Experts

Expert systems for registering and decision supporting

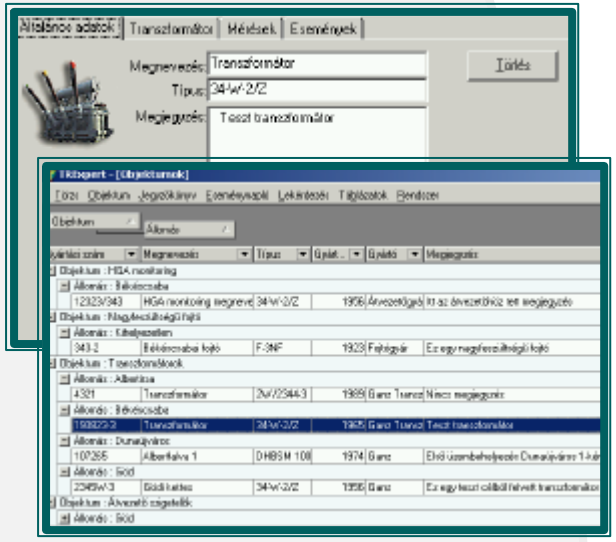
Kalocsai László, ☎ +36 (30) 9-773-890

©Kalotronics BT 2003 – Ver.En. 09p06

diagnostics
www.diagnostics.hu

Experts

Registering and Decision Supporting



A complex method for companies to manage their great-value high-voltage equipments by

- Recording general parameters of objects
- Inspecting their condition by evaluation of various type measurements
- Make expert decisions in connection with repairs and replacements

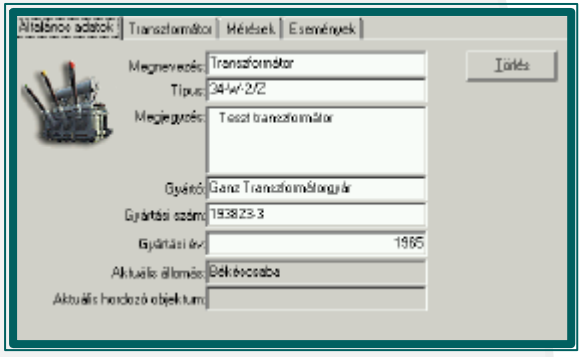
Experts

Registering and Decision Supporting

- Registering

  Base characteristics of filing includes

  - Objects
    - ★ Transformers and accessories, or
    - ★ Cables and accessories
  - Events
    - ★ Tracking objects events
    - ★ Abnormal events
    - ★ Scheduling object to-dos
  - Measurements
    - ★ Measuring results and
    - ★ Classification of measurement



Experts

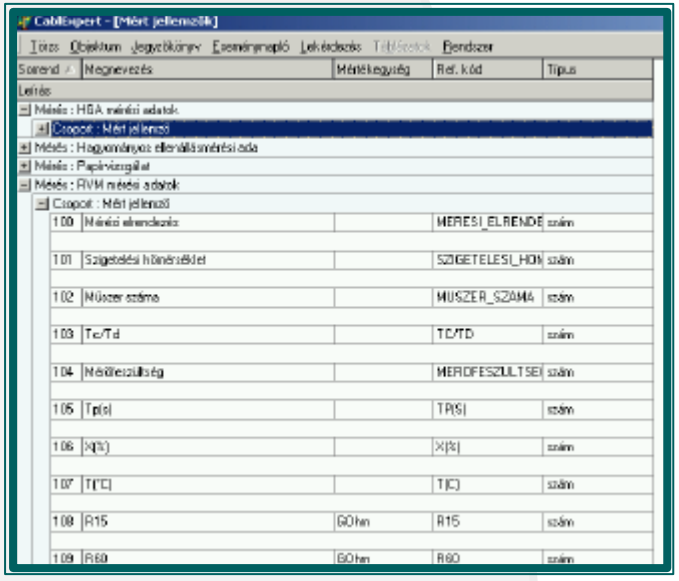
Registering and Decision Supporting

- Expertise

  Interactive, parametric, user alterable and programmable surface

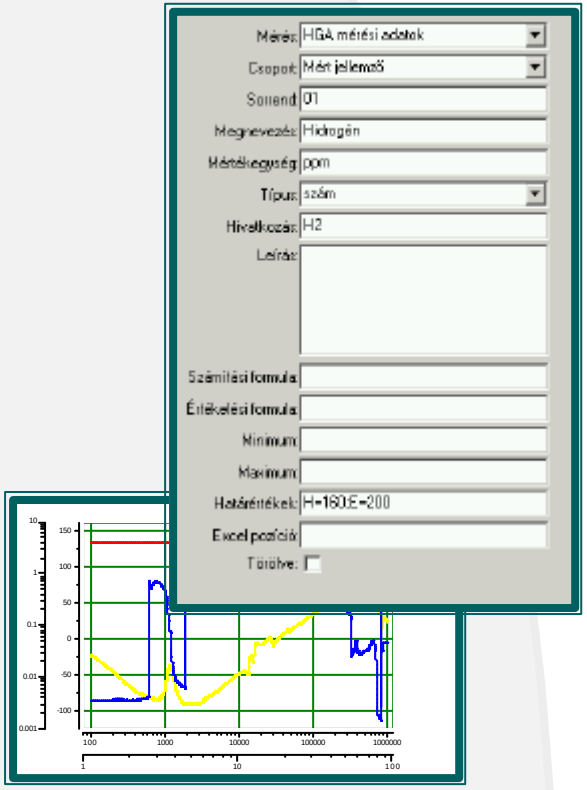
  - Objects can be sorted in different orders by filtering and weighting of various measurement and property categories.

    For example: find the ten worst condition objects attending the most important costumers.
  - Scheduling measurements, special plans for critical condition or exclusively important objects
  - Supports decisions of repair and replacement.



Experts

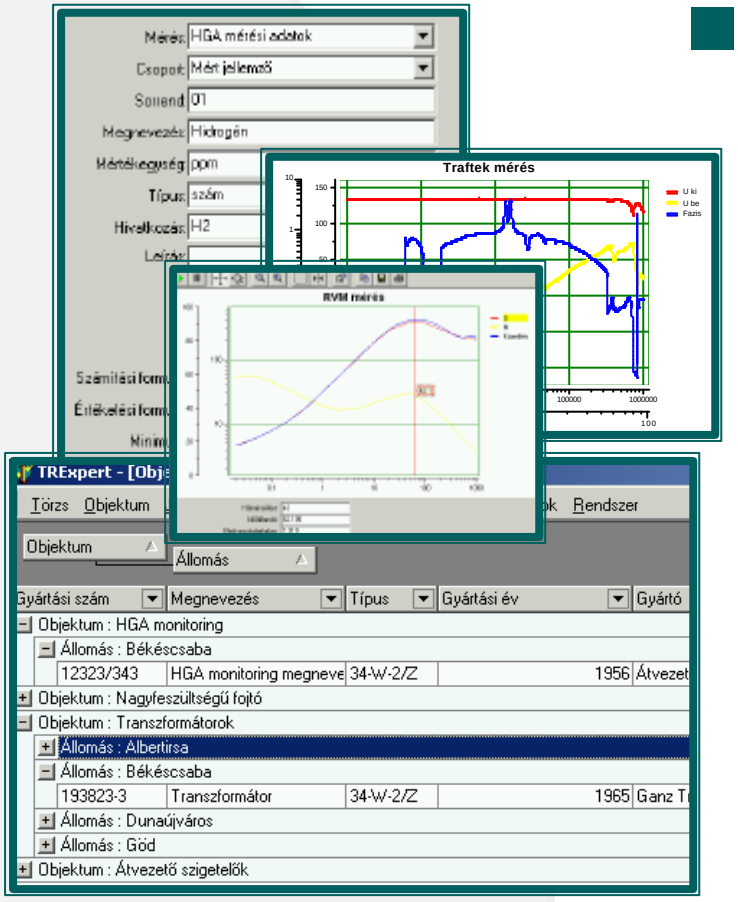
Registering and Decision Supporting



- Utilities
  - Uniform registration of objects
  - Import from external data sources
  - User expandable object list
  - User defined new measurement types
  - Importing measurement data from external source
  - Evaluation of measurement data, exporting to other systems
  - Aiding of document generation
  - Helping to file documents
  - Task to-dos

Experts

Registering and Decision Supporting



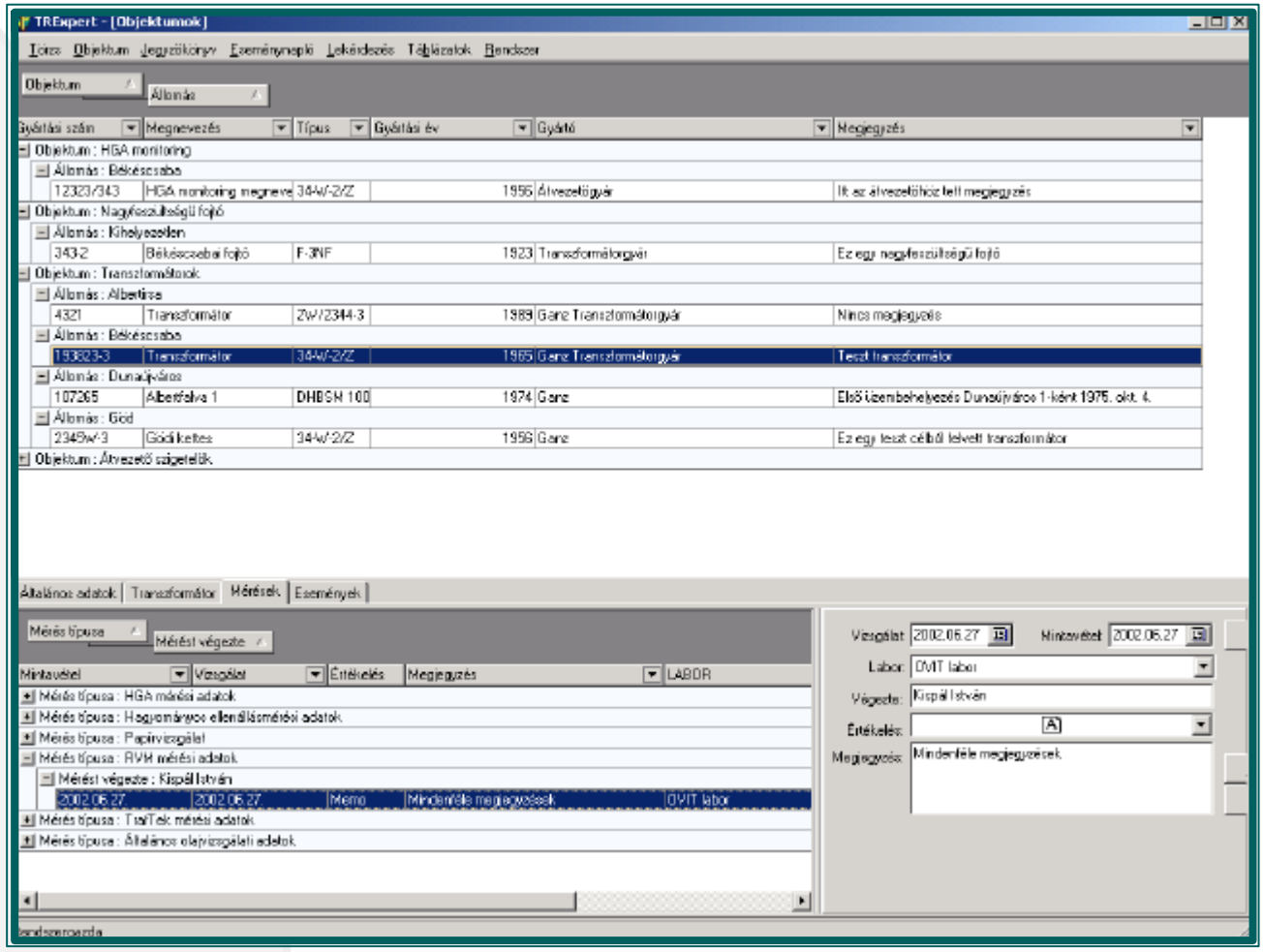
- Measurements

The following measurements are supported by the system:

- OWTS
- Isolation resistance
- Cable length measurement
- Tg delta measurement
- Voltage test
- RVM measurement
- High current resistance test
- Zn-O-Com
- PD-Anal

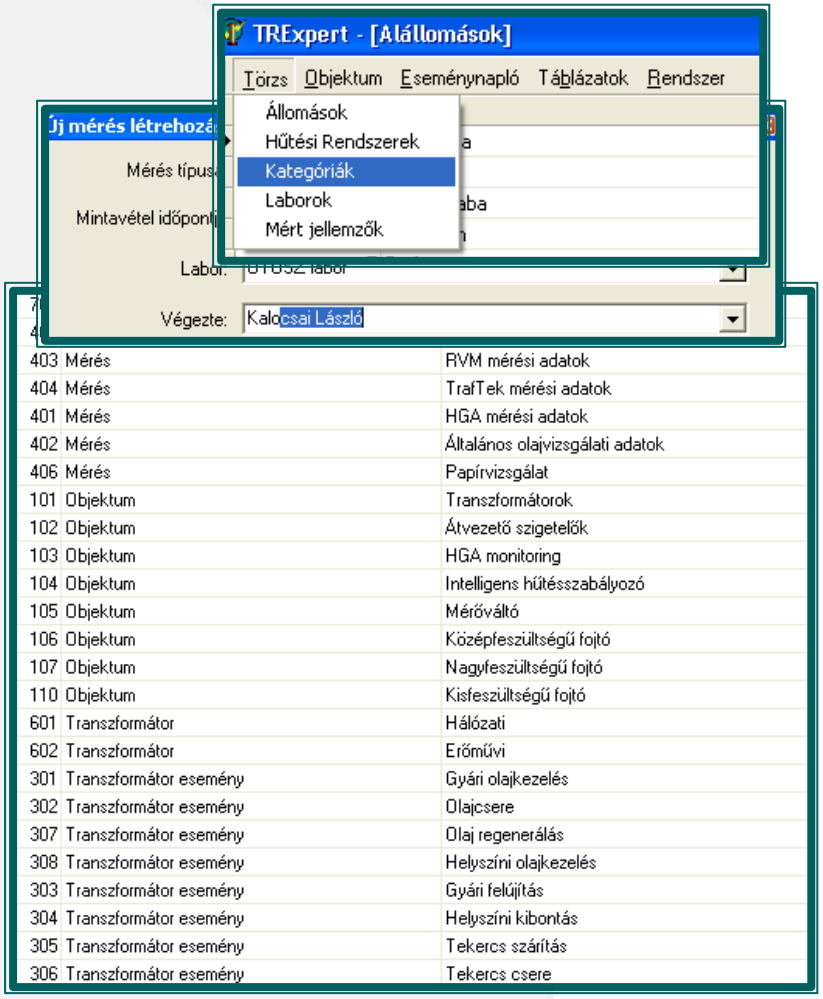
Experts

Registering and Decision Supporting



Experts

Defining Categories



- **Categories**

  Definitions and qualifications in rigorous order

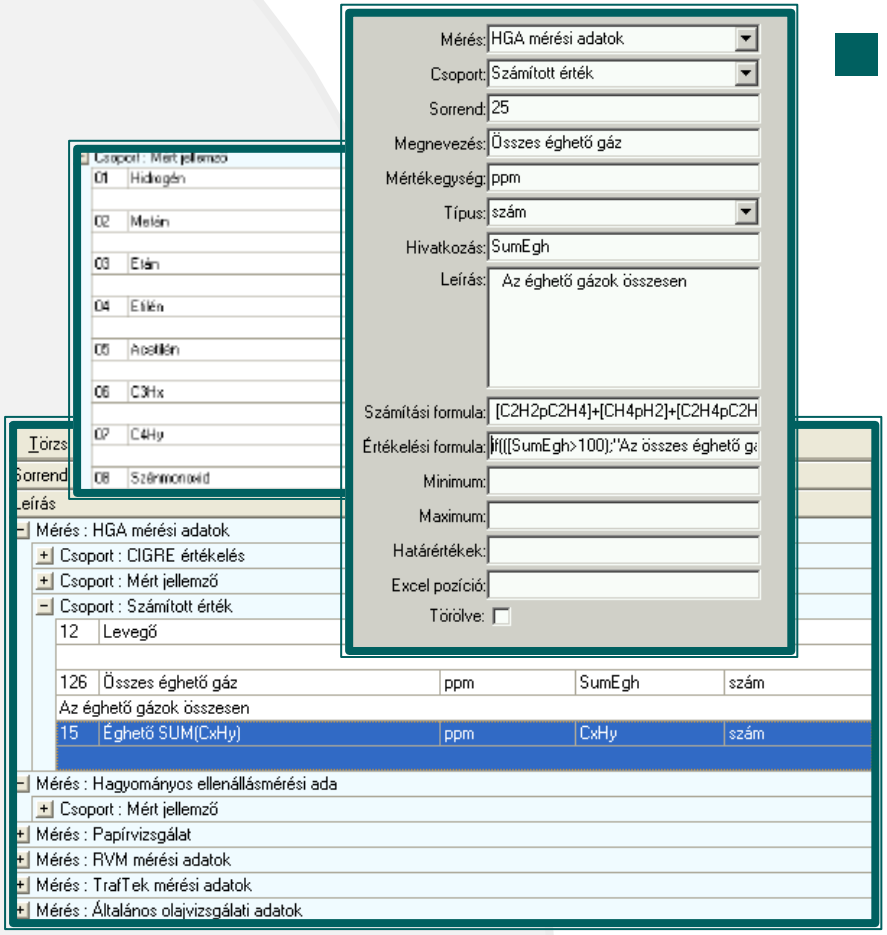
  - Defines selections
  - Broadened by user (administrator)
  - Minimizes hazard of erroneous inputs

- **Automatic filling**

  - Offeres former inputs of other objects after recognition.
  - Minimizes hazard of misspelling

Experts

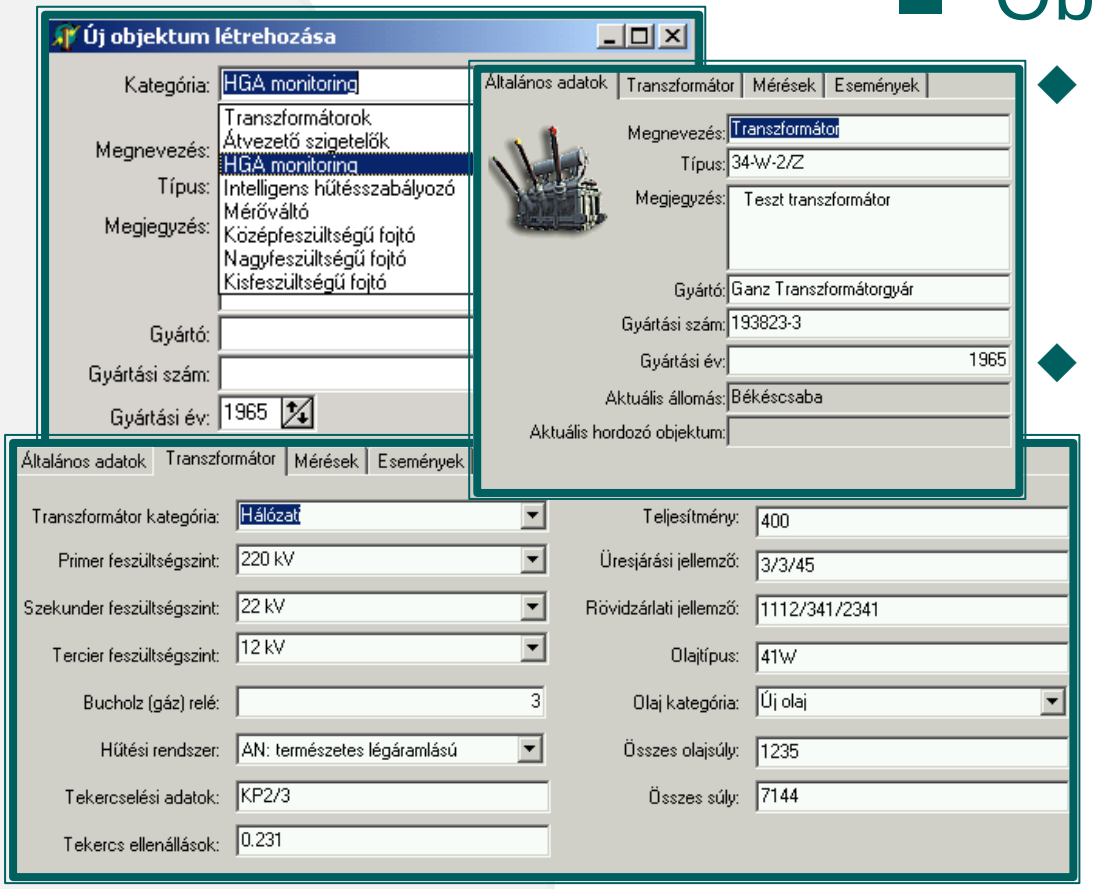
Defining Measurements



- Measurements
  - Incomplex measurements can be defined by simple category definition
  - Defing data groups
  - Defining data types
  - Defining data behavior
    - ★ Calculation formula
    - ★ Evaluation formula
    - ★ Maximum-minimum test
    - ★ Loadable from Excel table

Experts

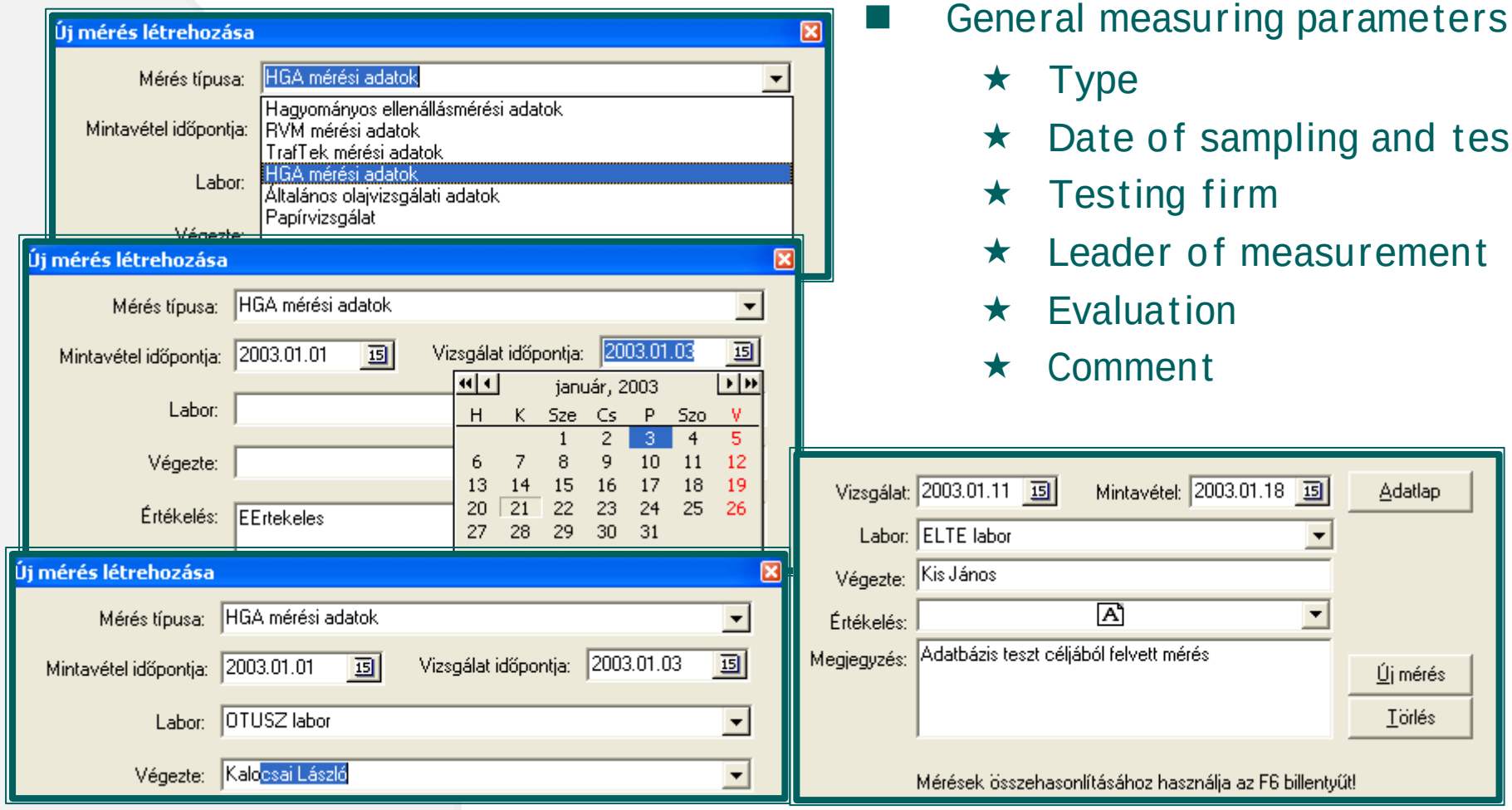
New Object Definition



- Objects
  - CablExpert
    - Elementary cables
    - Terminations
    - Joints
  - TrExpert
    - Transformers
    - Bushings
    - Intelligent coolers
    - Measuring transformers
    - Reactors
    - HGA monitoring systems

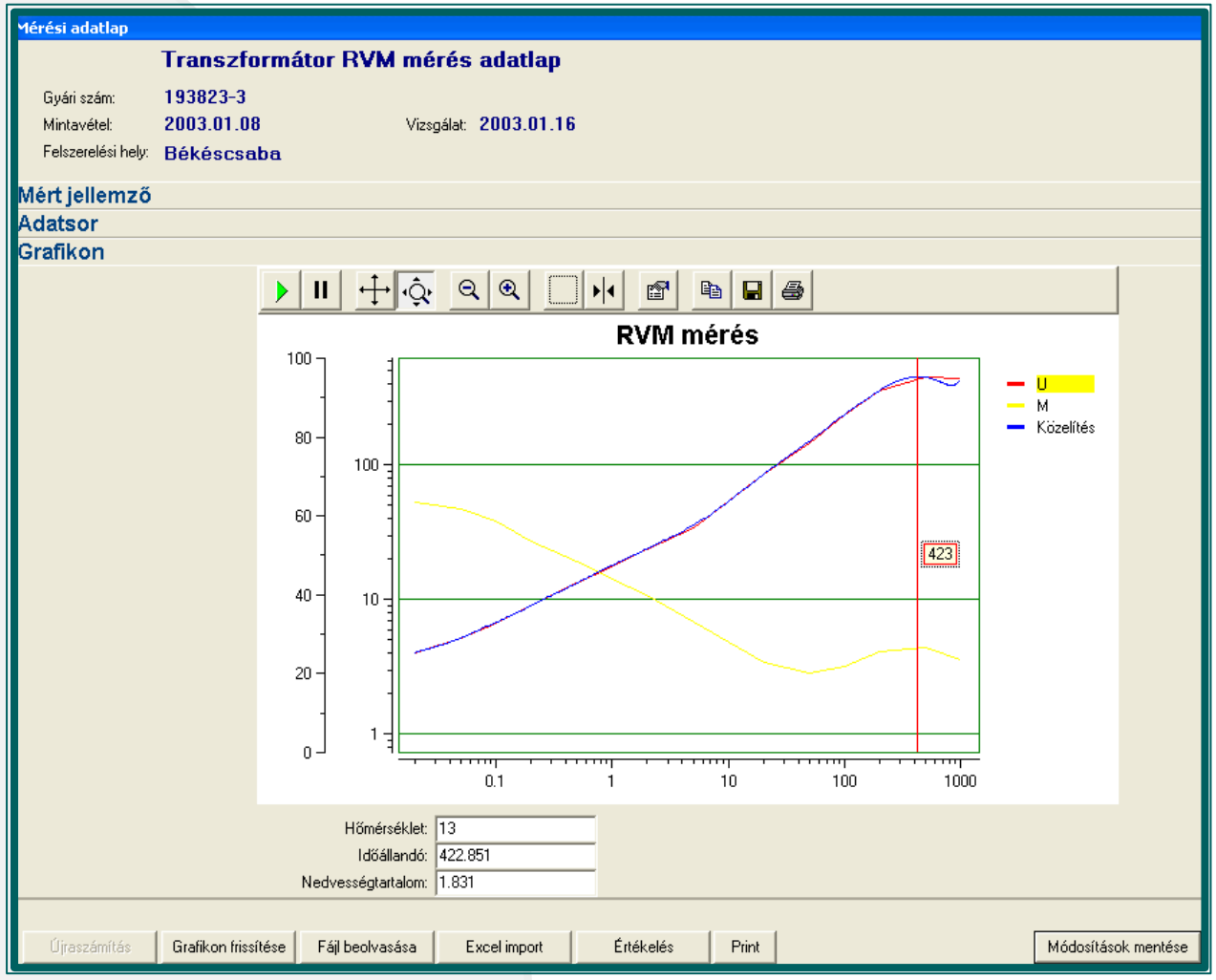
Experts

New Measurement Definition



- General measuring parameters
  - ★ Type
  - ★ Date of sampling and test
  - ★ Testing firm
  - ★ Leader of measurement
  - ★ Evaluation
  - ★ Comment

Experts

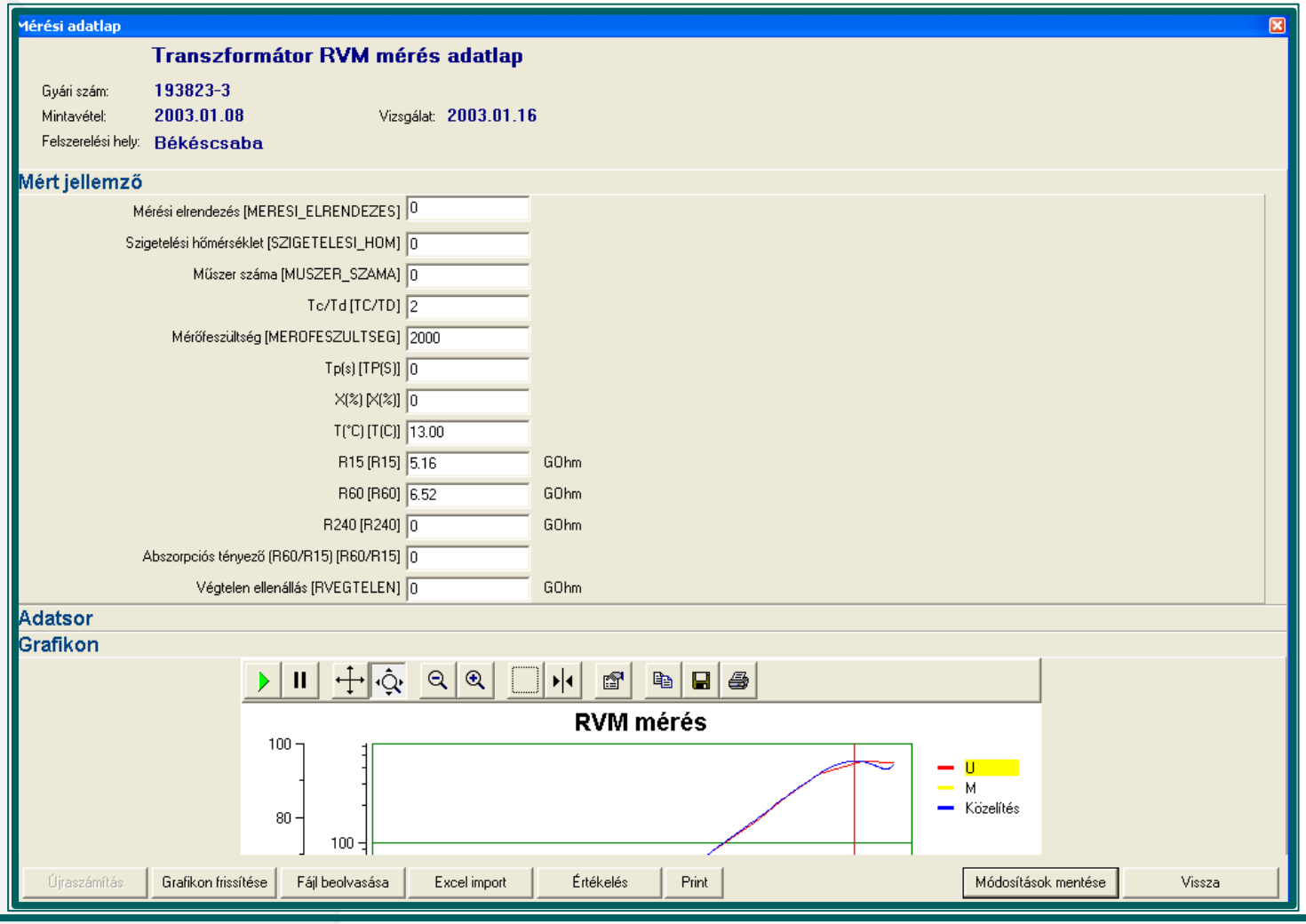


- Data sheet
  - ★ General measurement parameters
  - ★ Measured data
  - ★ Derived quantities
  - ★ Evaluation groups
  - ★ Special charts

  - ★ Calculations
  - ★ Importing data file
  - ★ Importing Excel data
  - ★ Evaluation
  - ★ Printing

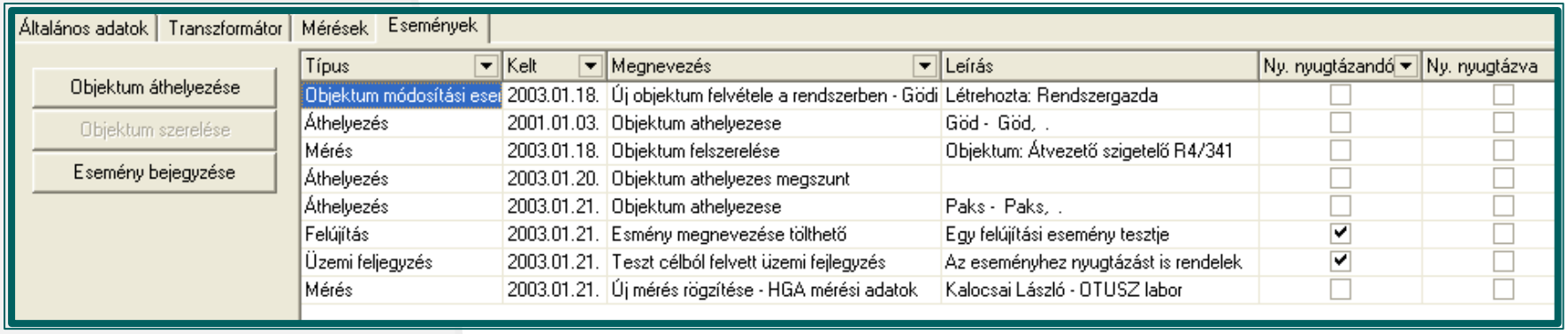
Experts

Datasheet – Measured Parameters Open



Experts

- Events
  - Collection of happenings in connection with objects
  - Automatically registered events:
    - ★ Generating objects, etc.
  - User registered events:
    - ★ Object transfer, repair, renewal
    - ★ Abnormal evenets, for example: break-through, rupture of cables, etc.
  - Registered parameters
    - ★ Event type, date, time, description, user
    - ★ To be acknowledged, dead-line of acknowledgement



Típus	Kelt	Megnevezés	Leírás	Ny. nyugtázandó	Ny. nyugtázva
Objektum módosítási eset	2003.01.18.	Új objektum felvétele a rendszerben - Gödi	Létrehozta: Rendszergazda	☐	☐
Áthelyezés	2001.01.03.	Objektum athelyezese	Göd - Göd, .	☐	☐
Mérés	2003.01.18.	Objektum felszerelése	Objektum: Átvezető szigetelő R4/341	☐	☐
Áthelyezés	2003.01.20.	Objektum athelyezes megszunt		☐	☐
Áthelyezés	2003.01.21.	Objektum athelyezese	Paks - Paks, .	☐	☐
Felújítás	2003.01.21.	Esmény megnevezése tölthető	Egy felújítási esemény tesztje	☑	☐
Üzemi feljegyzés	2003.01.21.	Teszt célból felvett üzemi fejlegyzés	Az eseményhez nyugtázást is rendelek	☑	☐
Mérés	2003.01.21.	Új mérés rögzítése - HGA mérési adatok	Kalocsai László - OTUSZ labor	☐	☐

Experts

- Classification of objects
  - Doubled five-stage classification criteria for every measurement
  - Defining special “measurements”
    - External condition of object, etc.
  - Weighted classification of measurements (might be all equal)
  - List by weighted classification
  - Decision supporting information
    - Filtering information
    - Grouping
    - Various embedded sort criteria

Finita

©Kalotronics BT 2003