



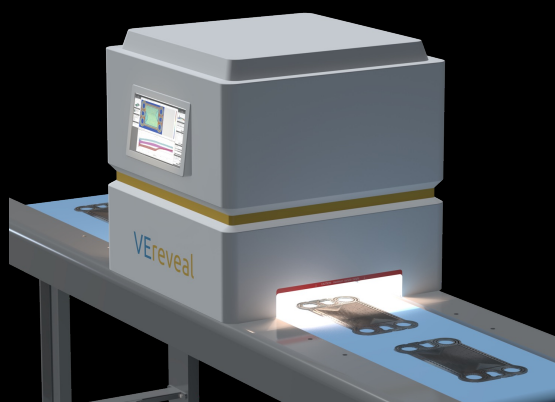
# VEREVEAL

## Hyperspectral Vision Inline Module

### FAST, COMPREHENSIVE AND NON-DESTRUCTIVE

VEreveal features the VEpioneer® core for continuous inline inspection by Hyperspectral Vision. It efficiently captures surface properties, detects thin films, and identifies deviations from production specifications.

- **FAST**  
Near real-time for data acquisition and evaluation
- **COMPREHENSIVE**  
100% product information
- **NON-DESTRUCTIVE**  
Unique combination of optical spectroscopy and imaging



### INSIGHTS FROM INSPECTION

VEreveal boosts your product and sample knowledge by orders of magnitude with spatially resolved recognition of:

- **LAYER THICKNESS**  
1 nm - 500 µm, depending on layer material
- **QUALITY CRITERIA**  
Defects, contaminations, processing status, roughness of surfaces and interfaces
- **SAMPLE PROPERTIES**  
Chemical, electrical, optical

CHECK  
OUT MORE



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# VEREVEAL

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### INSPECTED MATERIALS

VEreveal is designed for simple and fast as well as continuous area measurement of surfaces and thin films on various substrates:

- **SUBSTRATES**

Semiconductors (Si, SiC, ...), metals, polymers, ceramics, glass, ...

- **LAYERS**

Oxides, nitrides, carbides, polymers, ...

### SPECIFICATIONS

Imaging technique	Pushbroom scanning mode
Acquisition mode	Reflectance   fluorescence optional
Acquisition time per frame	< 4 ms shorter acquisition times optional
Wavelength range	VNIR: 400-1000 nm   SWIR: 900 – 1700 nm   further wavelength ranges (1 – 2.5 µm) optional
Spectral bands	VNIR: 448   SWIR: 224
Spectral resolution	VNIR: 1.34 nm   SWIR: 3.5 nm
Field of view (FOV)	customisable: typical 1 µm minimum (µ-optics), maximum according to requirements
Spatial resolution	application and sensor based, typically < 1 mm
Lighting	VELuminise unit: tuneable halogen broadband source for homogeneous light field, broadband LED with spectral range 400 – 900 nm or UV-LED excitation optional
Sample size	defined by customer requirements
Sample stage	customized, i. e. conveyor belt or specific sample holder
Reference	reference integration into process system, if feasible selection of reference materials according to custom process (usually PTFE, protected aluminium)
Data evaluation time	near real time
Data connection	customisable, defined by customer requirements
Operating conditions	+5 ... +45 °C (non-condensing)
System certification	CE, RoHS, UKCA
Power requirements	rated voltage: 230 VAC (115 V or heavy current connection optional) rated frequency: 50 - 60 Hz
Connectivity	RJ45 (ethernet)
Compute unit	x86 based, with DIVE VEsolve® Pro software

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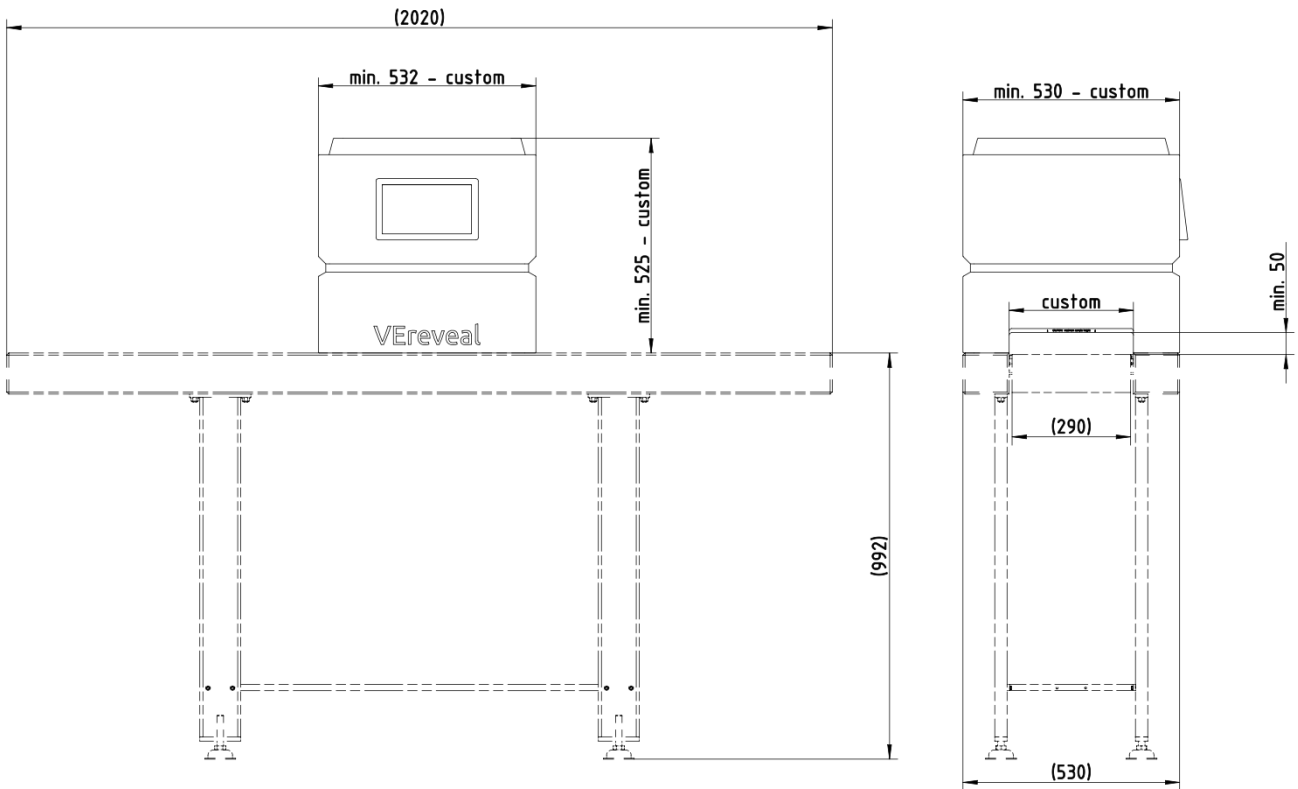
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### DIMENSIONS



Dimensions are subject to sample sizes and the manufacturing process of the customer. The above dimensions provide an illustration of a specific use case with sample sizes of 120 mm x 220 mm.

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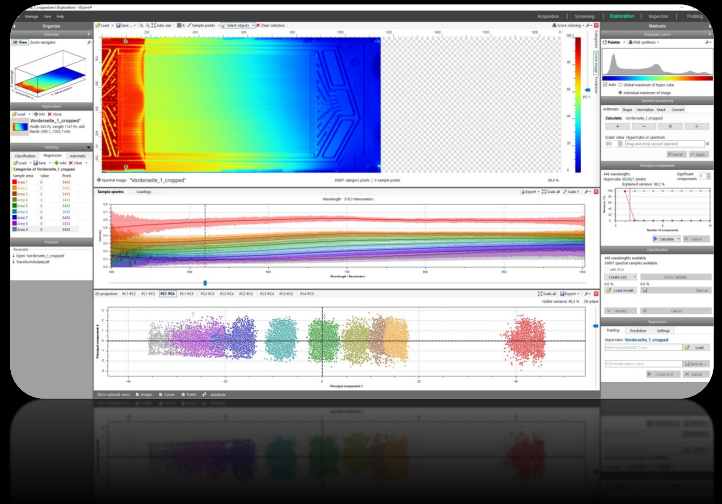
# VESOLVE<sup>®</sup> PRO

## Hyperspectral Vision Software

### TARGETED, USER-CENTERED AND AI-DRIVEN

VEsolve<sup>®</sup> Pro is the powerful all-in-one software suite designed for DIVE technology, comprising acquisition, screening and exploration of Hyperspectral Vision data ("hypercubes").

- **TARGETED**  
Designed for DIVE hardware
- **USER-CENTERED**  
Visualise the insights within milliseconds after data recording
- **AI-DRIVEN**  
Teaching and application of AI models by simply one click



### START EASY

VEsolve<sup>®</sup> Pro boosts your productivity together with DIVE's VEpioneer<sup>®</sup> system by orders of magnitude:

- **PRESETS**  
Provision of optimised presets per sample and ensuring highest data quality through live correction of all non-sample influences
- **PRESS PLAY**  
The green button just starts the preset and runs the measurement

CHECK  
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# VESOLVE<sup>®</sup> PRO

## Hyperspectral Vision Software

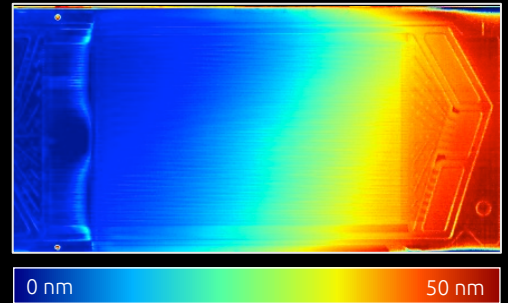
### RUN EASY

VEsolve<sup>®</sup> Pro provides easy handling of sophisticated math utilizing commonly known concepts empower users to commence productive work immediately.

- **AI models**

Teach your own AI models by simply “painting” the hypercube or utilize existing models

Bipolar plate with graphite like carbon layer and applied thickness model



### SOFTWARE FEATURES

Data acquisition	with live frame
Referencing	white and dark reference   fault correction optional
Measurement control	preset use excitation intensity   exposure time   framerate   pixel binning region of interest (if supported by hardware)   spatial resolution (scan direction)
Sampling modes	standard (scan moving) reduced noise (step-wise by averaging frames) free run (record frames or record until stop)
Data screening	palette selection   RGB synthesis
Hypercube editing	resampling   crop   rotation   stitching
Object separation	threshold   arithmetic operations
Spectral processing	smoothing   median calculation   derivative calculation normalization   masking
Data exploration	unsupervised and supervised AI
Exploratory AI	PCA, k-means
Classification AI	LDA, random forest
Regression AI	PCR, PLS
Data import	ENVI (bsq, bil, bip), .jpg, .hsi, .csv, .hdf
Dat export	ENVI, .tiff, .jpg, .png, .csv, .xml
Software requirements	PC or laptop, 32 GB RAM and 1 TB SSD recommended, Windows 11

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