TTT-System PCA 4
Quick Start Guide

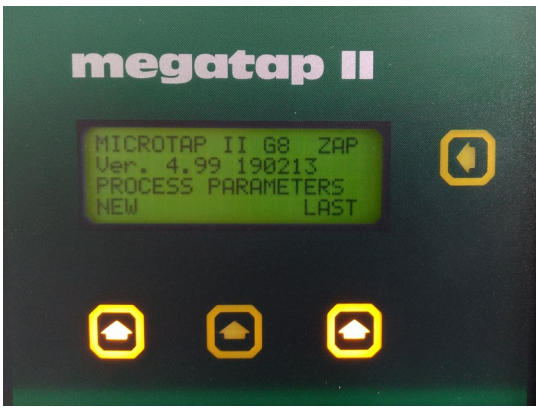
Version: 4.0 – 2018-07-24

This short document will help you to get started with the TTT-System PCA version 4.

Contents

1. Basics

1.a Turn on the Machine

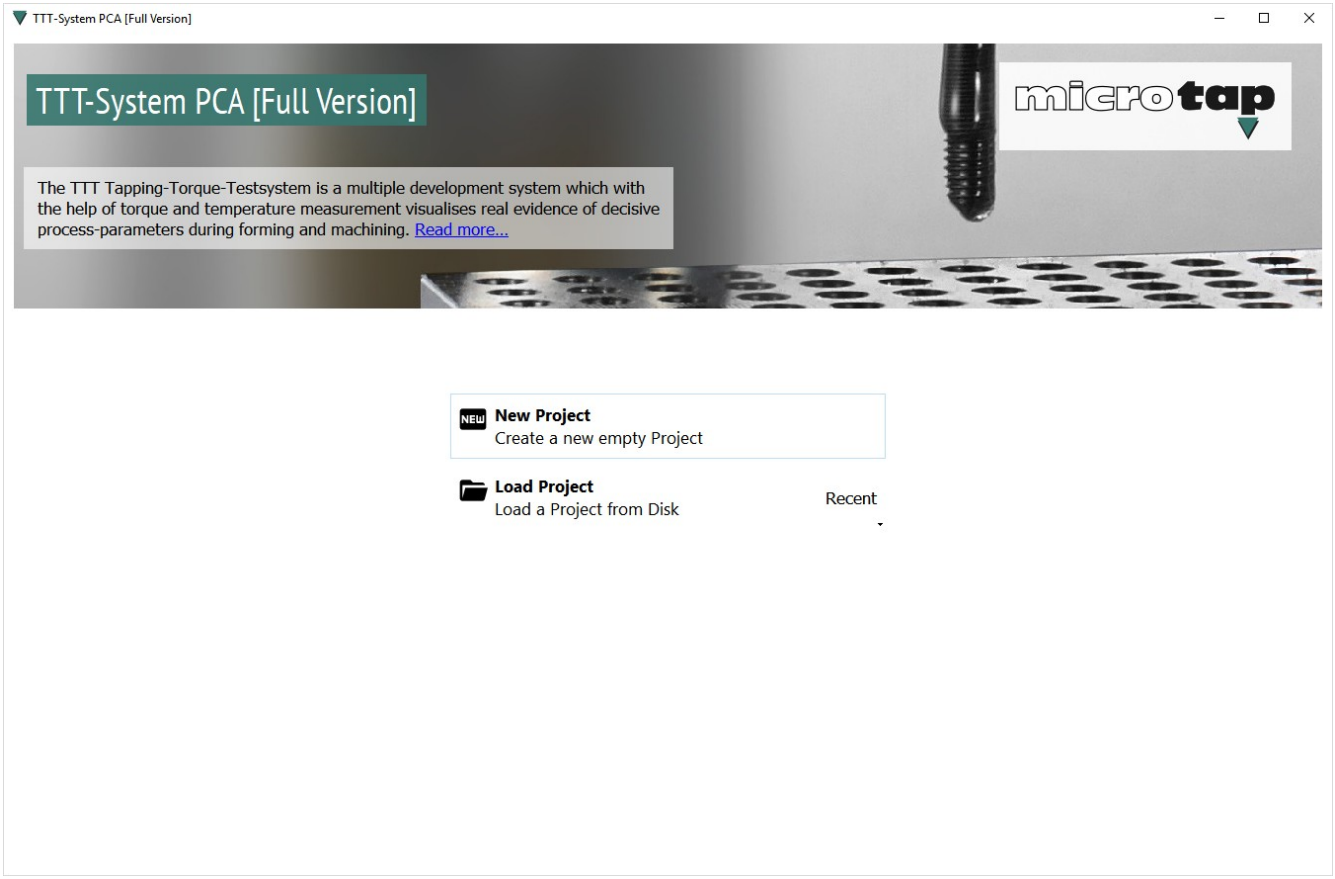


After starting the microtap TTT-System machine it's a must to load the process parameters LAST or start with NEW. The “process parameters” are named **machine parameters** in the TTT-System PCA.

The connection will fail if the machine is still in this state.

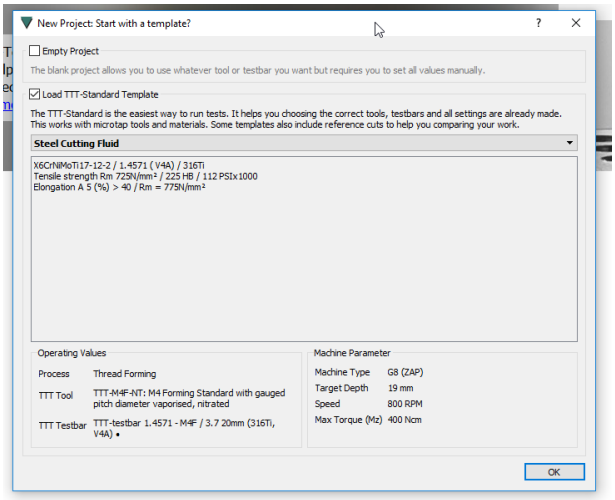
1.b Start View

Start a “New Project” which allows you to record cuts from the TTT unit. It is possible to load already saved pojects, do further analysis or add more cuts to them. The “Recent” drop-down allows you to quickly open documents which were recently used in the application.



1.c Start View: New Project

A “New Project” can be either completely empty (blank) or based upon a template which is provided. The template loads all settings of the selected TTT-Standard. Some may provide reference cuts to compare your measurements with.



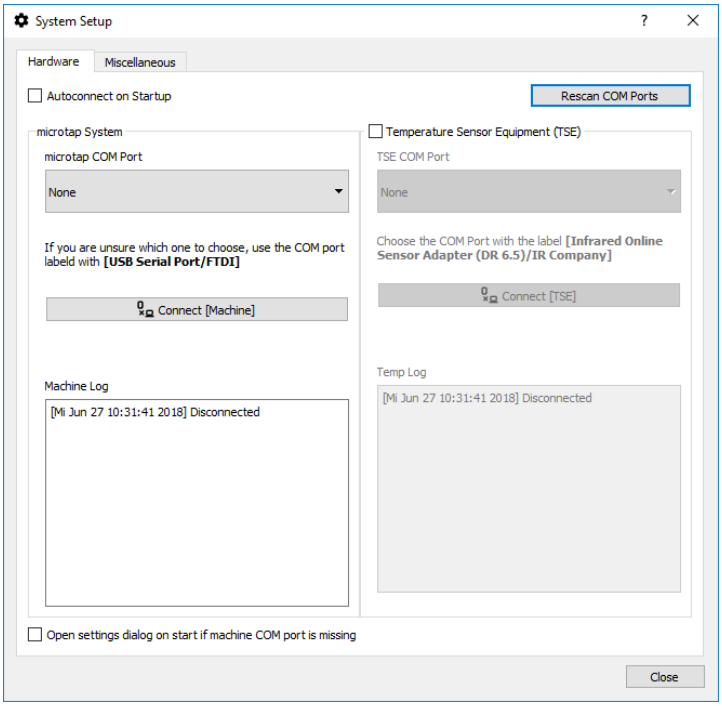
1.d Hardware Setup

The TTT-System PCA tries to find the correct COM ports automatically if it was never configured. Machine (TTT unit) and TSE has to be conntected to the computer.

The setup is accessible via the “Settings” Menu. The checkbox “Temp Add-on (TSE)” has to be enabled if TSE is in use.

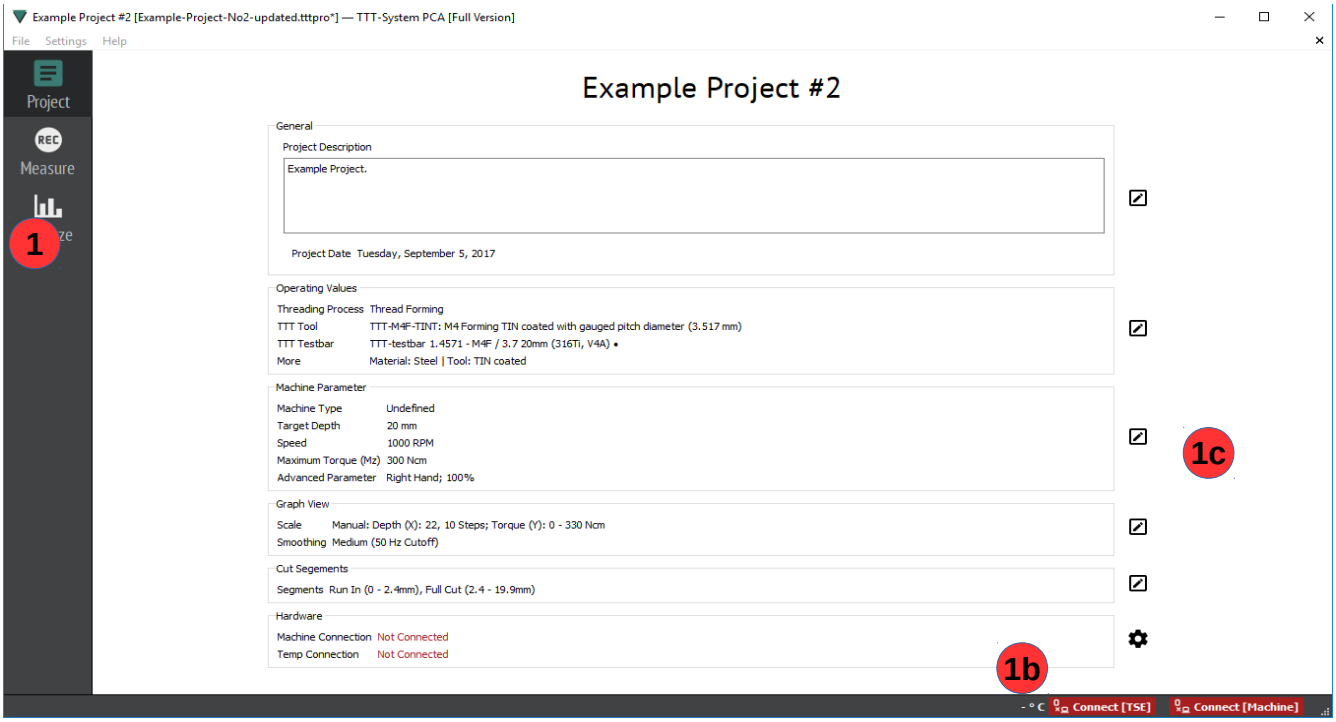
Click “Rescan COM Ports” to update the

list of available ports while having the setup dialog open to connect the devices.



1.e Project Mode

On the dark sidebar [1] the three main views are shown: **Project**, **Measure**, **Analyze**.



The Project mode offers an overview of all current project related meta data and settings. In [1c] the Machine Parameters are shown and can be changed.

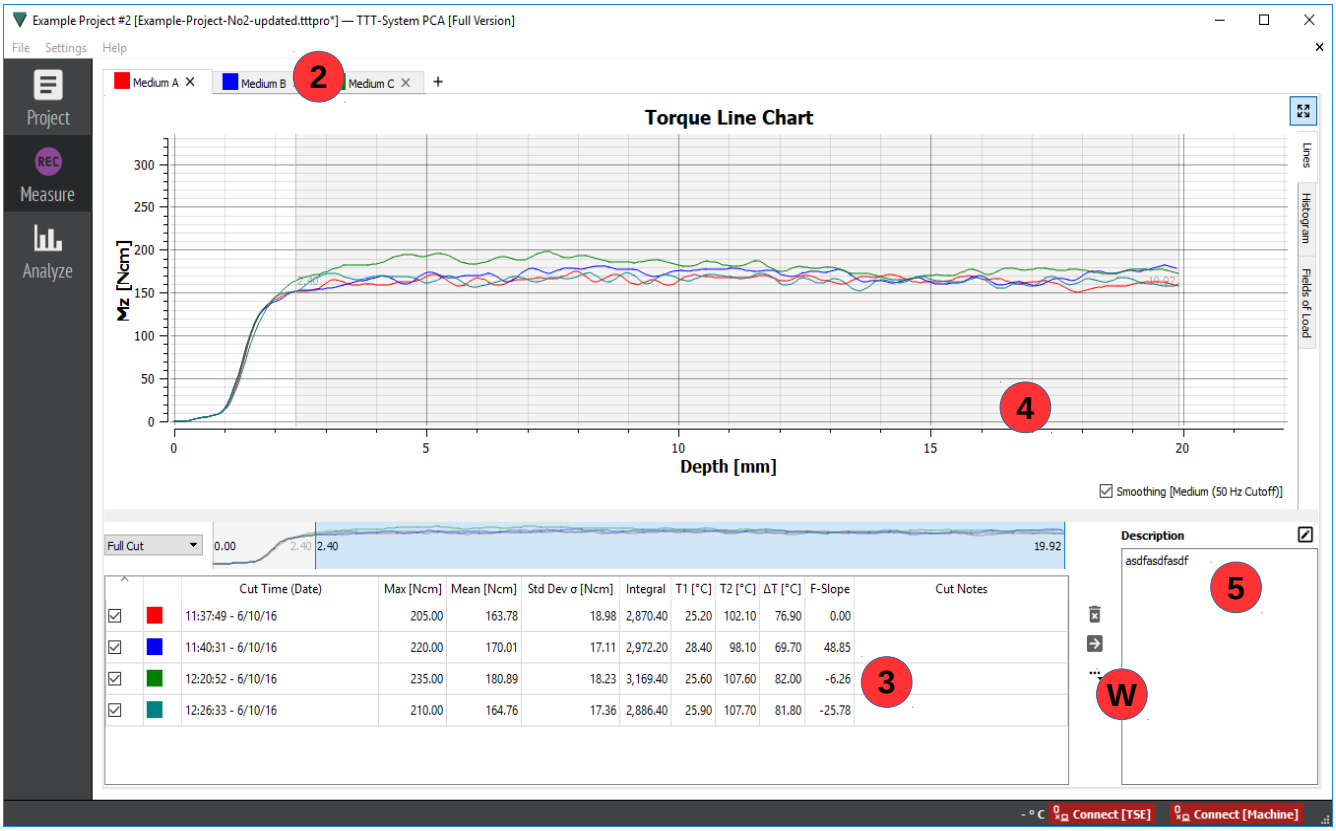
1.f Measure Mode

This mode allows the measure (record) of new cuts, as well as manage and view the raw cuts. Each tab [2] represents measurement series with a product (e.g. medium or tool). If the machine is properly connected to the computer, a new cut ist automatically added to the currently active tab in Measure mode. If a cut gets into the wrong tab by accident the arrow (→) can be used next to the table (see [W]) to move it into another measurement (tab).

All cuts (see table [3]) of a series are averaged to create a Sum Cut of this measurement. The Sum Cut is displayed under the main view button “Analyze”.

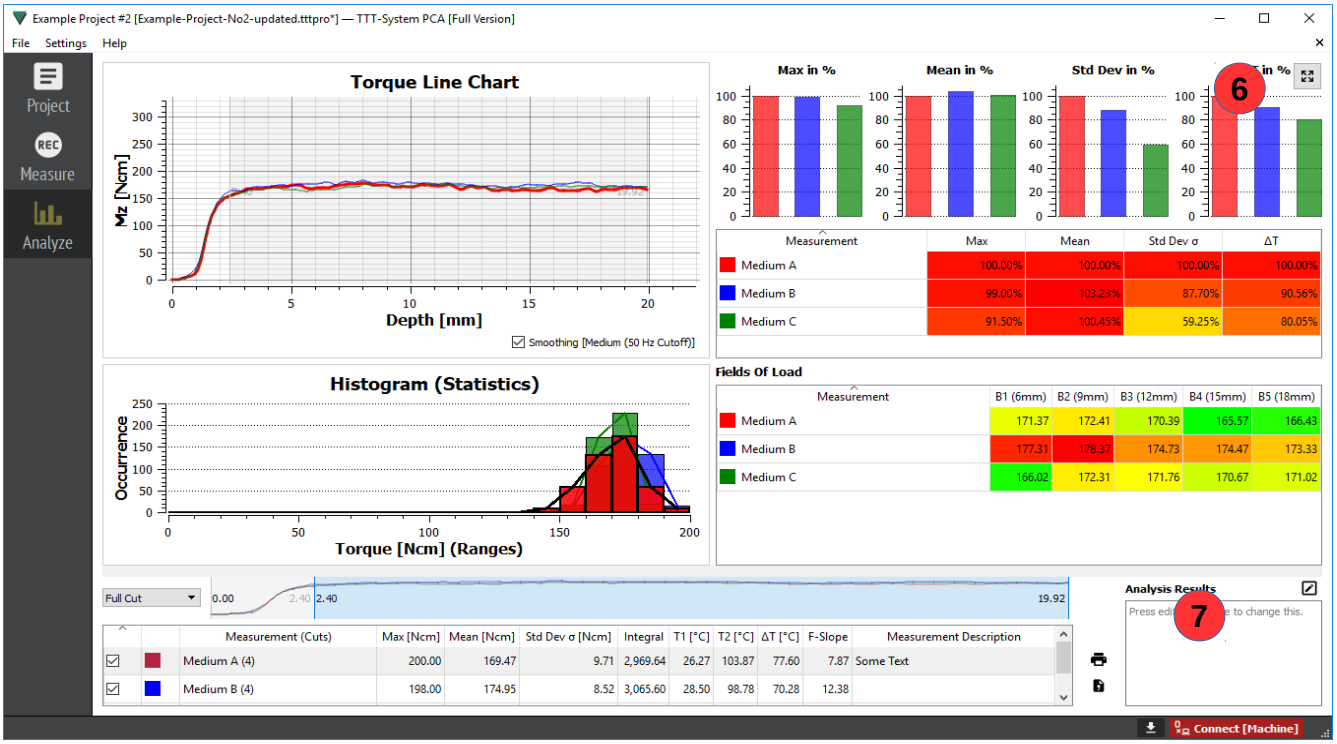
The table [3] shows all details of the cuts which are visualized in the graph [4]. It is possible to add notes to each cut (double click on “Cut Notes”) as well as to the whole measurement series (see edit icon [5]). To change the name of the measurement series, double click on its name [2].

To import a cut from the WinPCA 3.x click on the “3.x” icon right of the table [W] (see 5.b).

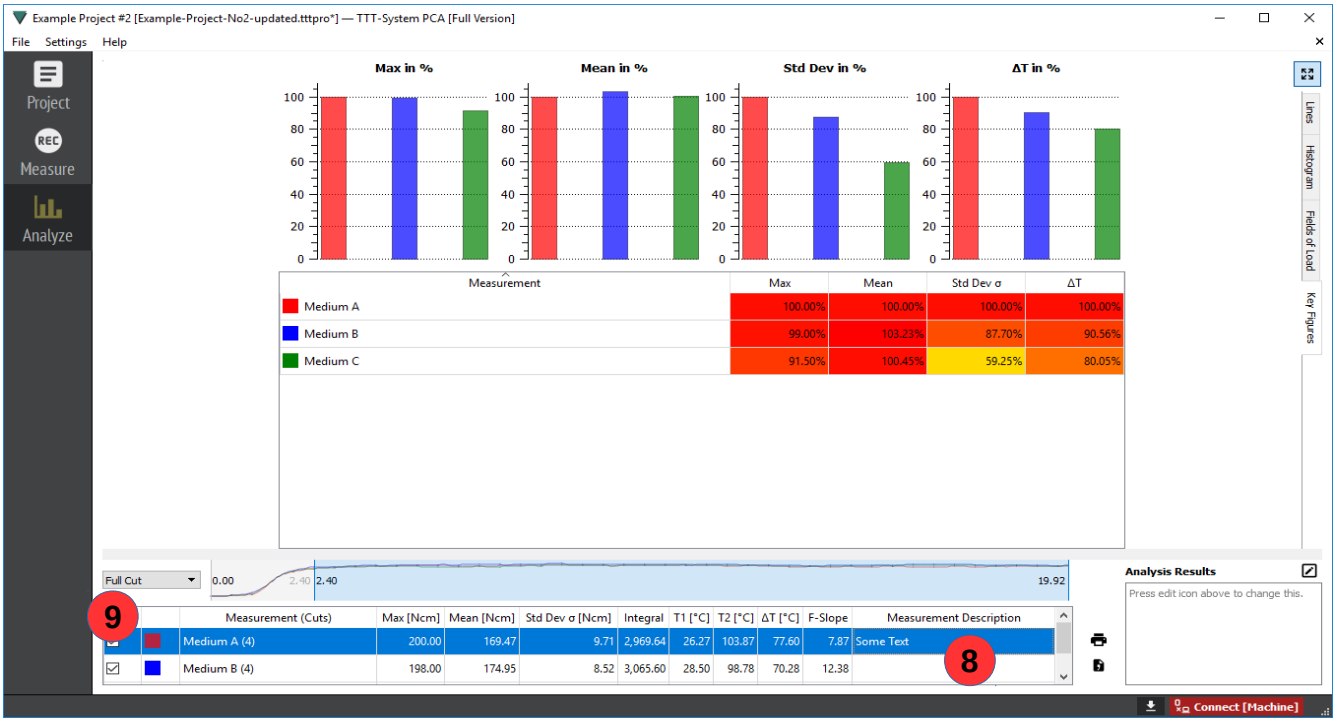


1.g Analyze Mode

In the “Analyze” mode each row represents a Sum Cut which is the mean value of each point recorded in the “Measure” mode. This is why the rows bear the same name as the measurement series in the previous view (“Measure”). The graph [6] shows all three different types of charts. A click on ⛶ (expand icon) will change the mode to tabs on the right.



To export a PDF or directly print with a preview click on the buttons in [7].

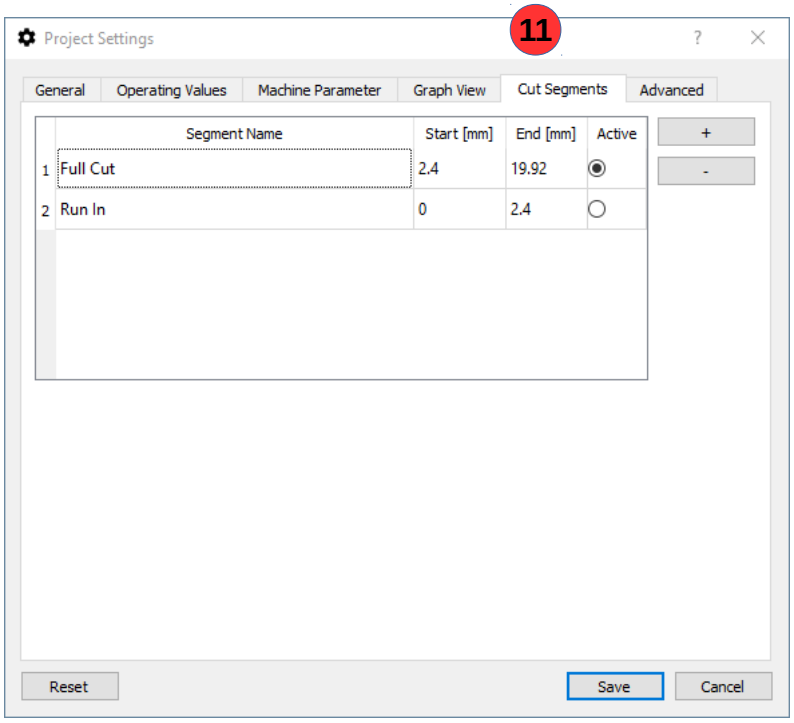


To change the reference item which is used to compare the other with (the values in Key Figures of the reference item are all 100%), select it in the table below the graphs [8]. With a double click

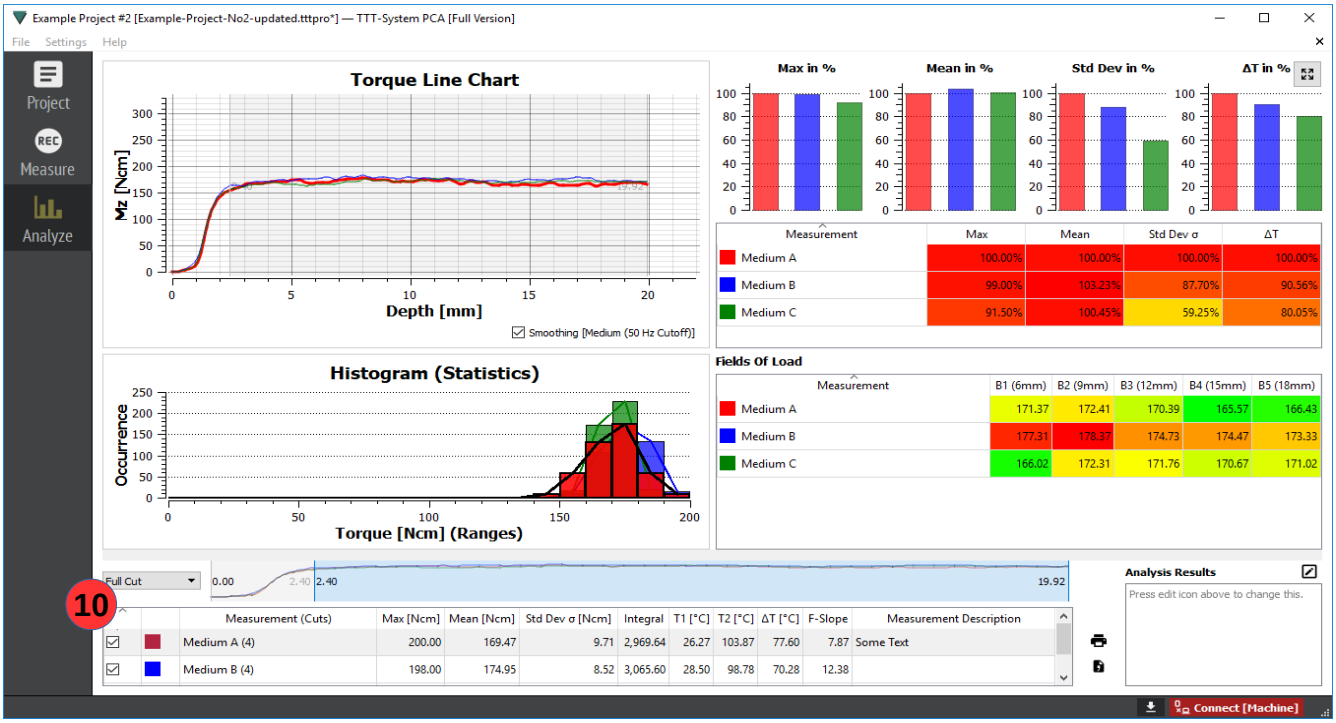
on the color [9], it is possible to change the color of this row. It is further possible to change the name of the measurement by double clicking the name.

2. Advanced

2.a Cut Segments

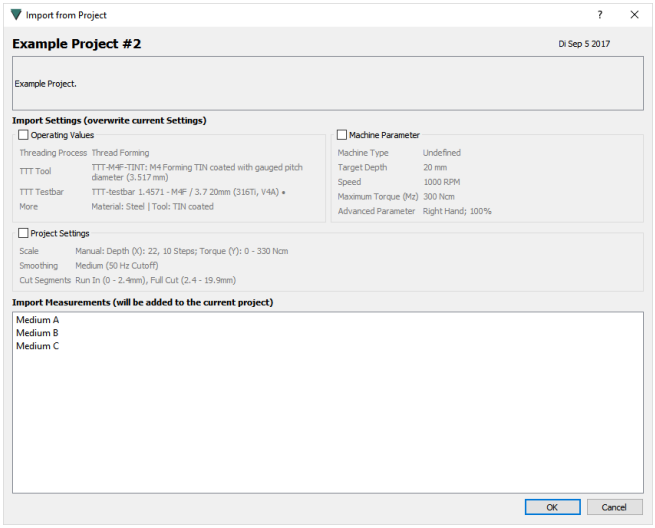


The Cut Segments is a feature which is new in TTT-System PCA Version 4. Similar to the "*Dual Cursor*" in WinPCA3 it allows you to select a range of depth which is analyzed. In contrast to the dual cursor this setting is present in the whole application and synchronized over all views. This greatly improves the accuracy of the analysis. To change the active segments use the drop down in [10]. Right of the drop down the active and inactive segments are displayed. The border of each section can be dragged to change the values. Add or remove a section by opening Settings → Project Settings (or CTRL+U) in the main menu, choose the "Cut Segments" tab in the Project Settings [11].



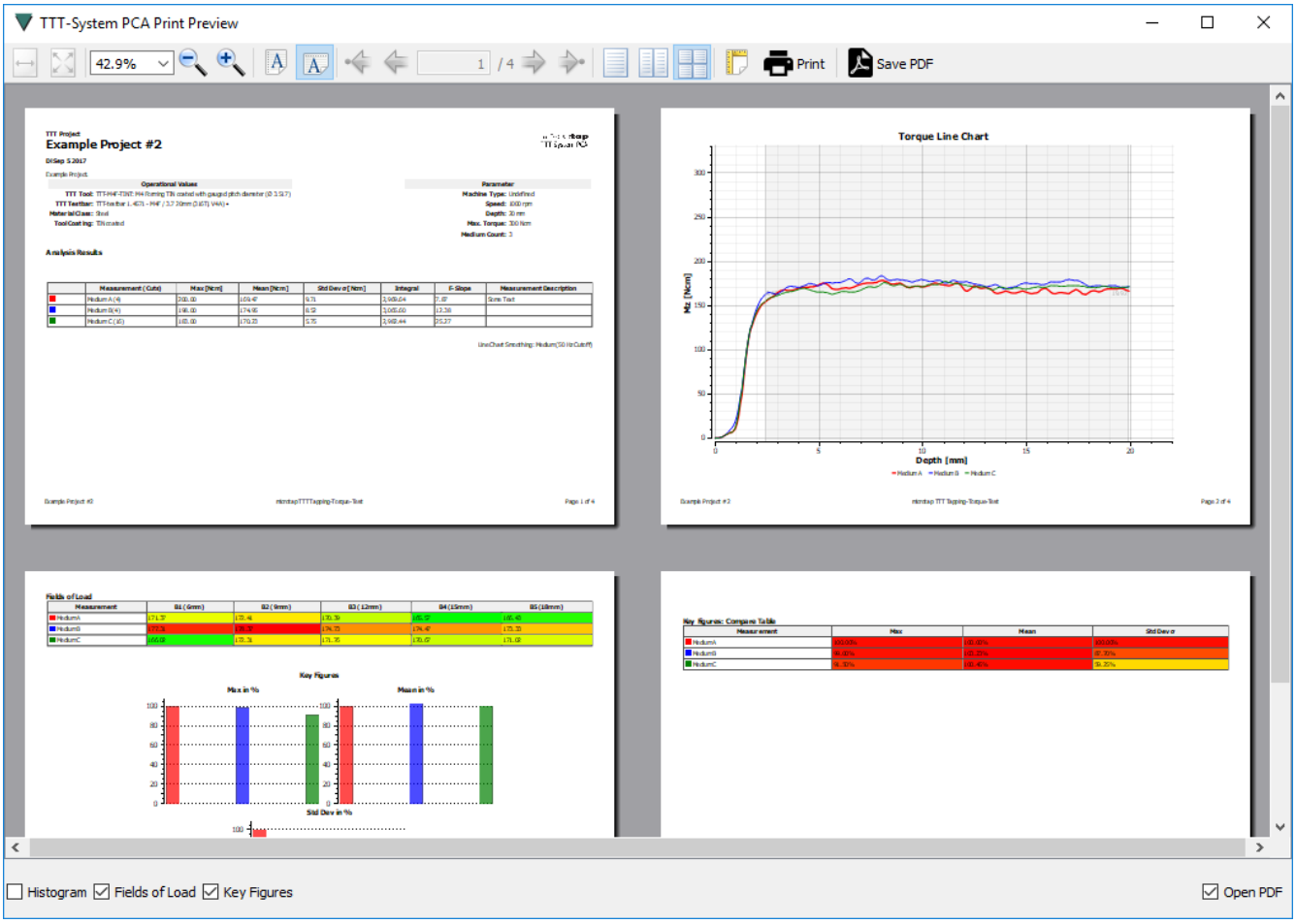
2.b Import from existing Projects

The import from existing project files is possible: Open the *Import from Project* dialog via the menu entry "Import" in the menu bar (used to be in the "File" menu before Version 4.0.3). The dialog offers the import parameters, settings and measurement series (with all cuts of that series).



3. Analysis and Export

This is an example PDF Export in Analyze mode (Sum Cuts) which will produce four A4 landscape format pages. The project description as well as the “Analyze” or measurement series description are printed on the first page. This descriptions can be written using Markdown[1] formatting. With the checkboxes at the bottom bar the user can choose which parts of the report he wants to be included.



1 https://www.markdowntutorial.com/

4. Explore New Visualizations

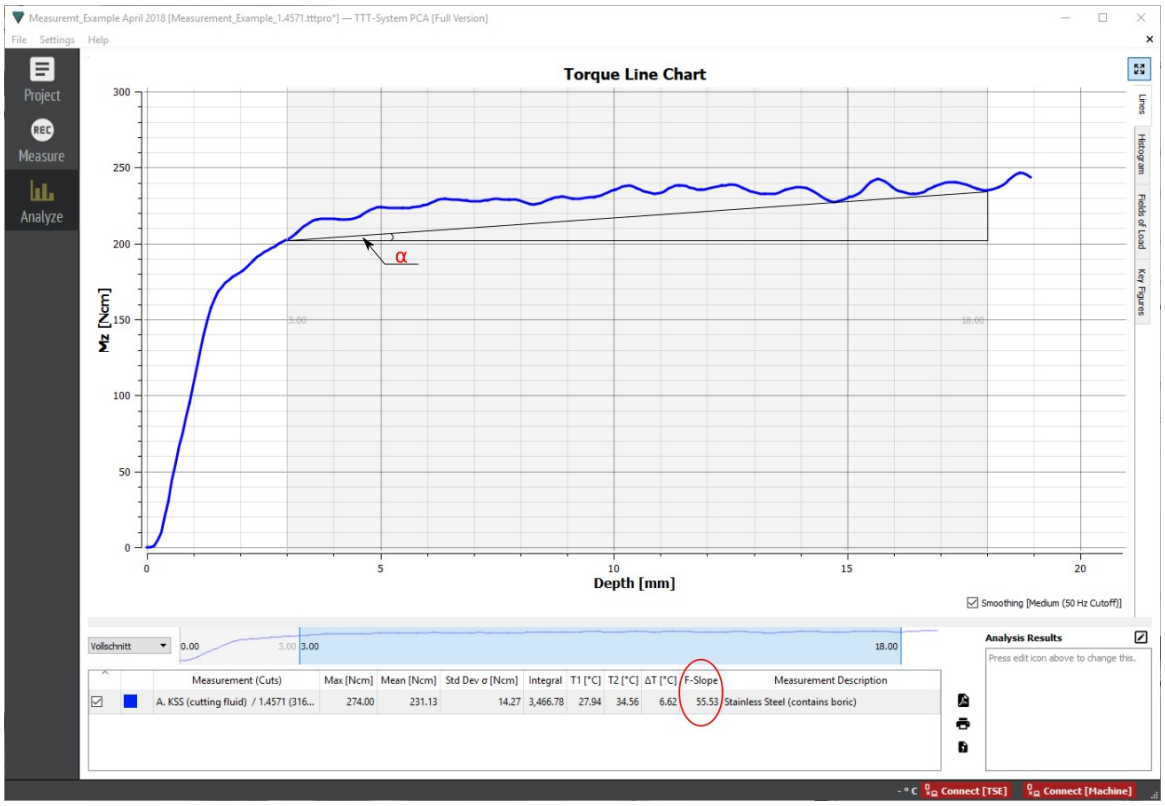
Fields of Load (tB)

Torque of several fixed points (depth 6 mm, 9 mm etc.) are visually shown for easier comparison. This enables the user to quickly see which cut performed better in this section, even if the absolute torque values are close to each other.

Measurement	B1 (6mm)	B2 (9mm)	B3 (12mm)	B4 (15mm)	B5 (18mm)
Medium A	171.37	172.41	170.39	165.57	166.43
Medium B	177.31	178.37	174.73	174.47	173.33
Medium C	166.02	172.31	171.76	170.67	171.02

F-Slope

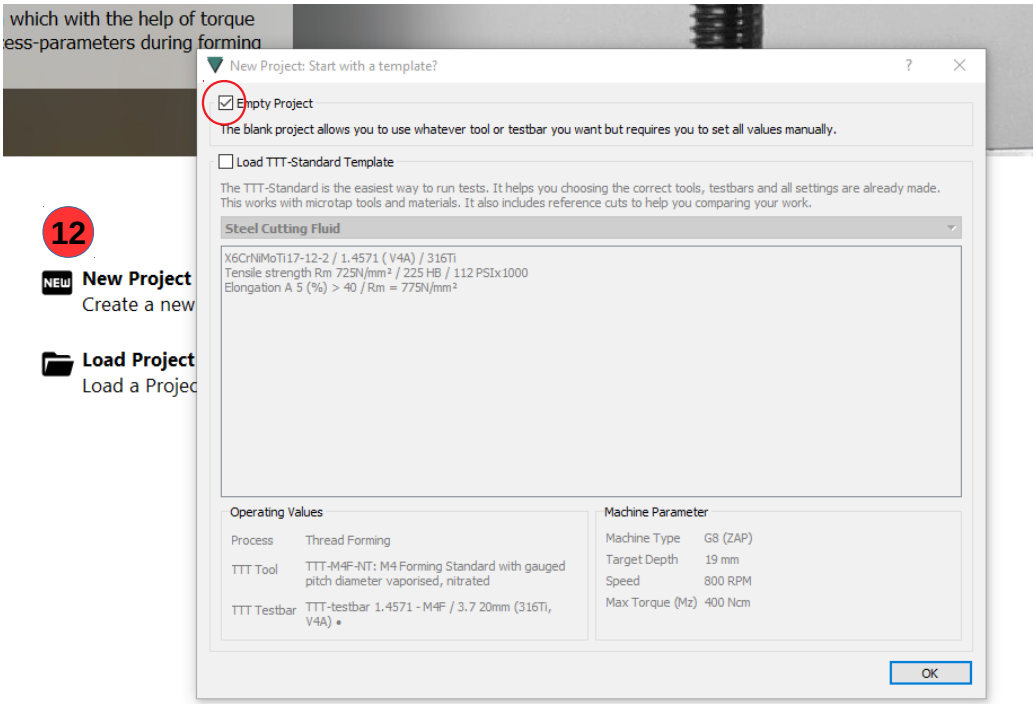
Linear regression of the curve: It is the math. slope of the line between start end end point of the current segment (similar to the old dual cursor). The value is the angle in degrees. The lower, the better.



5. Migrate from WinPCA3

5.a Create New Project

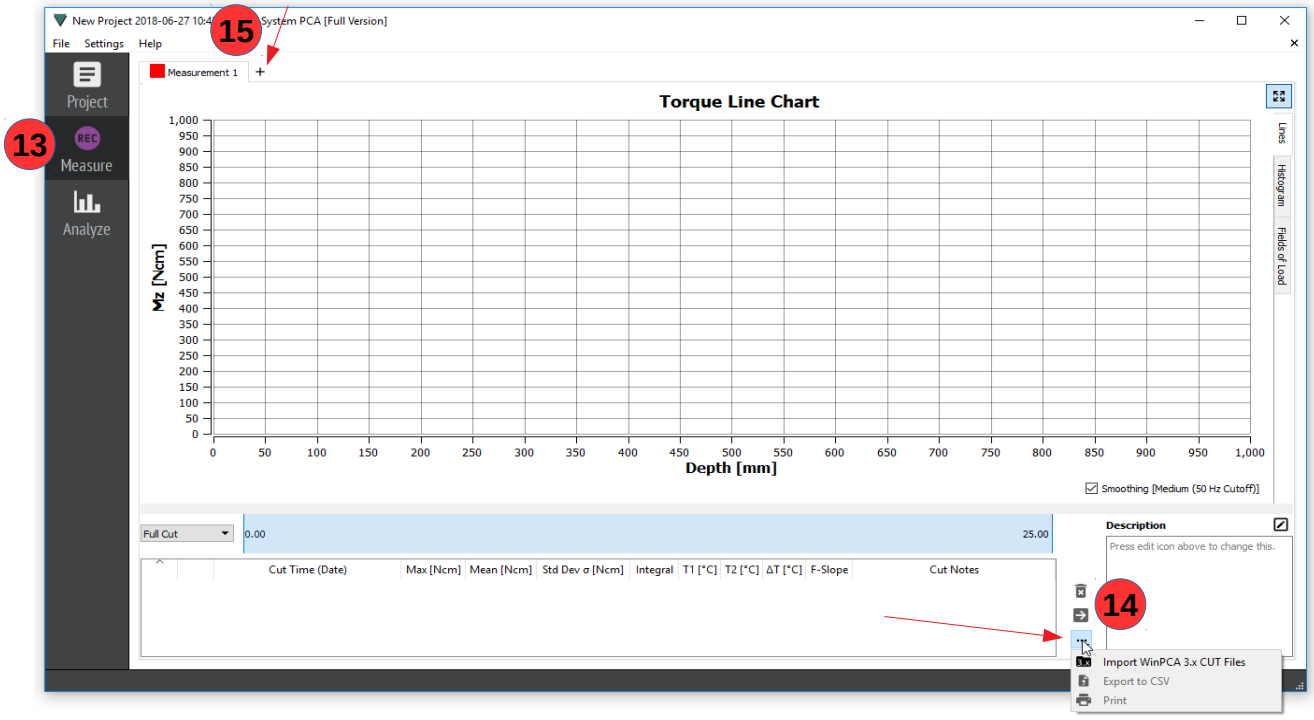
The migration from WinPCA3 is very easy. You just start with a new empty project [12].



The information about the used tools and testbars need to be manually entered in the project section (see 1.e).

5.b Import CUTs

In the measure mode [13], the tabs (in this picture the red tab called “Measurement 1”) represent a series of cuts for one parameter to optimize (e. g. an additive of the lubricant or similar). WinPCA3 used to save the cut files in different folders with a similar effect. To import them click on the “…” [14] right of the main table. Then on “**Import WinPCA 3.x CUT Files**”. The selection of multiple files in one folder is possible and recommended.



If the first measurment series if finished, create a new tab for the next measurement series with the (+) button in [15] and import the next batch of cut files there.

The default way how WinPCA 3.x Cuts were stored was in several numbered files. They might be in different folders for a different R1, R2. The “R” indicates a measurement series and the “P” the cut in that series. See below for an example.

Measurement 1

132542R1P1.CUT
132659R1P2.CUT
132753R1P3.CUT
132753R1Sum.CUT ← **This file is NOT required as it is generated automatically in TTT-System PCA v4 (with a click on Analyze)**

Measurement 2

132948R2P1.CUT
133025R2P2.CUT
133118R2P3.CUT
133118R2Sum.CUT ← **Do not import (see above)**

Import three cut files in each **Measure** tab of your TTT-System PCA v4 project. Click on **Analyze** and get as result the two *Sum-Cuts*.