

ivf smart Quench

II

Portable quenchant test system

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



swerea|IVF

Main uses:

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

Tests can be made:

- ◆ On-site in quench tanks
- ◆ In the laboratory to ISO and ASTM standards
- ◆ With all quenchant's: 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.

Agitation device for polymers



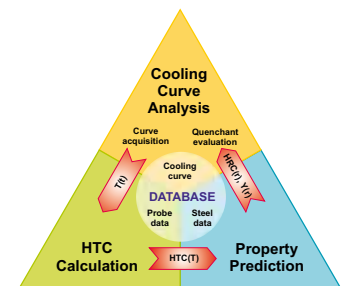
Unit designed to provide reproducible conditions for polymer testing.

Non-standard test probes



Test probe in non-standard dimensions and materials.

SQIntegra



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.



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

Optical tachometer with reflecting tape.

Advanced software for:

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

Control limits can be set for all characteristics

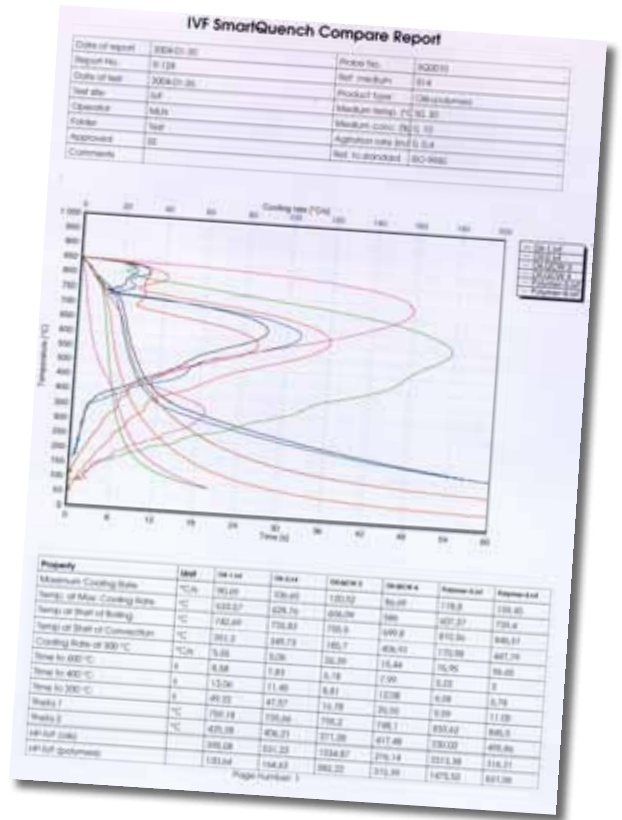
→ Evaluation enhanced

Database filtering of selected characteristics

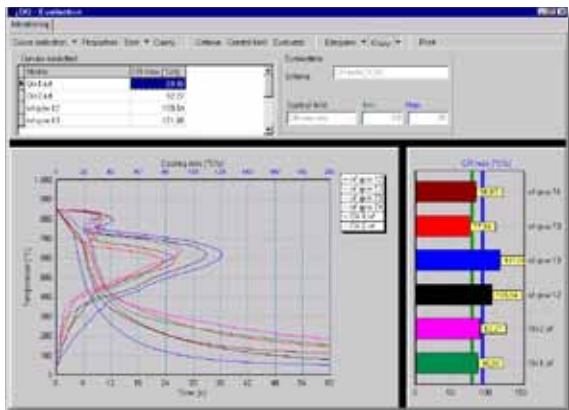
→ Optimized selection of quenchant

Flexible report presentation

→ Adaptation to the application

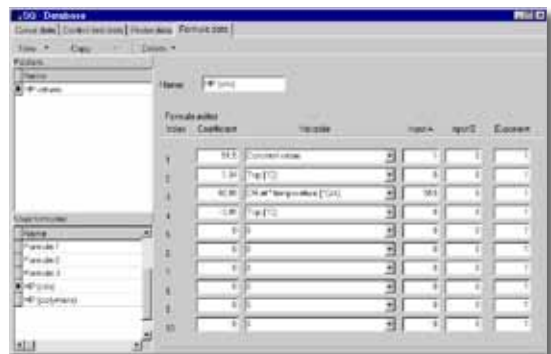


Evaluation

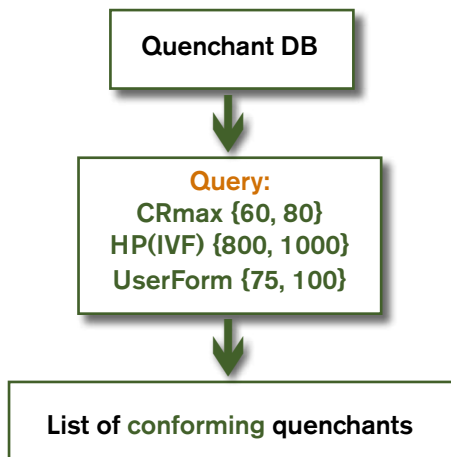


Formula editor

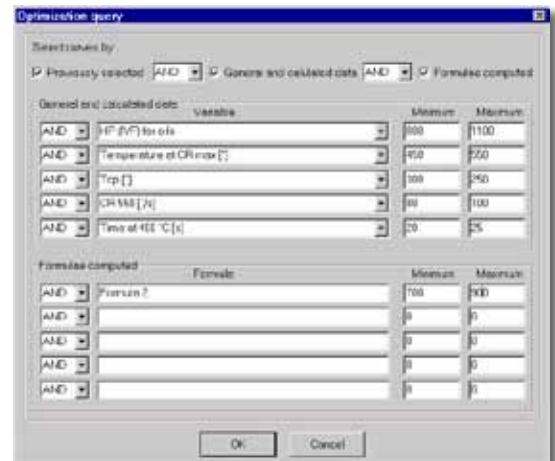
$$F_1 = 91.5 + 1.34 T_{vp} + 10.88 CR(550^{\circ}C) - 3.85 T_{cp}$$



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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