ivf smart Quench II

Portable quenchant test system

Leading edge technology to ensure and optimize performance of your quenching system

swerea IVF

ivf smart Quench II

Main uses:

- Incoming inspection of quenchant
- Monitoring of quenchants' performance
- Trouble-shooting
- Comparison between quenchants

Tests can be made:

- On-site in quench tanks
- In the laboratory to ISO and ASTM standards
- With all quenchants: oils, polymers, salts, gas

Markets:

- Quenchant suppliers
- Commercial heat treaters
- Component suppliers with own heat treatment facilities
- Furnace manufacturers
- Research institutes, laboratories, technical schools

Customer values:

- Cost saving, quality assurance, easy-to-use
- Access to IVF's extensive knowledge of quenching

On site testing

Wireless data transmission facilitates on-site testing.

Carrying case

The data acquisition unit with accessories, the test probe with handle, a CD with the computer software and the manual are all contained in a carrying case.

Optional items

Items for calibration

Reference test probe, 400 mm.

Reference oil.

Optical tachometer with reflecting tape.

Hand-held, digital temperature measuring instrument with calibrated thermocouple.

Agitation device for polymers

Unit designed to provide reproducable conditions for polymer testing.

Non-standard test probes

Test probe in non-standard dimensions and materials.

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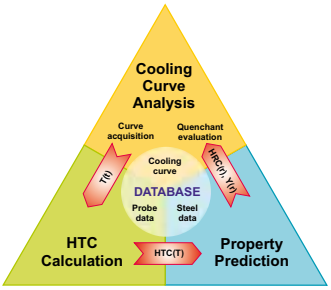


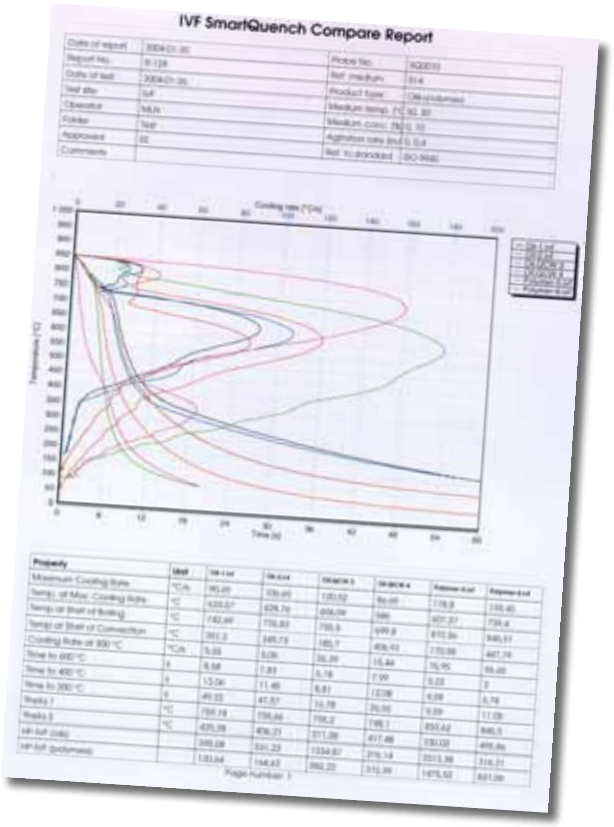
Software for further evaluation of quenchant data

- *Calculation of heat transfer coefficients (HTC)*
- *Prediction of hardness and microstructure distribution in cylindrical specimens*

See separate leaflet.

Advanced software for:

- Handling and evaluating measurement data
- Monitoring of quenchants and quenching systems
- Decision support, e.g. in selecting quenchants
- Report generation



Some characteristics

Standard database format
→ User-friendly

High-performance smoothing algorithm
→ Efficient noise reduction

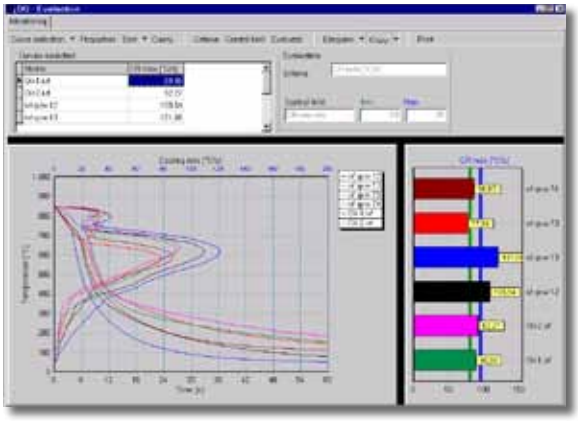
Built-in and user-defined characteristics
(CR_{max}, CR_T, t_T, T_{vp}, T_{cp}, HP, etc) calculated automatically
→ Quantitative evaluation of quenchants

Control limits can be set for all characteristics
→ Evaluation enhanced

Database filtering of selected characteristics
→ Optimized selection of quenchants

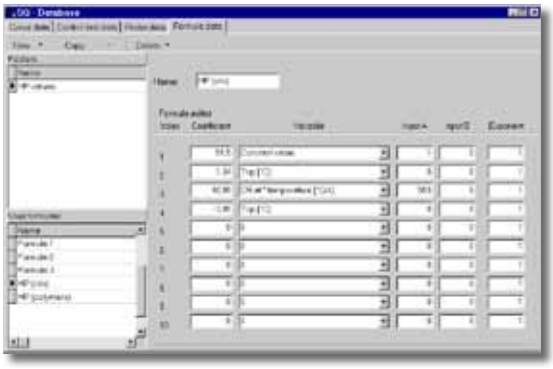
Flexible report presentation
→ Adaptation to the application

Evaluation

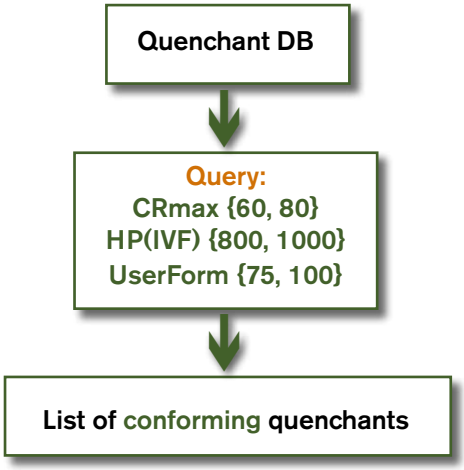


Formula editor

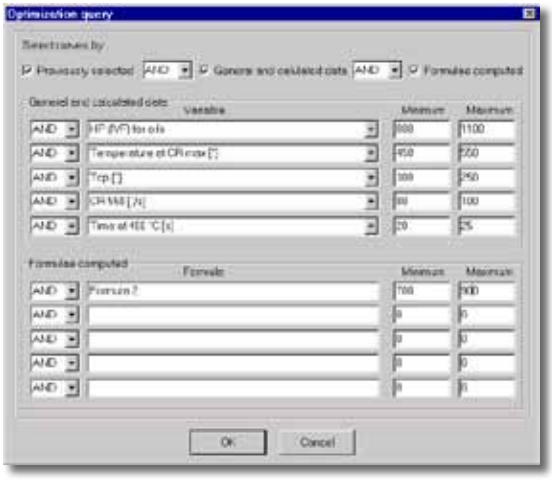
$F_1 = 91.5 + 1.34\ T_{vp} + 10.88\ CR(550^{\circ}C) - 3.85\ T_{cp}$



Selecting quenchant by data filtering



Defining limits in data filtering



Technical data:

Data acquisition device

Hand unit:

Dimensions:	167 x 105 x 34 mm
Weight:	700 g
Power supply:	4 batteries, R03/AAA
Display:	AMOLED color display
Memory capacity:	20 measurements; maximum 60000 readings per measurements
Recording time:	Programmable, from 20 seconds to 10 minutes
Sampling frequency:	Programmable, from 1 to 100 $sec.^{-1}$
Digital serial interface:	USB
Radio frequency:	Bluetooth
Wireless range:	approximately 10 m indoors (depending on local conditions)

Standard Package includes:

Hand unit, Furnace, Standard test probe (400 mm), probe handle, ivf SmartQuench PC software, Hardware key, Reference test probe (400 mm), Carrying case, Reference oil (2 litres), Oil beaker for laboratory testing, Bluetooth adapter, USB cable.

Agitation device for polymers (optional)

Dimensions:	125 x 60 mm wide, 205 mm height
Volume of fluid:	1.5 litres
Max. temp. of fluid:	50 °C (120 °F)
Weight:	7.6 kg, including motor controller
Power supply:	220/240 V, max. 5 A, 50/60 Hz

Design in accordance with the ASTM D 6482-06 standard

Test probe

Probe size: probe body 12.5 mm dia. x 60 mm

Overall length of test probe: 400 mm

Probe material: Inconel 600

Thermocouple in centre of probe body

Weight: 240 g

Probe design in accordance with the ISO 9950, ASTM D 6200-01 and ASTM D 6482-06 standards

Test certificate showing conformance with master test probe

Furnace

Insulated with ceramic fibres for rapid heating – appr. 15 min

Pre-set furnace temperature, normally 870 °C (1600 °F), but can be changed easily by the user

Display showing actual furnace temperature

Size: 200 x 280 x 250 mm. Weight: 5.4 kg

Power requirement: 220 or 110 V, 6.3 A

Reference fluid

Carefully selected reference oil with certificate for test probe calibration

Computer requirements for the software

Pentium II processor

64 MB RAM

20 MB minimum free hard disk space

Microsoft Windows 9x/NT/ME/2000/XP/Vista

USB port for data transmission

USB port for the hardware key

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