

## TTT Tapping-Torque-Testsystem

Laboratory Evaluation & Analysis System

### Terms of Reference / Approach

### The Temperature-Sensor-Equipment TSE collects Temperature Data for Application of Temperature Delta T

At the time of the greatest heat build-up the exact temperature at the tip of the tool can be measured only with an enormous effort

### Solution / DeltaT Method

When determining the temperature at the tip of the tool right before measurement and again right after measurement however, and compare both data, the difference results in the temperature value Delta T ( $\Delta T$ )

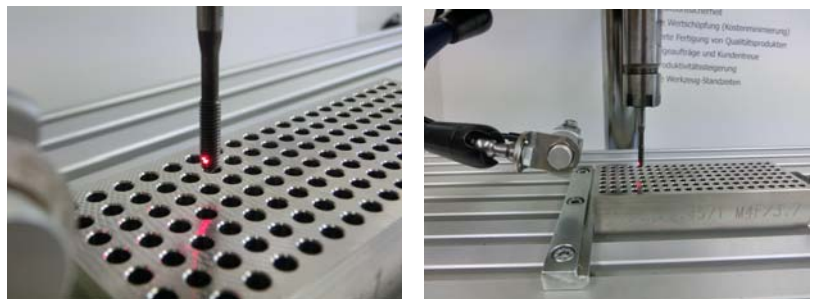
### Realisation

The **Temperature-Sensor-Equipment TSE** is furnished with a temperature measurement device incl. optics, fixation handle and accessories

### Features

The  $\Delta T$  data are fed into the Analyser of the „**Evaluation & Analysis Software**“ and directed towards a parameterisation (graphic and numerical display of the temperature value  $\Delta T$ ) and subsequently amalgamated and evaluated with the torque data of the work spindle

The **TSE** in combination with the **TTT System** has specially been developed for laboratory requirements of the Water-Mixable-Fluids (MWF's) industry and manufacturers of threading tools and tool coatings



### Temperature Assessment

...right before and right after measurement

From „ $\Delta T$ “ we gain meaningful evidence for the interpretation of temperature influences. The computed  $\Delta T$  mean value of a series of measurement, interacting with the torque values, is able to deliver plausible conclusions in regard of the effective power of an additive respectively EPs in dependence on temperatures (friction\*) occurring in a work process

\* At determination of the friction coefficient the physical load parameters in a wear process are defined in four quantities:

- Normal Force  $F_N$  (Torque)
  - Velocity  $V$  (Cutting Speed)
  - Temperature  $T$  (Delta T)
  - Time of Load  $t_B$  (Depth of Thread / Time)
- (GFT, Tribologie from 2002, sheet 7, page 8)

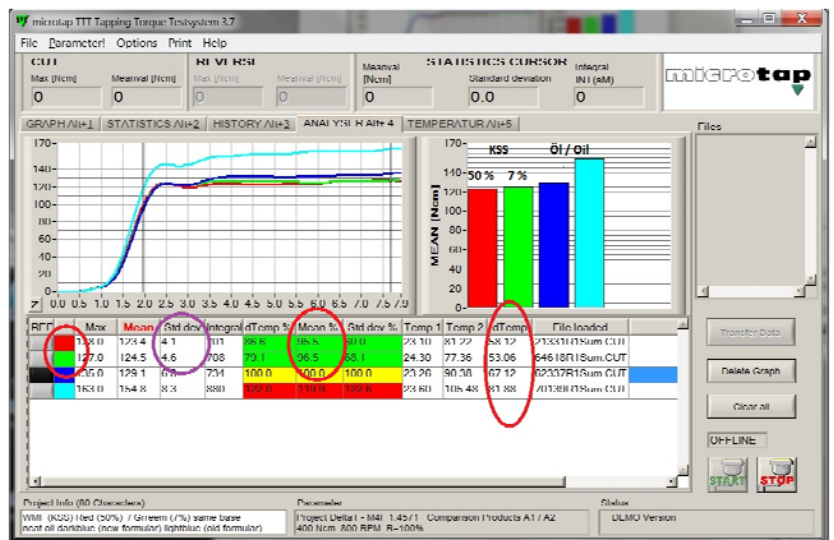
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## Benefit / Advantage

## Retrofitting TSE Temperatur-Sensor-Equipment and WinPCA3.7 Upgrade

Temperature, which has a decisive influence on the activity and functionality – in other words: the potency and limitation of tribologic performance of lubricants and their additives, is a factor for friction with essential effects on a durable existence and the quality of a factually operative lubrication film, and its limits as well



## Analyser / Bar Chart

**Price**  
Retrofitting

3.000 €  
Incl. Firmware-Update at microtap GmbH  
and authorised partner excluding shipping costs

## Requirement

The TSE System is available and applicable only in junction with WinPCA3.7, Firmware > V.4.99

**Upgrades**  
V2.5 – 2.6V3  
V2.7 – 2.7V6

WinPCA3.7 (Compatible MS-2000 / MS-XP / Win7+8 32/64)  
3.000 €  
2.500 €

**Updates**  
V3.0 – V3.36

1.000 €

**TTT Instruction & Training** on-site  
Incl. TSE Installation, TTT Standard & Method, WinPCA Evaluation-Analysis  
WinPCA SW for further PCs

1.600 € ( 1 day)  
2.400 € (2 days)  
foreign countries plus expenses  
300 € per workstation / computer

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TSE\_Temperature & WinPCA\_Upgrade\_E

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