THE COMPANY

AREAS

TOOLS AND TOOLING SYSTEMS
for metal cutting and components in cemented carbide and other hard materials

EQUIPMENT AND TOOLS MINING & CONSTRUCTION

PRODUCTS IN ADVANCED STAINLESS STEELS, SPECIAL ALLOYS, TITANIUM
and metallic and ceramic resistance materials
Applications in underground mining and construction:
OBJECT ORIENTED PROGRAMMING IN MATLAB

- Bring data and algorithms together
- Powerful once mastered

Applications:
- ...
- Encapsulation of Matlab graphics objects
- GUIs
- Make external interfaces drivers, dlls etc. „usable“
- Data evaluation
PARAMETER AND LANGUAGE MANAGEMENT

PARAMETER + PARAMETERCOLLECTION CLASSES

• Manage parameter values, defaults, minimum, maximum, display unit, display formatting, enumerations datatypes…

• Referenced by client classes

• Current value retrieval in code by key string:

```
value=obj.P.retr('Sump.targetstroke')
```

RETRIEVE LANGUAGE STRING

• Manage language text and formatting for multi language environment applications

• Languagechange (events)

• Text retrieval:

```
obj.L.retr('machineposition')
```
ENCAPSULATION OF MATLAB GRAPHICS OBJECTS

- Add functionality to basic graphics objects
- Graphics object reference is a property of encapsulating object
- Publish graphics object properties
- Add custom context menus and functionality
GUI

- Matlab graphics objects in additional overlay axes
- References to parent, neighbor and child objects
- Multi input navigation
- Callbacks stored as function handle properties
- Multilanguage
DATA ACQUISITION AND REALTIME PLOTTING
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Test 4

IFC Sine Position Control
OFFLINE DATA ANALYSIS TOOL
TBD: SCREEN VIDEO DATA SCREENING TOOL
HIGHLOAD ROCK CUTTING TEST RIG
DESIGN CONCEPT

MULTIPURPOSE CONCEPT

- Disc cutting: conventional or undercutting
- Pick cutting: single tool / multiple tools, radial tool / conical tool
- Horizontal raise boring
- Horizontal drilling

Cutting unit
Drive tool unit
Control room
Concrete foundation
Rock block unit
HIGHLOAD ROCK CUTTING TEST RIG
MODULAR CUTTERHEAD CONCEPT

radial pick
tri-cone-bit
17” disc
13” disc
raise boring cutter
conical pick

water
compressed air
power supply, Ethernet via fibre optic

oil
HIGH LOAD ROCK CUTTING TEST RIG
MEASUREMENT SYSTEM

- Software fully implemented in Matlab
- Interface with measurement hardware: binary TCP/IP protocol
- Customization of hardware modules
- Modular and expandable
GUIDANCE SYSTEM
THANK YOU FOR YOUR ATTENTION