HCC-F Software

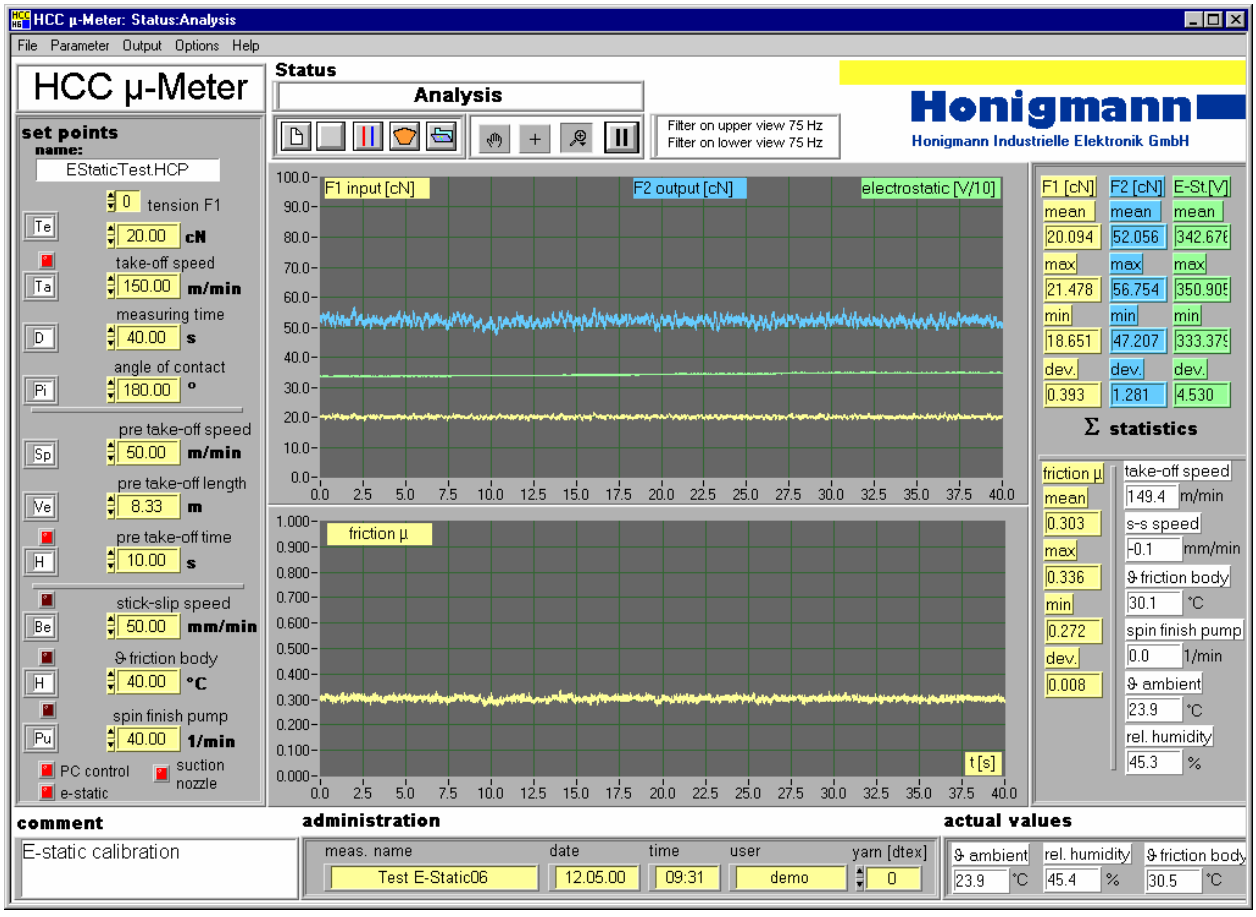
Honigmann **C**omputer **C**ontrol - Precision **F**riction Meter

The HCC-F software, used in conjunction with the Honigmann µ-meter, provides automated, precision measurement of the coefficients of friction at fibers and yarns. Running on the Windows platform, the HCC-F offers complete, high-level functionality for

- Controlling the Honigmann HCC µ-meter, the FAG 478 thread take-off device and other peripheral units,
- Online measurement data capture and evaluation,
- Automatic documentation and output of the results.

HCC-F makes available to the operator all the advantages of a graphic user interface. Thanks to automatic sequencing the control functions, measurement processing and, ultimately, the presentation of the results can be handled quickly and efficiently, with a minimum of operator effort.

The concept behind the overall system is consistently targeted on working to the specific testing standards (e.g. ASTM) and quality standards (e.g. DIN/ISO 900x). When recording the individual measurements not only the final results will be stored but all the peripheral parameters, as well, such as the F_1 and F_2 tensile forces, take-off speed, measurement period, date, operator identification, temperature, relative humidity etc.



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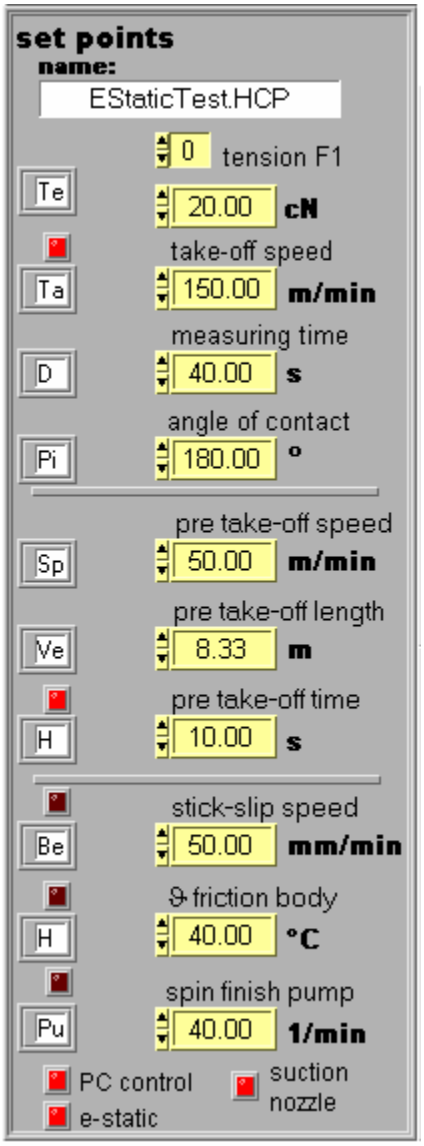
Controls



Before any measurement routine is started, the set-point values and other control parameters are loaded from files already on hand, edited if necessary, and then displayed in the „Set points“ screen.

These parameters remain visible during the entire measurement process (left-hand edge of the enclosed screenshot).

The adjustment ranges:

Tension Input F_1	5 ... 37	cN
Thread take-off speed	0 ... 200 (... 800)	m/min
Measuring time	30 ... 900	s
Angle of contact	30 ... 3x180	°
Pre take-off speed	0 ... 200 (... 800)	m/min
Pre take-off length	0 ...	m
Pre take-off time	0 ...	s
Speed for stick-slip-measurement*	0.01 ... 60	mm/min
Temperature of friction body*	30 ... 200	°C
Spin finish pump rotation speed*	0 ... 60	1/min

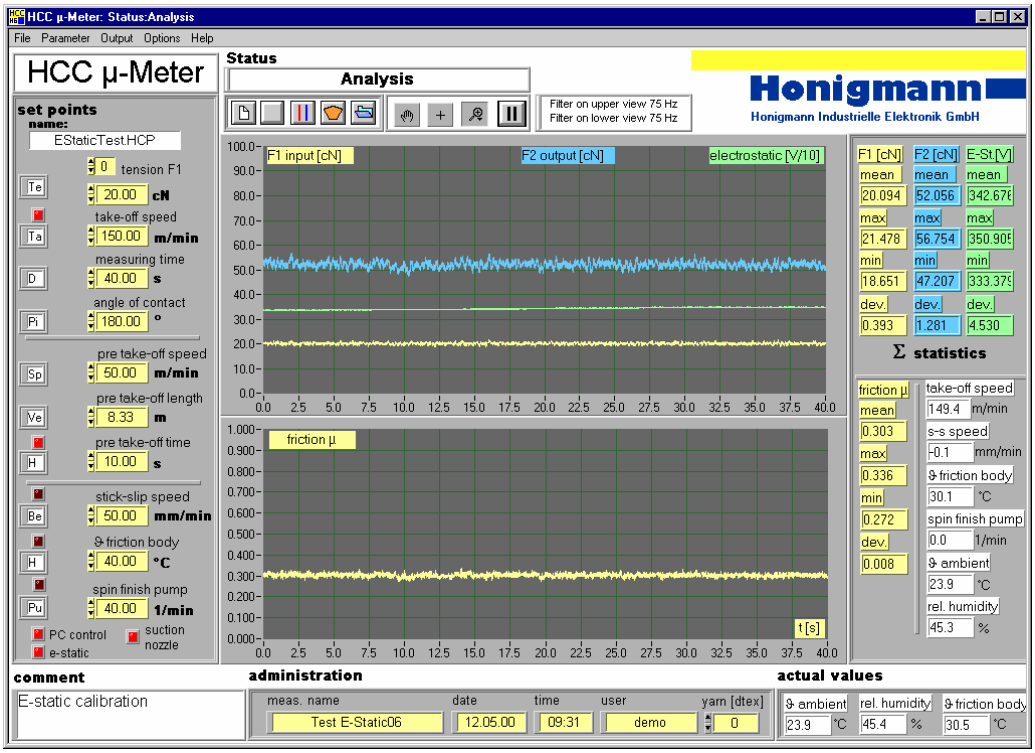
Digital buttons signal the momentary operating status and make it possible – even online and while measurement cycle is running – to switch individual devices and functions on and off.

Several sets of parameters can be stored in a queue, one behind another. They are then executed automatically as a measurement series. Thus it is possible to run a series of tests using differing speed, temperature and tensile force profiles.

An individual comment can be added to each parameter (and to each measurement). Whenever the program is launched, pre-defined comments will be loaded; these comments contain the guideline values recommended in the ASTM standard.

* Provided that the appropriate functional module is installed at the HCC µ-meter

Measurement data capture and online depiction



The measured data are captured at a sampling rate of 200 measurements per second, at resolution of 12 bits.

Shown in parallel, during the measurement, are the set-point value and

- The actual value for tensile forces F_1, F_2 and electrostatic buildup
  - In analog form as a y(t) chart (upper display area) and
  - Digitally as a mean value over the previous 300 ms
- The friction value µ calculated online
  - In analog form as a y(t) chart (lower display area) and
  - Digitally as a floating mean value over 300 ms
- The actual values for the following parameters
  (shown digitally, in the right hand frame within the screen)
  - Thread take-off speed
  - Stick-slip speed *
  - Temperature of the friction body *
  - Finishing pump rotation speed *
  - Room atmosphere * (ambient temperature and relative humidity)
- Status information on the switching states for the devices
- Information on the momentary software operation status

All the measured values are stored as the original values, without data compression, together with the associated measurement parameters, the comments and the statistical values. This makes it possible to call these data once again, whenever it may be required, and to carry out further assessments – in accordance with the state of the art valid at any given date. In addition, this makes for simple reconstruction of the measurements at any time.

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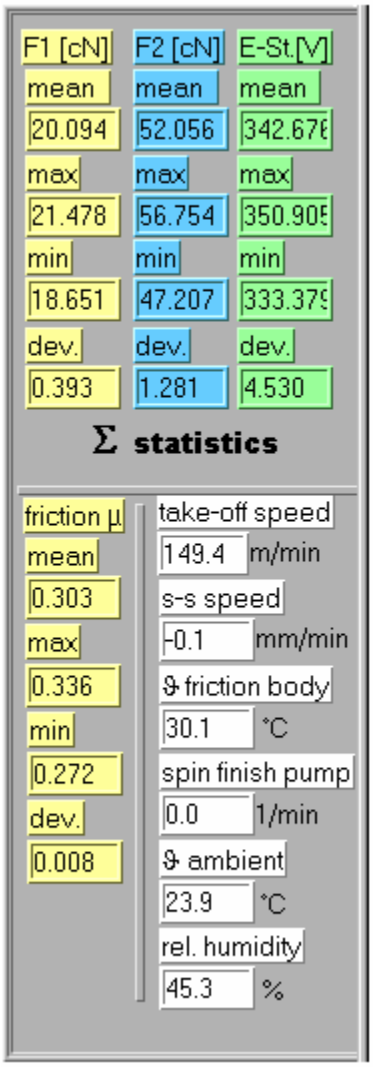
Analysis capabilities and statistical evaluations



Once a measurement has run to completion the data captured for tensile forces F_1 and F_2, for the electrostatic charge* and for the calculated friction value will be evaluated statistically:

- Mean value
- Maximum
- Minimum
- Standard deviation or
  coefficient for standard deviation c_v

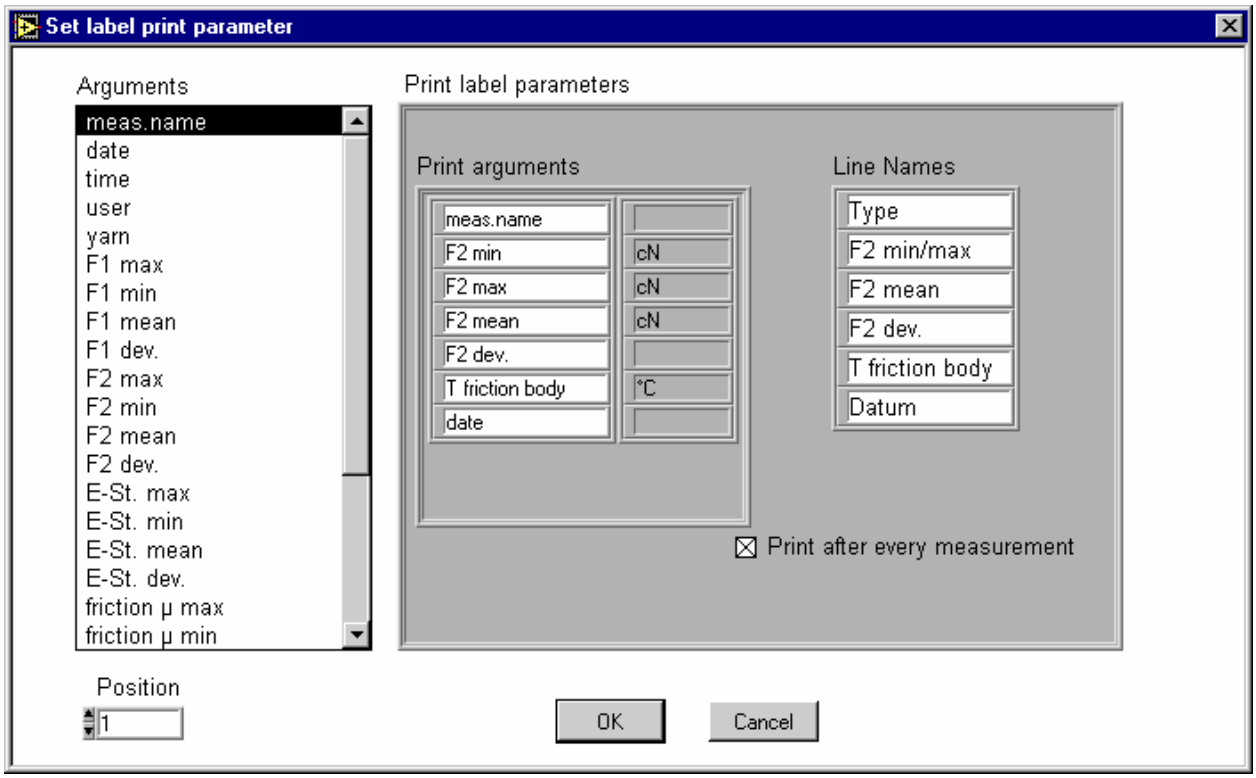
In addition to the evaluations described above, the HCC-F software offers further outstanding analysis options. Parameterization – within the limits imposed by values which make good mathematical and physical sense – can be specified as desired.

- Zoom function for both display areas, in the t and y directions
- Recalculation of the mean value across the zoomed sector
- Recalculation of the peak values across the zoomed sector
- Cursor functions with the current cursor position displayed
- Complex evaluation of the stick-slip signal*
  - Exact calculation of all the individual stick-slip maximum and minimum values
    - Calculation of the envelope curve for maximum and minimum values as a 3rd-degree spline function
    - Automatic cursor function for maximums and minimums
    - Maximum, mean and minimum values for all extreme values
  - Calculation of the envelope curves as spline functions
  - Separate display for selected charts
- FFT analysis**
- Filter functions with adjustable cut-off frequencies

Each measurement can be provided with an individual comment.

* Provided that the appropriate functional module is installed at the HCC µ-meter
** FFT: Fourier transformation – depiction of the frequency and amplitude spectrum

Output options for measurement and analysis values



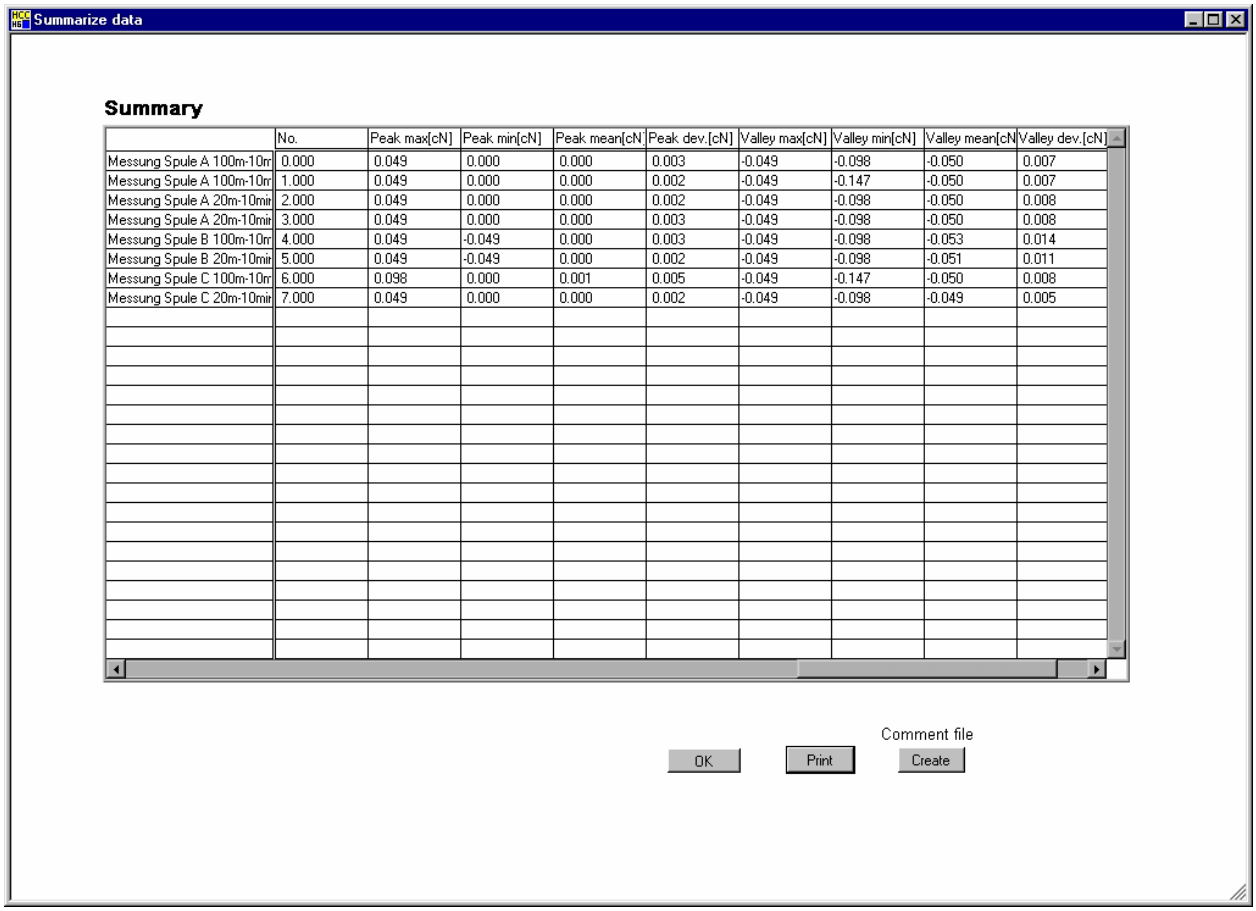
The following output options are available for documentation purposes and to export the results:

- Direct output of the analysis screen content (color or B/W) to an ink-jet or laser printer
- Generating bitmap files (*.bmp) for post-editing using MS Paint or MS PowerPoint, for example
- Label printing, at present with
  - 10 user-selectable measurement and analysis values in 5 lines
  - header / free text for each line
  - 2 free editable texts

Measurement: Material Test 0235

friction mean	0.2034	cN
F2 mean	35.987	cN
µ max/min	0.307 / 0.105	cN
speed	80.0	m/min
F2 Std. dev.	1.245	cN
12.10.2002	User: demo	

– Generating files (*.xls, *.txt) for editing and further processing of the data with other programs, such as MS Excel



Minimum PC system requirements

- computer: Pentium III, 500 MHz, 128MB-RAM
- hard disk 4GB
- monitor and
  graphic card: min. 768 x 1024, 256 colours
- keyboard and mouse
- required plug-in space:
  2 PCI-slots
- CD-ROM
- housing:
  standard desktop or
  miditower housing
  (**no** slim-line housing)
- inclusive original operating system: Windows 2000, Windows XP,
  German or English version
- inclusive installation programs for all accompanying drivers
  (i.e. for monitor, graphic card etc.)
- other periphery: usual Windows standard

Note:
Our equipment is normally designed for power supply 230 V AC / 50 Hz.
Should you require 115 V AC / 60 Hz, please state so explicitly in your order.