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nCore
For Mineral Knowledge

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Photon etc
A spectrum of solutions

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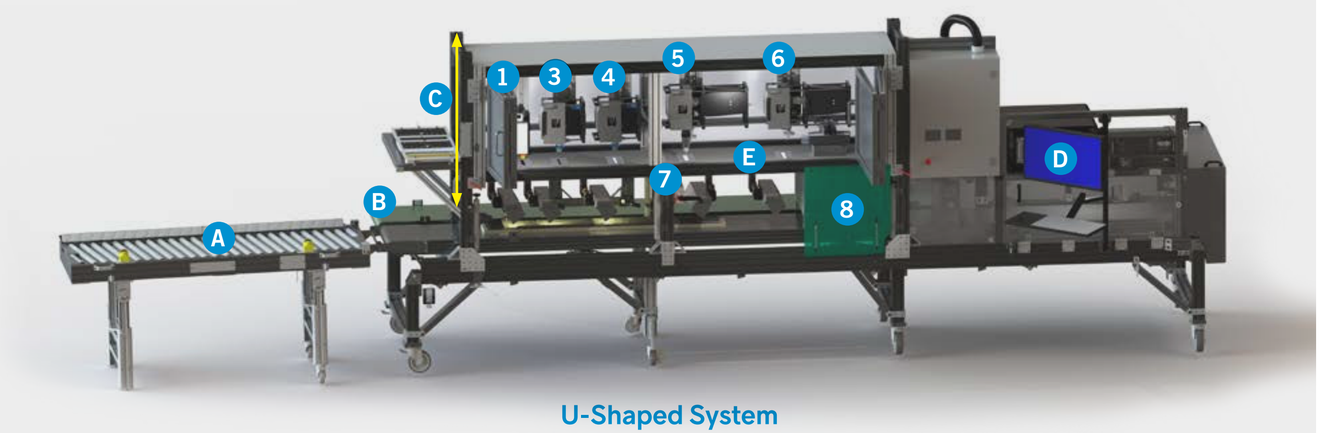
nCore Multi-Sensor Hyperspectral Core Scanner

The nCore is a **fully autonomous** multi-sensor scanning **platform** for continuous drill core scanning and handling. Built with our proprietary state-of-the-art hyperspectral imagers, the system can deliver its outstanding performance directly on or in a laboratory with the different modular configuration options offer. **Three options** of modular system are offer: Compact, U-Shaped and Container to accomodate all the needs of the mining industry. The integration of up to 7 optical sensors provides the most comprehensive imaging tool set, delivering an extensive map of the mineralogy with unmatched precision.



U-Shaped System

Specifications

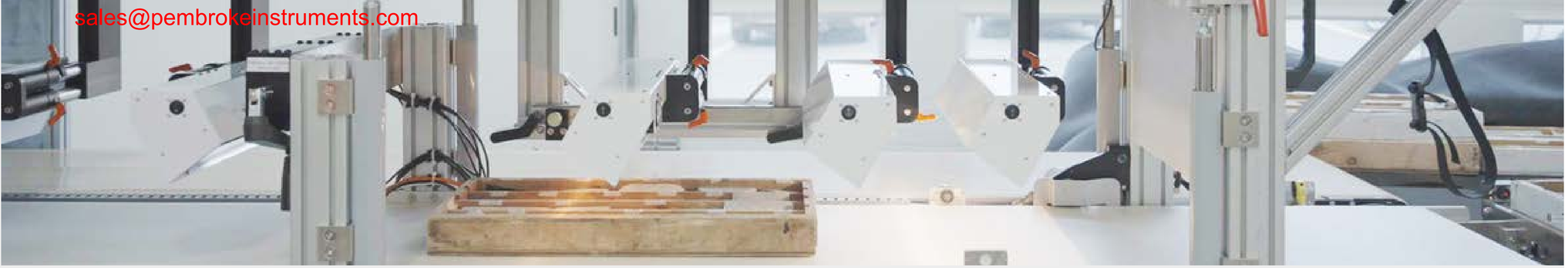
	1	2	3	4	5	6	7	8	A	B	C	D	E
	VNIR	**SWIR 1.7**	**SWIR 2.5**	**eSWIR 2.9**	**MWIR**	**LWIR**	**RGB**	**3D laser profiler**	**Pre-alignment conveyor**	**Return conveyor**	**Height-adjustable camera enclosure**	**Integrated workstation**	**Bar code reader**
Spectral range (nm)	400 - 1000	950 - 1600	950 - 2500	1600 - 2800	3000 - 5000	7500 - 11500			Allow easy feeding in order to have continous flow of drill boxes	The u-shaped path allows the product to be fed on one side and return on the back side for an effecient by one person operation	Could be adjust to different drill core diameters up to 3 inches	Easy acces 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												
Reduce system dimension (L x W x H) Compact system	3800 x 800 x 2000 mm												
Full system dimension (L x W x H) U-Shaped System	7700 x 1400 x 2300 mm												
Container dimension (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 was develop with geologists in mind, allow them to spend time for interpretation mineral maps and refining models rather than logging.

We believe that geologists should spend their precious time interpreting mineral maps and refining models rather than logging, which is something the nCore system can handle. It was developed to handle the repeatability and systematicity involved in logging and is a great asset to overburdened geologists since it allows them to focus on drill cores of interest and skip the sterile parts.

A thorough analysis of the cores can increase the precision of the resource estimation and better inform the design of a future mine. Furthermore, it can multiply the return on an exploration campaign, thereby amortizing the substantial cost of drilling.

Offered for on-site or in-lab complete core logging and mineral interpretation, a digital library will provide users with easy access to geological information and allow it to be shared for further review; in addition, it will not degrade over time or require costly storage at a facility.

Having instant access to objective and precise mineralogy, with information available within hours, allows for faster decision-making on the next target. A higher processing rate and sending fewer samples to the lab result in an overall lower cost per metre for analysis.

Compact System

How it works

The system incorporates five motorized axes to automatically handle the core boxes. The operator loads the input conveyor, and the onboard control computer takes care of feeding the boxes as needed while acquiring the signal. After being processed, the core boxes exit on the return conveyor and are collected by the operator. Thanks to its versatile design, the nCore system can be used as a mobile containerized laboratory outdoors, but the scanner can also be taken out of the container and used in the core storage facility when it is more convenient.

A custom-made lighting system provides high-density illumination for a very high scanning rate and gives good results with dark minerals. This, combined with our proprietary hyperspectral push broom cameras, produces a high signal-to-noise ratio, fast scanning speed and high-resolution images over the widest spectral range ever done.

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

Using reflectance spectroscopy data and a region-specific mineral library, the mineralogy maps are created in correlation with proxy minerals; the proprietary algorithms can highlight high probability targets for the element of interest.

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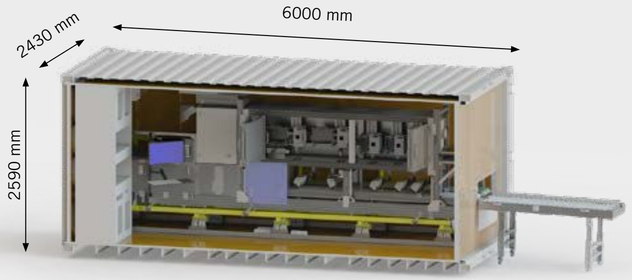
nCore Modular System Platform Options

U-Shaped

This efficient system allow one person to fed and return on the same side.

Maximum Sensors	Twice as must space that the Compact system allowing up to 14 optical sensors and a bar code reader.

Container



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

Maximum Sensors	Twice as must space that the Compact system allowing up to 14 optical sensors and a bar code reader.

Compact

Perfect for indoor use to allow to scan easilly with a high trougput.

Maximum Sensors	5 hyperspectral cameras 2 optical sensors (RGB camera and 3D laser profiler), and a bar code reader