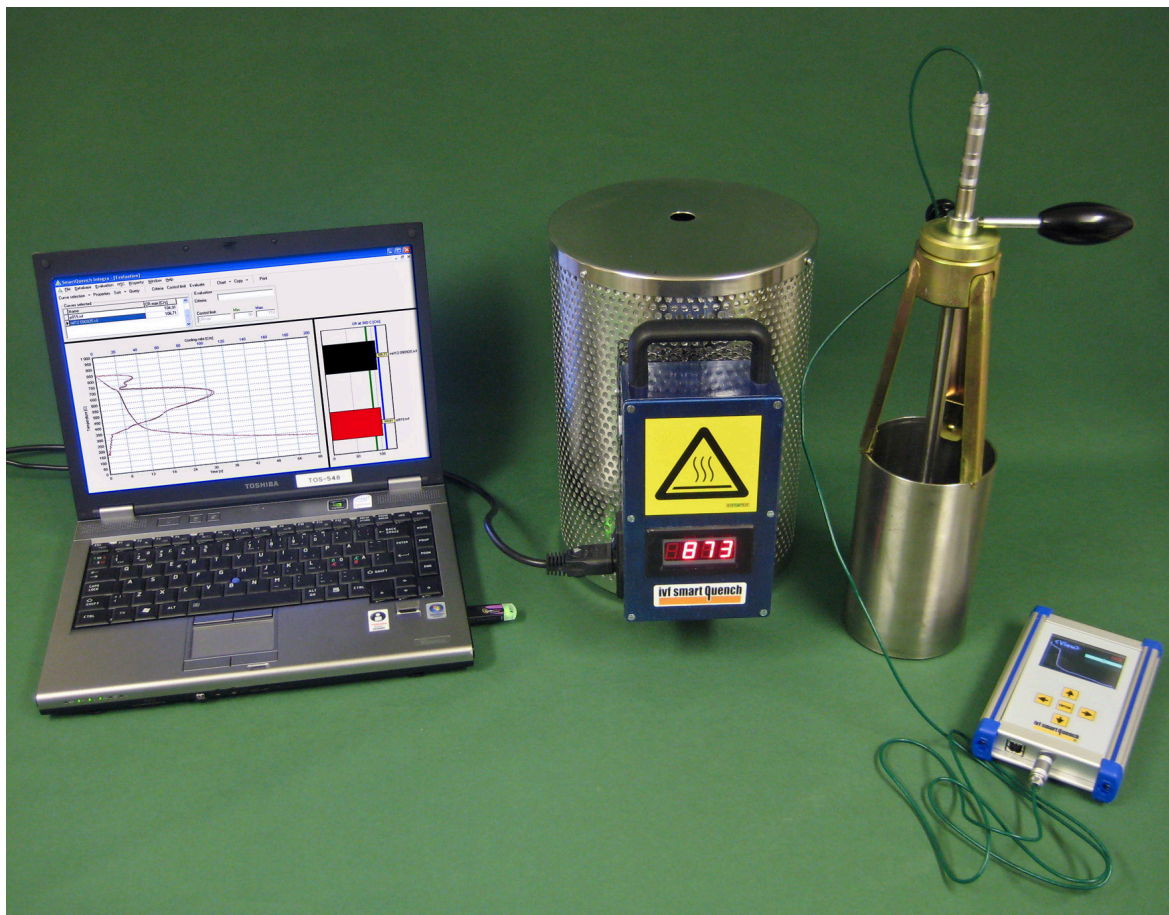


# ivf smart Quench

## II

## Portable quenchant test system

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



## 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

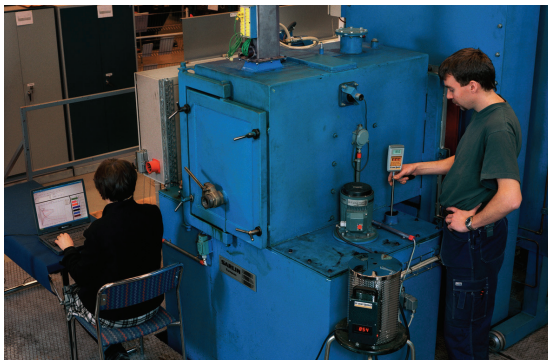
## Markets:

- ◆ 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 oil.

Reference test probe, 400 mm.

### Agitation device for polymers



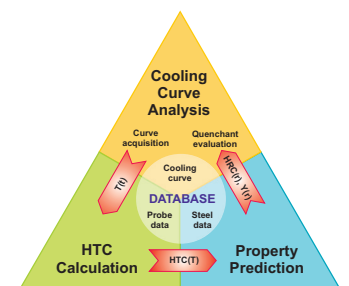
Unit designed to provide reproducible conditions for polymer testing.

### Non-standard test probes



Test probe in non-standard dimensions and materials.

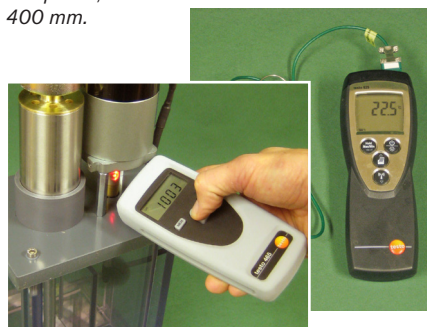
### SQintegra



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 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<sub>max</sub>, CR<sub>T</sub>, t<sub>T</sub>, T<sub>vp</sub>, T<sub>cp</sub>, HP, etc) calculated automatically

→ Quantitative evaluation of quenchants

Control limits can be set for all characteristics

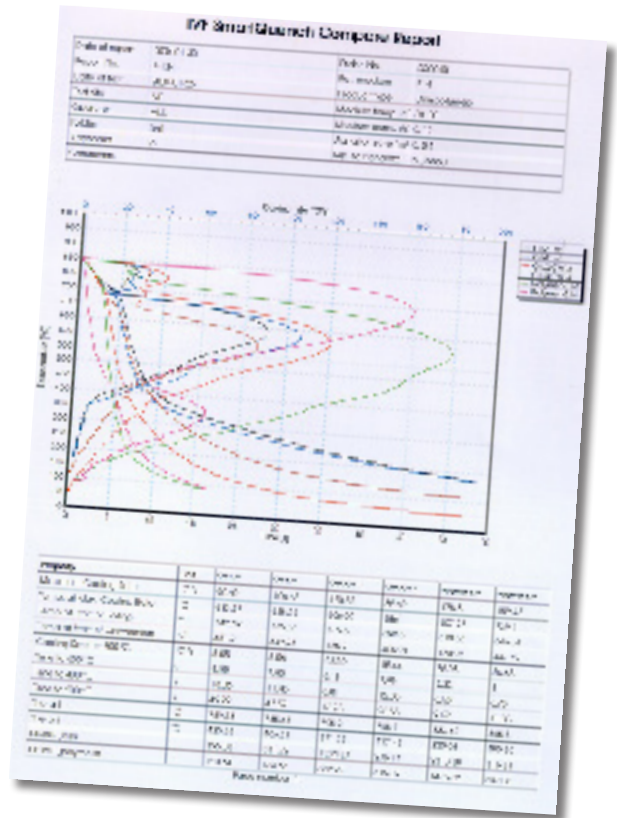
→ Evaluation enhanced

Database filtering of selected characteristics

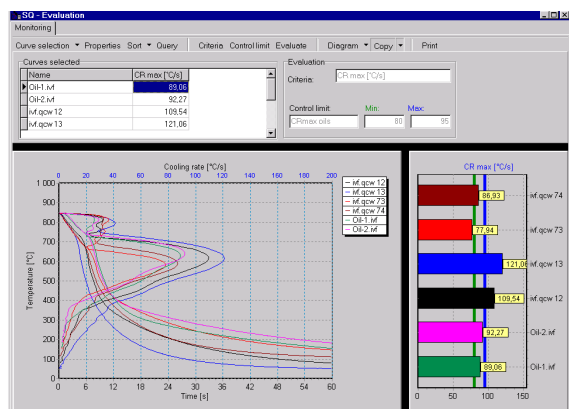
→ Optimized selection of quenchants

Flexible report presentation

→ Adaptation to the application

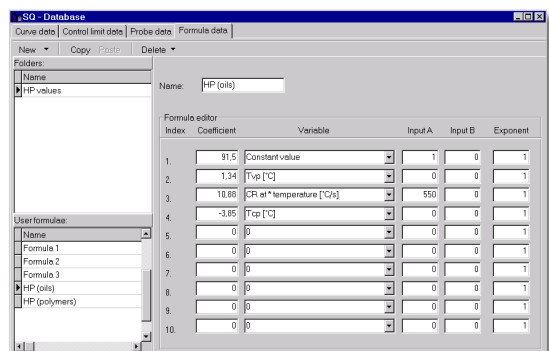


## Evaluation

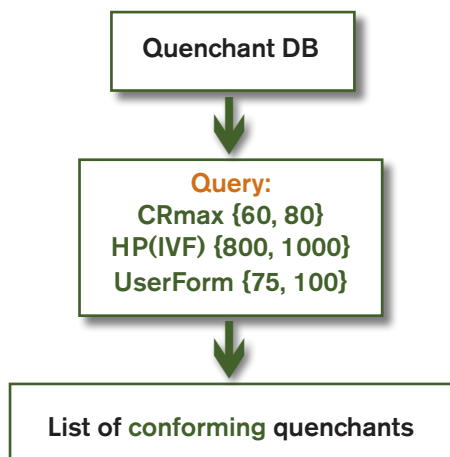


## Formula editor

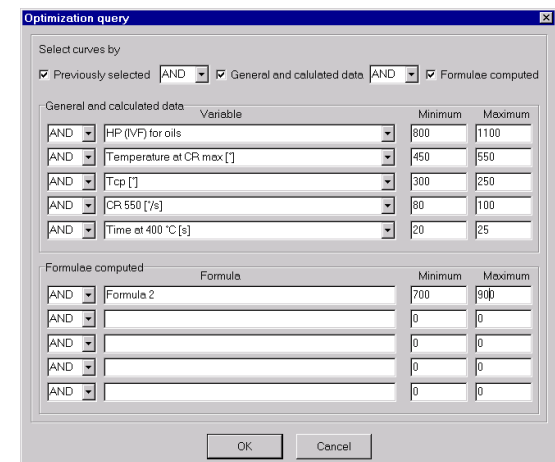
$$F_1 = 91.5 + 1.34 T_{vp} + 10.88 CR(550^{\circ}C) - 3.85 T_{cp}$$



## 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. <sup>-1</sup>
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



### Supplier:

RISE IVF AB  
P O Box 104, SE-431 22 Mölndal, Sweden  
Argongatan 30, SE-431 53 Mölndal, Sweden  
Phone: +46 (0)10-516 50 00, Fax: +46 (0)31-27 61 30  
E-mail: ivfsmartquench@swerea.se  
<http://www.ivfsmartquench.com>

### Represented by: