CoreScan3 Digital Drill Core Imaging System

CoreScan3 – optical drill-core acquisition and storage unit (stand-alone)

CoreScan3 is a portable core imaging device developed for drill core image acquisition, storage and evaluation of full and slabbed core. Furthermore, whole core boxes can be scanned in one image.

Full core is rotated 360º around its cylindrical axis while the line-scan camera, positioned parallel to the axis of rotation, scans its surface. Full core is scanned at a rate of ~20 sec/m and the image can be stored as BMP, PNG, TIF or JPG files.

Tasks:

- Creation of a digital drill core library with quick search functions
- Re-orientation of the drill core log according to borehole inclination and deviation
- Structural analysis of drill cores
- Special routine for structural analysis of heavily broken drill cores
- Calculation of mineral content
- Determination of grain size distribution (Sieve curve)
- Determination of geotechnical parameters (RQD), fracture density, fracture distance

Functions:

- Digital drill core acquisition & storage
- Applicable on any core drilling project
- Online global accessibility of core images
- Digital drill core library
- Structural analysis and presentation
- Petrographical analysis: Mineral content, grain size distribution
- Derivation of geotechnical and geomechanical parameters (RQD)

Advantages:

- Higher production rate owing to faster scanning process (1m core in 20 seconds)
- Completely new operating software with advanced features
- No moving parts (except for rollers) minimizes any damage
- Easy to remove drawer beneath the rollers collects dust and debris
- Reduced handling of core limits the possible damage – High workspace between core and lamp/camera
- Greater depth of field
- Better image quality with improved colour saturation and distribution
- Less prone to fluctuating light conditions
- Core boxes of any dimensions can be scanned

Examples

Finland

El-Teniente, Chile

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Modes & Dimensions

360º Full Core

- Length: up to 1 meter
- Diameter: 30 mm – 150 mm (1 ½ - 6 inch)
- Image size: 18 MB (1 meter, 100 mm diameter)
- Resolution: 5 – 40 pixel/mm = 127 1008 dpi

Slabbed Core

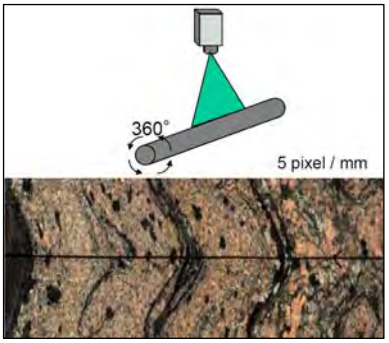
- Length: up to 1 meter
- Diameter: up to 250 mm
- Image size: 15 MB
- Resolution: 5 – 40 pixel/mm

Core Boxes

- Length: up to 1.05 meter
- Width: up to 0.64 meter
- Image size: 25 MB (1 x 0.6 meter)
- Resolution: 5 – 10 pixel/mm = 127 – 254 dpi

360º Full Core Mode

Scanning During Rotation of the Core



"Unrolled" Image of the Core Mantle

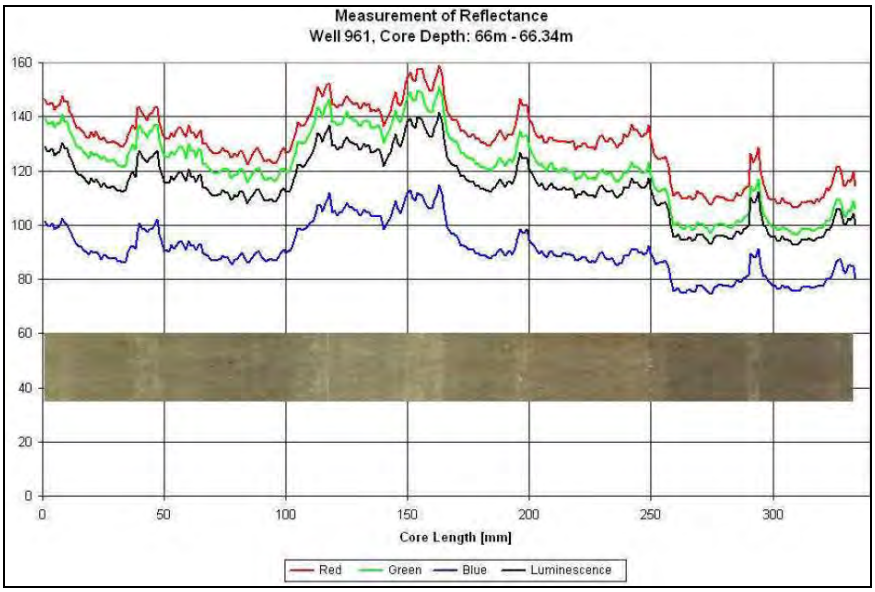
"Plane Mode"

Scanning of Slabbed Core and Core Boxes

Resolution: 5 – 40 pixel/mm

Surface of image of the slabbed core

3-Channel Spectral Data Measuring the Reflectance



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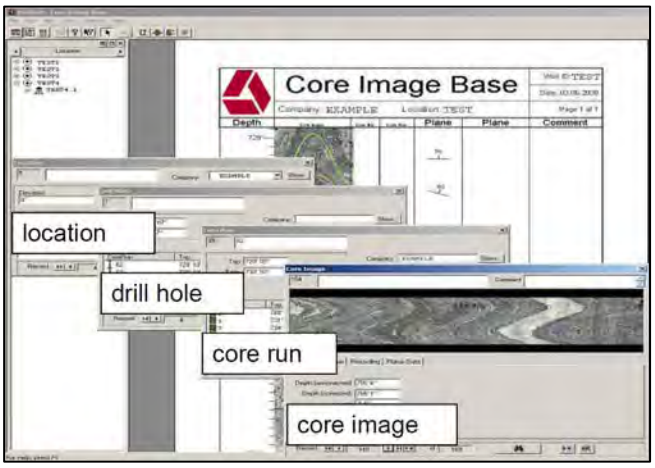
Terraplus

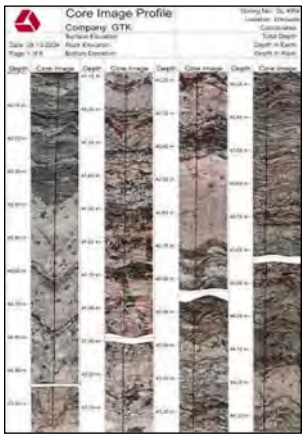
Evaluation Software

- CoreBase™2 (Digital Core Library)
- CoreStructure Analysis™ (Quantitative Structural Analysis)
- CoreImage Analysis™ (Petrographic Analysis)

CoreBase Data Management System



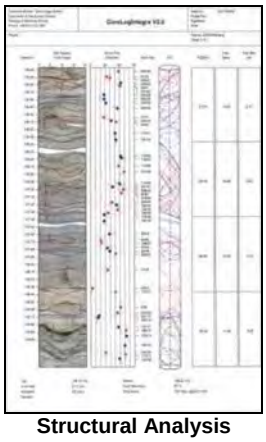
CoreBase™2 Digital Drill Core Library



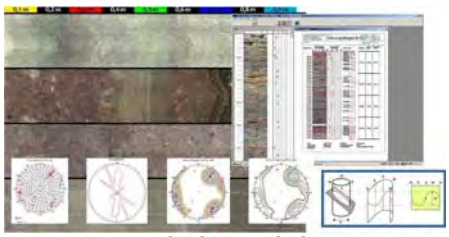
Virtual Drill Core Library

CoreStructure Analysis™

- Software system for quantitative structural evaluation, analysis and presentation
- Geological structures are evaluated by pickup routines (bedding, foliation, joints, faults, veins, self-determined)
- Acquired structures can be N-oriented in connection with geophysical logs or oriented drill cores
- Geomechanical parameters: RQD, FD, FS
- The orientation of the borehole together with the structures are presented graphically and in the case of deviated boreholes, the dip direction and dip of the structures are corrected directly on request



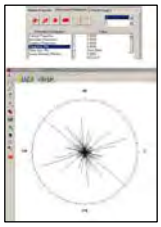
Structural Analysis



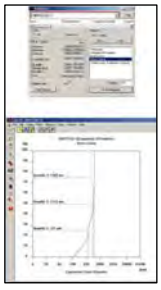
Quantitative Statistics

CoreImage Analysis™

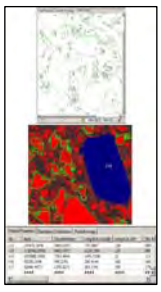
- Main parameters can be evaluated with “CoreImage Analysis”:
  - Differentiation of mineral phases
  - Mineral content (absolute and percentage)
  - Grain size distribution (sieve curve)
  - Grain sphericity (circularity, convexity, ellipticity, rectangularity)
  - Porosity (absolute and percentage)
  - Porosity size distribution



Orientation Distribution



Grain Size Distribution



Mineral Content, Particle Properties

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