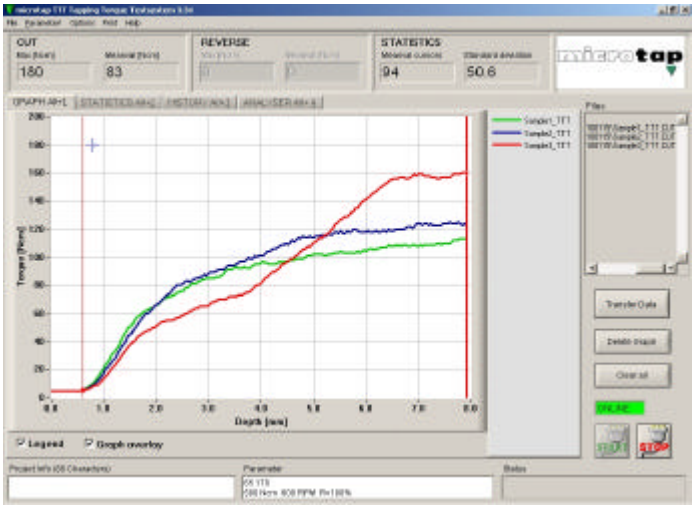
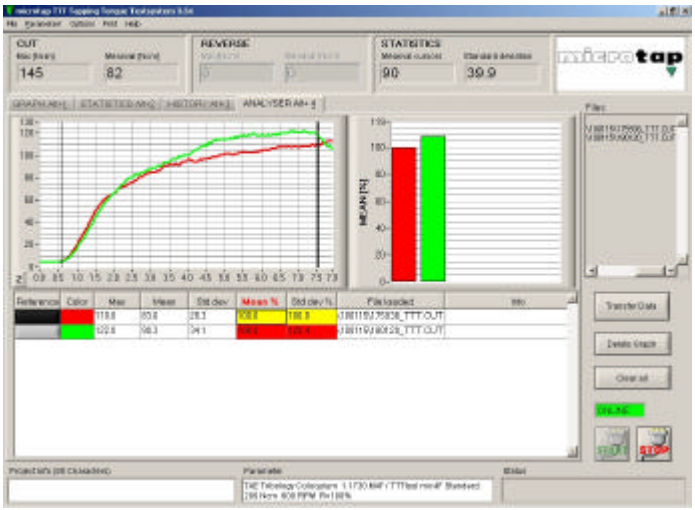
TTT_Tapping-Torque-Testsystem
New development for the request
of the MWF / Lubricant-Industry

WinPCA3 - „Monitoring & Analysis Software"

Measurement process



Analyser



Measurements are compared (process quality controlled) and values displayed on the screen as a graph, with applied torque shown as a bar chart. The formulas used to find the mean & the standard deviation are as follows

Average (mean value) = $\sum_{i=0}^{n-1} x_i / n$ StDev = $\sqrt{\sum_{i=0}^{n-1} [x,-ave]^2 / n}$

Mean value / Arithmetic method
The expression is called arithmetic methods of n sizes $a_1, a_2 \cdots\cdots, a_n$

$$c_A = \frac{a_1 + a_2 + \cdots\cdots + a_n}{n} = \frac{1}{n} \sum_{k=1}^{n} a_k$$

For two sizes a and b $c_A = \frac{a+b}{2}$

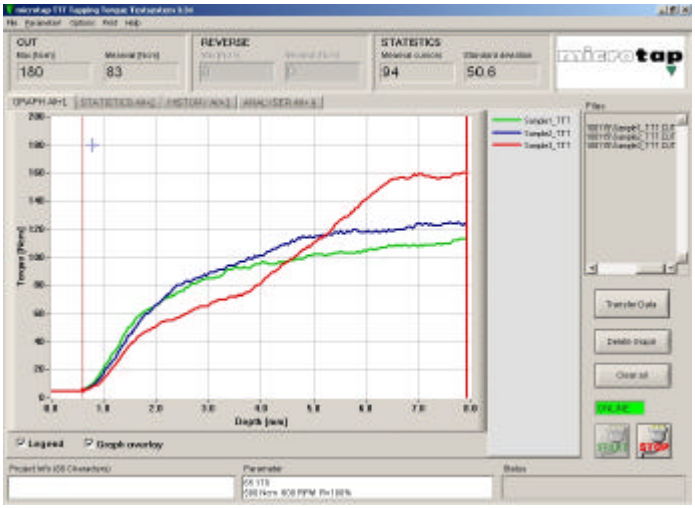
microtap GmbH **/ TTT**system - when monitoring lubricants
Rotwandweg 4, D - 82024 Taufkirchen / München (Munich) - GERMANY
Tel +49-89-6128051 - Fax +49-89-6127488
info@microtap.de
http://www.tapping-torque-test.com/

TTT_Tapping-Torque-Testsystem
"When monitoring lubricants"

WinPCA3 - „Screening & Analysis Software"

Practical Example

Your Customer is testing a new tool to improve productivity with higher cutting speeds and a similar or longer tool life.
This may lead to the conclusion that your water miscible fluid (emulsion) or „neat oil" is no longer helpful because the additives may not affect its power! Lower friction for example, caused by the new tool (coating!), lowers operating temperature



Results and analysis

Your lubricant may not improve the results, or with higher tempretures (caused by resistance), your additives may burn off

Consider this example

The ***green*** graph displays the torque with the uncoated tool. The ***blue*** graph displays the coated new tool

Now let us try to construct the following hypothesis:
Regarding the lower resistance caused by the coating, the additiv do not reach temperature. The negative effect is that your lubricant works on half power and therefore the torque becomes higher because the coating effect does not allow your good working additive to function

The ***red*** graph displays, the other assumption or possibility, that the coating and additives are working well in the beginning – but in the end the additives are burnt off due to higher temperature, caused by "high speed"

Please note that each graph is the result out of ten measurements – we call it „summary.cut" – and for each product – shown in the graph – we used a new tapping tool

microtap GmbH / **TTT**system - when monitoring lubricants
Rotwandweg 4, D - 82024 Taufkirchen / München (Munich) - GERMANY
Tel +49-89-6128051 - Fax +49-89-6127488
info@microtap.de
http://www.tapping-torque-test.com/