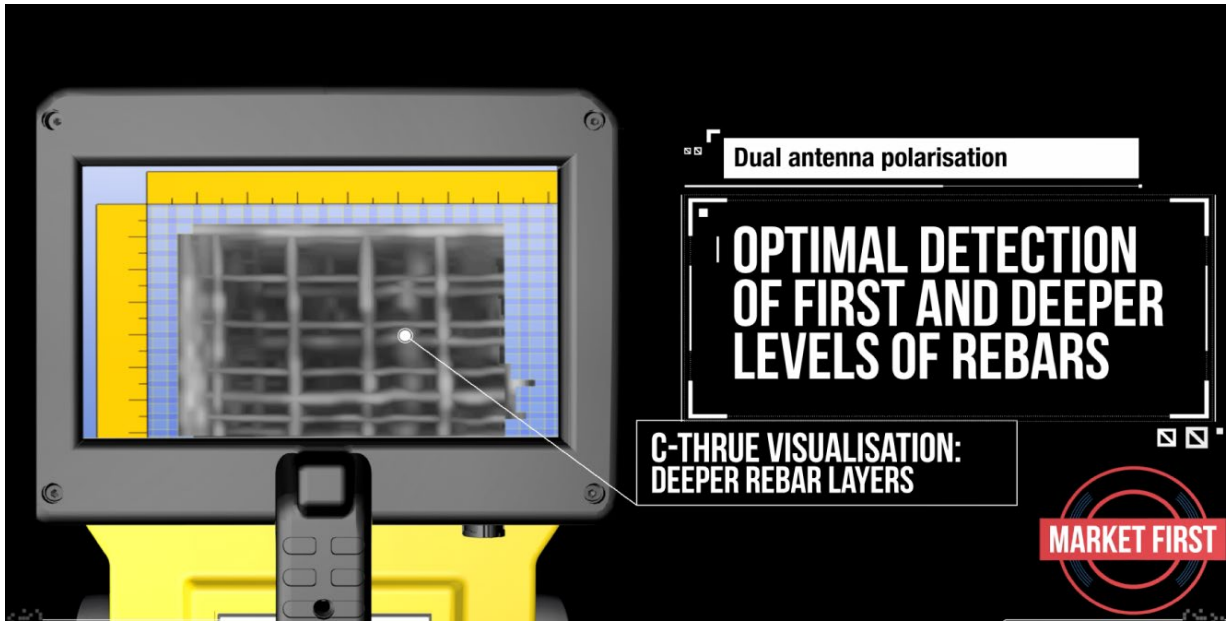
- **Improve productivity by:**
  - Reduce field time
  - Simplify progress for data acquisition
- **C-thrue Methods:**
  - An automatic position and navigation system with virtual display and laser-based sensor reduce time for device to identify position
  - Dual antenna polarisation allow C-THRUE to instantly identify first and deeper levels of rebars, structure of different materials
- **Traditional Methods**
  - Paper grid (Time consuming for setting paper grid on walls)
  - No dual antenna (Require multiple scans across vertical and horizontal direction)



Benefits - Quality

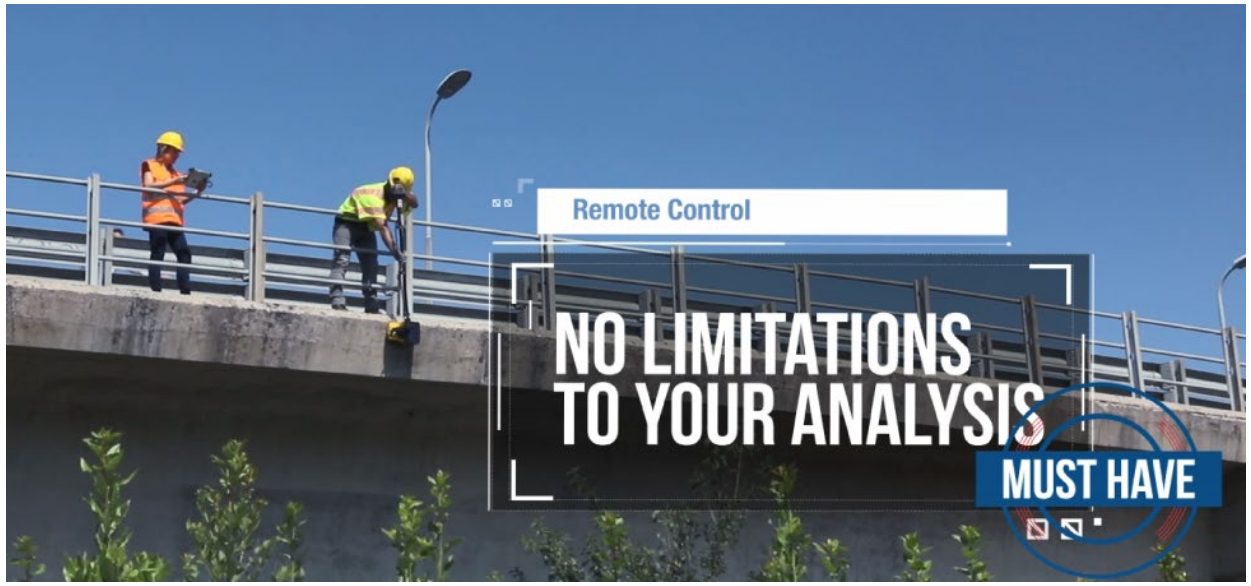
- **Improve quality by:**
  - Improve completeness of acquired data
  - C-thrue style visualisation in real time
- **C-thrue Methods:**
  - Dual antenna polarisation allows automatic discrimination on rebar/void
  - B-scan and C-scan visualization of data to present 3D data which allowing user to adjust levels of views to visualise first and deeper details assisting user on on-site decision making
- **Traditional Methods**
  - Cannot automatically discriminate rebar/void
  - Top view and cross section view presentation only (cannot adjust levels of views)

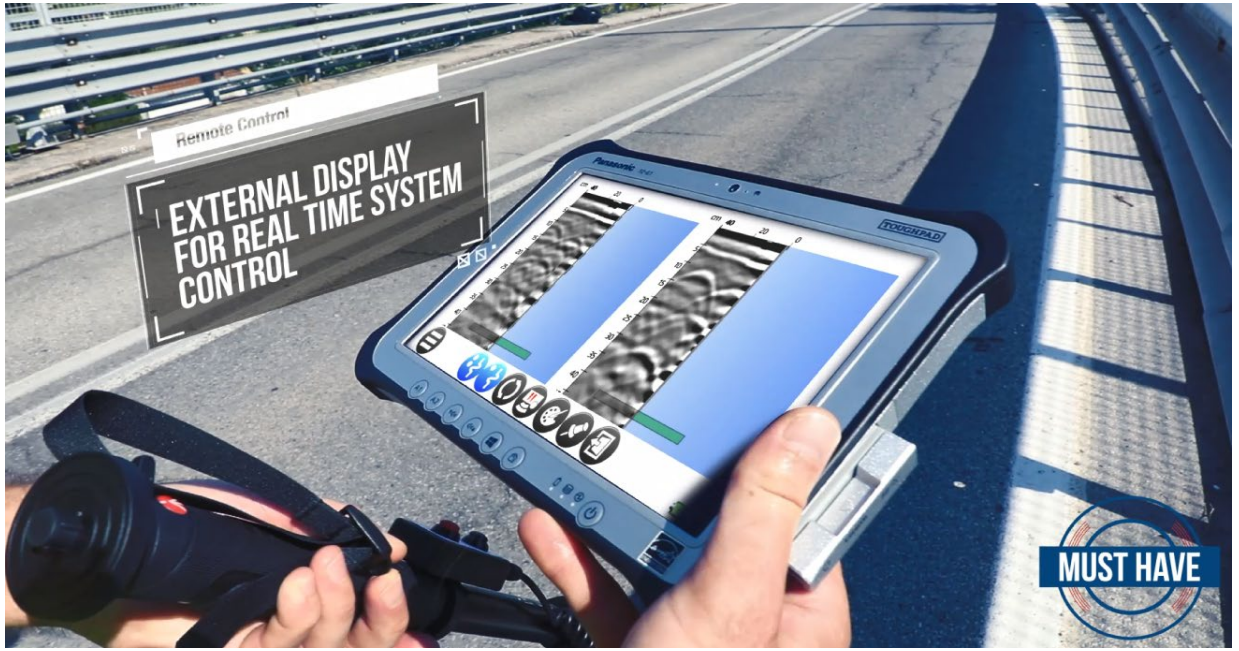
Video >>>



Benefits - Safety

- **Improve safety by:**
  - Improve construction safety
  - Improve man-power safety
- **C-thrue Methods:**
  - Automatic discrimination on rebar/void and other concrete structure to improve safety before cutting or drilling
  - External and extended remote handle for user to remote control
  - External display for user to real time control the system in safe position
- **Traditional Methods**
  - Cannot automatically discriminate rebar/void
  - Extended handle without remote control





Benefits - Environmental

- **Improve Environmental Performance by:**
  - Reduce construction waste
  - Digitalise concrete data for further management
- **C-thrue Methods:**
  - C-THRUE allow user to see thru and understand concrete structure before starting the construction progress
  - Convert reality concrete inner structure into digitalise data for further construction and environmental management
- **Traditional Methods**
  - Open the pit for concrete structure checking before starting the construction