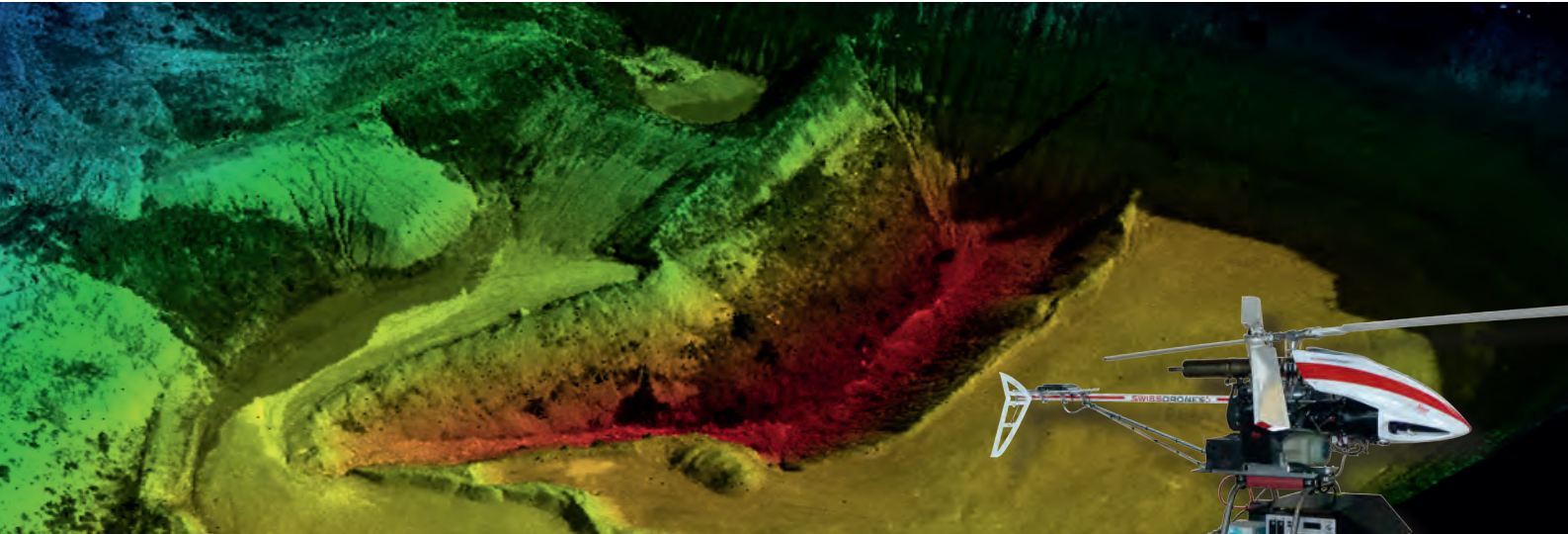


Leica RCD30 for UAV Mapping from UAV-based Platforms



UAV-based Mapping – an Emerging Market

The demand for professional UAV-based mapping solutions is growing world-wide. Although new technologies emerge at a rapid pace, many questions regarding operating environment and best practices have yet to be answered. For our customers, a professional UAV mapping solution has to be safe and tested, provide accurate geospatial information and should be part of a more automated workflow environment.

Leica Geosystems and Swissdrones – Working Together for Innovation and Safety

Leica Geosystems, the leading provider of airborne mapping solutions, is collaborating with Swissdrones, a UAV manufacturer, to explore new UAV-based solutions that will meet the exacting requirements of the professional mapping market. Of particular focus are solutions that can be operated safely in often harsh environmental conditions. Swissdrones, which is based in the St Galler Rheintal, Switzerland, brings outstanding expertise in engineering, manufacturing, deploying and operating UAVs for earth observation, directly complementing Leica Geosystems industry-leading mapping technology.

The Leica RCD30 for UAV – High Accuracy Mapping from UAV-based Platforms

As a first, the Leica RCD30 medium format camera has been integrated into the Swissdrones Waran TC-1235 UAV. The Leica RCD30 is the world's first medium format camera to provide superior multispectral imagery and highest accuracy. Its unique photogrammetric design features make the Leica RCD30 the preferred choice as a standalone or oblique mapping solution, for integration with a LiDAR sensor and for operation onboard an unmanned aerial vehicle (UAV). The Swissdrones Waran's equally unique design features provide superior payload capacity, prolonged endurance, stable flight patterns and a high degree of safety features.

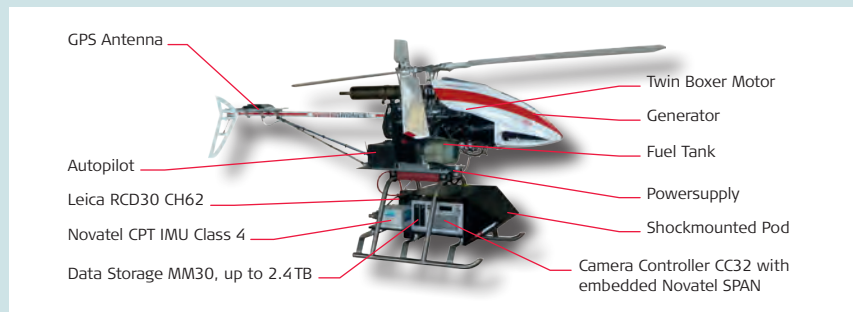
For further information on this development, please email us on uav@leica-geosystems.com or visit our website www.leica-geosystems.com

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Leica RCD30 for UAV with Swissdrones Waran TC-1235

Integrated Solution

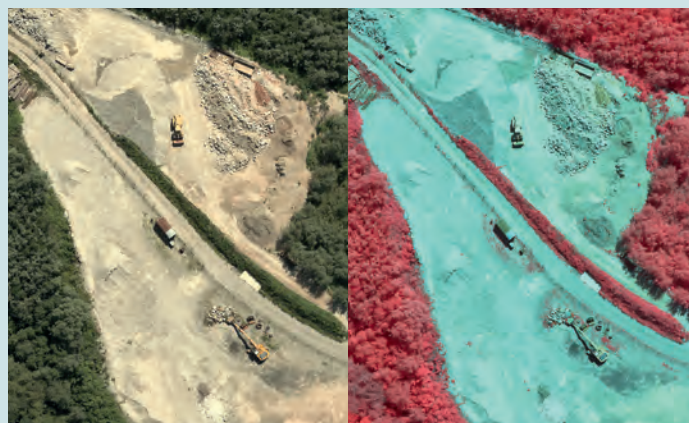


Swissdrones Waran TC-1235 UAV with integrated Leica RCD30 CH62, CC32 and Novatel IMU.

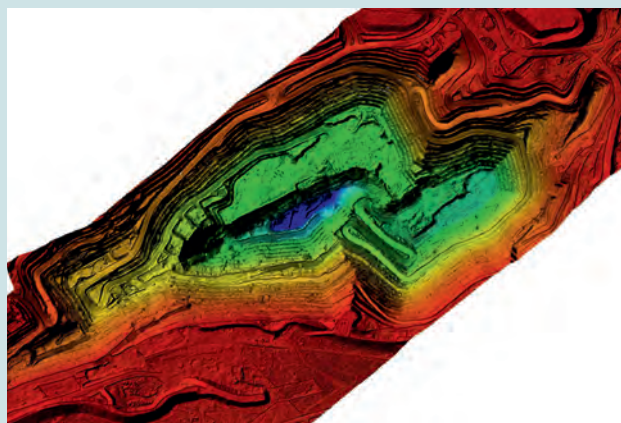


Leica RCD30 CH62 with Camera Controller CC32.

End-to-end Workflow



Orthophotos in RGB and FCIR for mapping and environmental analysis.



High-resolution surface model of Kalgoorlie superpit created using Leica DSM module (data courtesy of Fugro Spatial Solutions Pty Ltd).

Swissdrones Waran TC-1235 UAV – Performance Specifications

| | |
|---------------------------------|-----------------------------------|
| Rotor | Flettner Dual Rotor 2x2.8m |
| Engine | Twin Boxer Motor, 170ccm, 14.5 kW |
| Dimensions L x W x H | 1.7 m x 0.7 m x 0.9 m |
| Empty weight | 35 kg (without camera pod) |
| Payload Capacity | Leica RCD30 Camera pod 15 – 20 kg |
| Maximum take off weight | 70 kg |
| Maximum fuel capacity | 20 l |
| Maximum flight operation | 4 hrs |
| Maximum airspeed | 100 km/h |

Leica RCD30 Camera Head CH6x – Sensor Characteristics

| | |
|---------------------------------|--|
| CCD Size (60MP*) | 8956 x 6708 pixels |
| Pixel Size (60MP) | 6 µm |
| Dynamic Range of CCD | 73 dB |
| Resolution A/D Converter | 14-bit |
| Data Channel | 16-bit lossless compressed |
| Maximum Frame Rate | 1.0 sec |
| Motion Compensation | Mechanical, multi-directional |
| Spectral Range | CH62RGB and NIR (780 – 880 nm), coregistered |
| Weight (w/o lens) | 3.1 kg |
| Dimensions | Height 167 mm, diameter 128 mm |

Leica RCD30 Camera Head CH6x – Optics

| | |
|----------------------|---|
| Lenses | |
| Leica NAG-D 50mm | Weight 0.8 kg, height 76 mm |
| Leica NAT-D 80mm | Weight 0.5 kg, height 46 mm |
| Shutter | High accuracy performance between –10°C and +30°C |
| IMU selection | Central shutter, user replaceable (~200,000 + frames) |
| | Leica IPAS CUS4, DUS5m NUS5 |

Leica RCD30 Camera Controller CC32

| | |
|-----------------------------|--|
| Weight (w/o MM30) | 6.1 kg |
| Dimensions L x W x H | 300 mm x 260 mm x 140 mm |
| Capacity | Controls up to 5 CH6x |
| | Includes deeply coupled GNSS/IMU solution |
| Processor | WIN7 64-bit, 8 GB RAM, 32 GB flash, USB 2.0, SATA |
| Mass Memory MM30 | Solid state available in 320 GB, 600 GB and 1,200 GB |
| | CC32 holds up to 2 MM30s |
| | Weight 0.5 kg |
| | Removable & portable |

Mass Memory Capacity – For oblique configurations only a joint MM30 mode is available.
 Joint MM30 1,200GB 39,600 RGB images or 31,600 RGBN images
 Joint MM30 600GB 18,800 RGB images or 15,800 RGBN images
 Joint MM30 320GB 10,600 RGB images or 8,400 RGBN images

Leica RCD30 Electrical

| | |
|----------------------------------|------------------|
| Average Power Consumption | < 200 W / 28 VDC |
|----------------------------------|------------------|

Leica RCD30 Standards

RTCA DO-160G, EUROCAE-14E, FAR§23.561, FAR§27.561,
 USA FCC Part 15, EU Directive 1999/5/EC

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