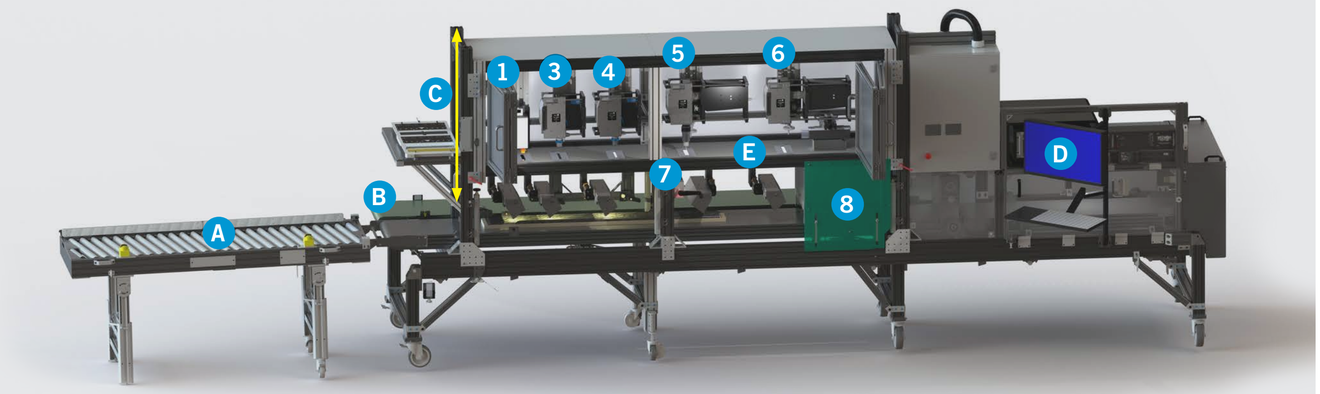
nCore
For Mineral Knowledge

Photon etc
A spectrum of solutions

nCore Multi-Sensor Hyperspectral Core Scanner

The nCore is a fully autonomous multi-sensor scanning platform designed for continuous drill core scanning and handling. Built with our proprietary state-of-the-art hyperspectral imagers, the system can deliver exceptional performance directly on site or in a laboratory with a variety of different modular configurations readily available. Three modular system options are available: Compact, U-Shaped and Container to accommodate all mining industry needs. The nCore allows for the integration of up to 7 optical sensors, offering the most comprehensive set of imaging tools and providing an extensive map of the mineralogical landscape with unparalleled accuracy.



U-Shaped System

Specifications

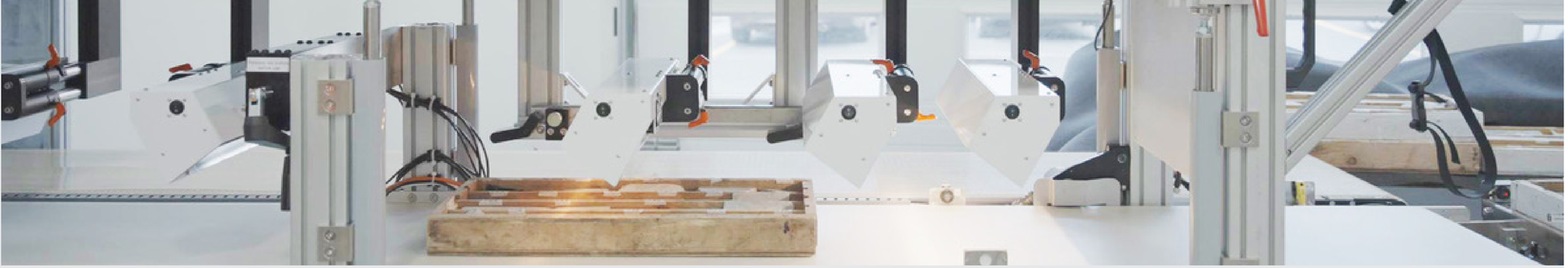
	1	2	3	4	5	6	7	8	A	B	C	D	E
	VNIR	**SWIR 1.7**	**SWIR 2.5**	**eSWIR 2.9**	**MWIR**	**LWIR**	**RGB**	**3D laser profiler**	**Pre-alignment conveyor**	**Return conveyor**	**Height-adjustable camera enclosure**	**Integrated workstation**	**Bar code reader**
Spectral range (nm)	400 - 1000	950 - 1600	950 - 2500	1600 - 2800	3000 - 5000	7500 - 11500			Allows easy feeding in order to have a continuous flow of drill boxes	The u-shaped path allows the product to be fed on one side and returned on the back side for an efficient one person operation	Can be adjusted to different drill core diameters up to 3 inches	Easy access to data during the scanning process	Easy reading of the barcode label on the core boxes while they are being scanned, making it easy to tag hyperspectral data
Spectral channels	447	256	320	320	246	106	3						
Spectral sampling (nm/channel)	1.3	2.5	5.0	3.8	8.00	40.0							
Spectral resolution FWHM (nm)	<2	<5	<10	<8	<20	<100							
Spatial channels	800	256	256	256	256	256	2048						
Spatial sampling (mm/px) (FOV = 25 - 32 cm)	0.31 - 0.4	1.0-1.25					0.2	x,y : 100µm z : 200µm					
FPS	100						500						
Scan speed mm/s	100												
Reduced system dimensions (L x W x H) Compact system	3800 x 800 x 2000 mm												
Full system dimensions (L x W x H) U-Shaped System	7700 x 1400 x 2300 mm												
Container dimensions (L x W x H)	6000 x 2430 x 2590 mm												
Max sample size (L x W x H)	370 x 1650 x 80 mm												
Warranty	one year												

Unique Characteristics

- Up to 7 optical sensors and a bar core reader
- Fast scanning rate over 1600 m of core per 8-hour shift
- No sample preparation needed
- Range from 400 nm to 11,5 micron of scanning
- Modular systems
- 560 MB of data volume per meter

Capabilities

Hyperspectral VNIR	REE deposits Additional discrimination capabilities for hydrated minerals
Hyperspectral SWIR/eSWIR	Mapping of white mica, biotite, chlorite, kaolinite, epidote, etc. Direct detection of hydrocarbons Additional discrimination capabilities for hydrated minerals
RGB	Colour and textural mapping
MWIR	Mapping of carbonates in hydrothermal deposits (Au-Cu)
LWIR	Mapping of non-hydrated silicates
3D laser profiler	RQD evaluation
LIF & LIBS	REE identification Direct quantitative elemental mapping
Room for improvement	Expandable with novel characterization methods



Optimize Value with nCore

The nCore has been developed for geologists to minimise logging time and enable them to focus more on mineral map interpretation and model refinement, which we believe is a priority for them.

The system has been developed to handle the repetitiveness and systematicity involved in logging, and will provide geologists with a revolutionary time-saving asset, so that they can focus their expertise on the drill core of interest, avoiding the mundane aspects of the job.

In-depth core analysis can increase the accuracy of the resource estimate and more effectively define the design of a future mine. In addition, it can exponentially increase the return on an exploration campaign, significantly reducing the initial drilling costs.

With full core logging and mineral interpretation on site and in the lab, a digital library will allow users to easily access and share geological information for future review. Information that will not degrade over time and will not require costly storage in a facility.

Instant access to objective and accurate mineralogy will allow a faster decision on the next target. A higher processing rate and a reduction in the number of samples sent to the laboratory will result in a lower overall cost per metre for analysis.

Compact System

How it works

The system incorporates five motorised axes to automatically handle the core boxes. The operator loads the input conveyor, and the on-board control computer feeds the boxes as required while acquiring the signal. After being processed, the core boxes exit onto the return conveyor and are collected by the operator. Due to its versatile design, the nCore system can be used as a containerised mobile laboratory outdoors, but the scanner can also be taken out of the container and used in the core storage facility when more convenient.

A bespoke lighting system provides high density illumination for a very high scan rate and gives good results with dark minerals. This system, combined with our hyperspectral brush cameras, provides a high signal to noise ratio, fast scan rate and high resolution images over the widest spectral range ever achieved.

The operator's screen displays a live view of the current acquisition from each camera as well as a reconstructed view of the core box and allows various meta information to be added to the data file, such as core box number, hole name, metres, etc.

nCore Modular System Platform Options

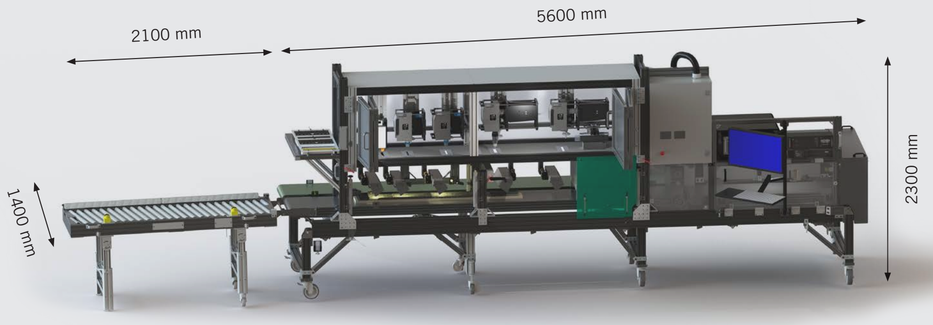
Compact

Perfect for indoor use to allow an easy scan with a high throughput.

Maximum Sensors

5 hyperspectral cameras
2 optical sensors
(RGB camera and 3D laser profiler),
and a barcode reader.

U-Shaped

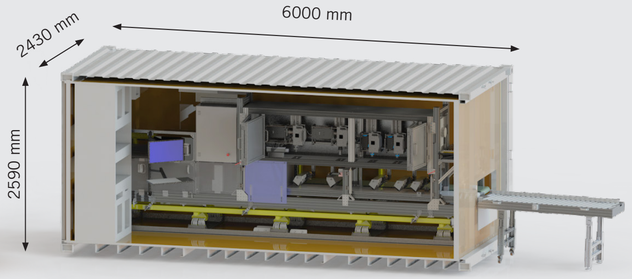


This efficient system allows one person to feed and return on the same side.

Maximum Sensors

Twice as must space than the Compact system allowing up to 14 optical sensors and a barcode reader.

Container



The container system can be shipped anywhere for efficient work both indoors and outdoors.

Maximum Sensors

Twice as must space than the Compact system allowing up to 14 optical sensors and a barcode reader.