

# Filmtest

## *Offline Thickness Measurement System*



## ■ TQM and process optimization with the Filmtest

The Filmtest is an offline film thickness measuring system that can be used for quality control and process optimization. The combination of several measuring functions in an offline system makes the Filmtest a valuable tool for a professional quality control of blown and cast films.

Due to fast and easy handling it is practical to perform measurements at every roll change. Consistent measurement means you can provide your customer with more assurance that delivered production is within specification.



The operation of the system is easy enough that any operator can do it. The Filmtest helps to reduce the work in the laboratory. For example, in addition to the thickness measurement, the unit weight of the sample is also calculated eliminating the manual step of weighing the film.



## ■ The working principle

- A sample of the film is cut by means of a cutting plate, that guarantees that the exact width of the sample is of 150mm.
- The length and the weight of the sample is measured.
- From the length, width, weight and density of the sample the exact average thickness is calculated.
- The thickness profile is measured with a high resolution capacitive sensor.



## ■ Overview of the advantages

- The sample of the film does not need to be formed into a loop. It will be measured all the way long through the feeder.
- Film samples that are cut into several pieces can be measured one after the other. The software will put the measuring dates together and will create the complete profile.
- The average thickness is calculated. The measuring is absolute and the Filmtest does not need to be calibrated.
- There is no limit in the length of the samples.
- All measuring values will be registered during the same measuring operation.

## ■ The cutting tools

Cutting plate with pad



Optional: The cutting table

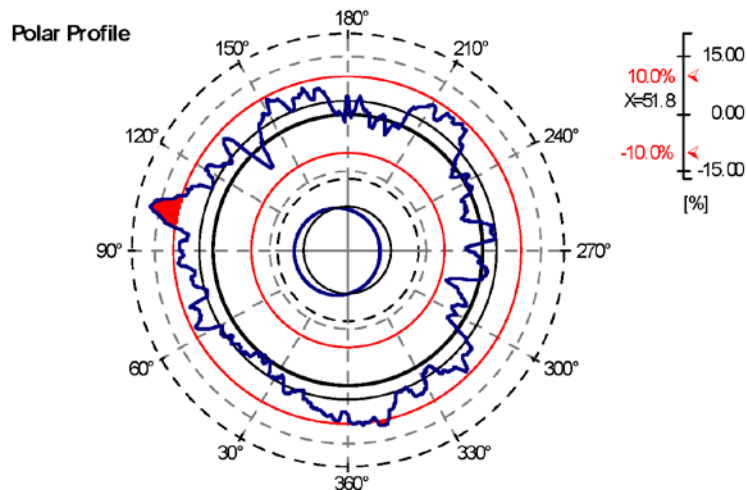
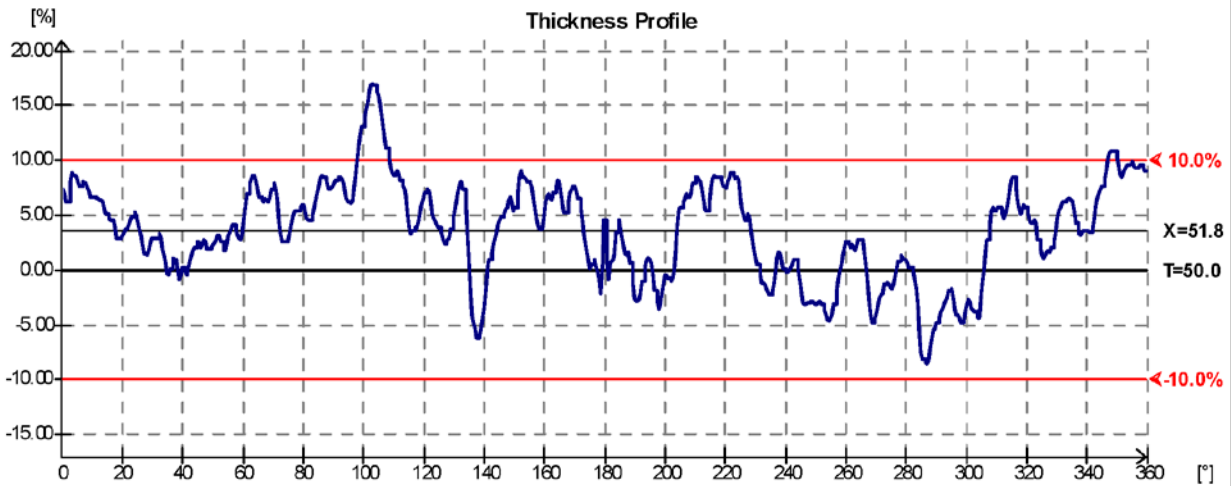


## ■ The quality report

### Quality Report

KÜNDIG CONTROL SYSTEMS FilmTest Demo V1.1 R1.0 /E-DEMO

Customer	:	KCS	Meter weight per roll	:	48.005 g/m
Order number	:	PE	Target thickness	:	50.0 µm
Line number	:	Line 1	Min. value	:	45.7 µm
Date	:	15.01.2009	Max. value	:	58.5 µm
Time	:	14:21:05	Average X	:	51.8 µm
Shift	:	2	Min. value in % (T)	:	-8.6 %
Operator	:	MT	Max. value in % (T)	:	17.0 %
Roll number	:	1	Average in % (T)	:	3.6 %
Material recipe	:	PE*	2s	:	4.49 µm
Density	:	0.923 g/cm3	Standard deviation in % (T)	:	4.5 %
Length	:	100.50 cm	Comment	:	



## The software

The Filmtest's software is the perfect complement for this measuring system. All measurements can be archived, printed and easily found when needed. This software is very flexible and it can be adapted for different needs.

### Before the measurement

Introduce the nominal thickness, density, receipt and tolerance. When the film is measured again, all these settings will be automatically suggested.

The menu can be completed with up to six additional fields, that can be entered according to the production or operator's desire.

### After the measuring

The measured profile is instantaneously displayed as either relative or absolute thickness. The zoom function allows the operator to analyze even the smallest deviations.

In case that the film sample has a crease, the operator can use a filter to eliminate the crease and then recalculate the profile.



### The archive

All measurements will be automatically archived. A search function is provided to ensure operators can easily retrieve archived data.

The data can be also exported from the archives. The entire archive with its data is possible to be stored in another network drive.



## ■ **Filmtest technical data**

### **Electrical interface values**

Power supply 115 / 230 VAC ± 10%, 50-60 Hz  
 Power consumption max. 180 VA

### **Ambient temperature**

Operation 10 °C to 40 °C  
 Transport and storage -40 °C to 70 °C

### **Measurement**

Measuring principle Capacitive thickness measurement  
Suitable for all electrically non-conducting material

Sample size 15 cm wide, no limit for length

Feeder speed Standard 190 cm / min.  
Other speeds available upon request

Measuring frequency 400 kHz

Sensor field size 3 x 64 mm

Measuring range 5 bis 500 µm  
Thicker than 500 µm on request

Measuring interval 50 ms

Temperature drift Compensated

Resolution 0.1 µm

Accuracy average thickness 0 to 10 µm ⇒ 0.2 µm  
 > 10 µm ⇒ 1%

Accuracy thickness profile (Average ± 10%) better than 2%

### **Ambient conditions**

Ambient temperature 23 °C ± 2 °C  
 Measured film LDPE-film, at 50 °C approx.

## ■ **Calculation of amortization**

$$\begin{array}{l}
 \boxed{\text{Material output}} \quad \text{kg/h} \quad \times \quad \boxed{\text{Operation time}} \quad \text{h/day} \quad \times \quad \boxed{\text{Operation time}} \quad \text{days/year} \quad \times \quad \boxed{\text{Material price}} \quad \text{€/kg} \quad = \quad \boxed{\text{Material throughput}} \quad \text{€/year} \\
 \\
 \boxed{\text{Material throughput}} \quad \text{€/year} \quad \times \quad \boxed{\text{Optimization}} \quad \% / 100 \quad = \quad \boxed{\text{Material savings}} \quad \text{€/year} \\
 \\
 \boxed{\text{Investment}} \quad \text{€} \quad : \quad \boxed{\text{Material savings}} \quad \text{€/year} \quad = \quad \boxed{\text{Amortization time}} \quad \text{years}
 \end{array}$$

## ■ Questionnaire application technology

Company

Address

Zip Code

City

Country

Contact person

E-mail

Phone

Fax

### We are interested in

- |   |  |
|---|--|
| <input type="checkbox"/> Online thickness gauge                               | <input type="checkbox"/> Width measurement             |
| <input type="checkbox"/> Online thickness gauge and automatic profile control | <input type="checkbox"/> Width measurement and control |
| <input type="checkbox"/> Offline system for film thickness                    | <input type="checkbox"/> Meter weight control          |

### Specifications of existing line

- Film width: Min. \_\_\_\_\_ mm Max. \_\_\_\_\_ mm
- Film thickness: Min. \_\_\_\_\_  $\mu$ m Max. \_\_\_\_\_  $\mu$ m
- Throughput: Min. \_\_\_\_\_ kg/h Max. \_\_\_\_\_ kg/h
- Line speed: Min. \_\_\_\_\_ m/min Max. \_\_\_\_\_ m/min
- Extrusion:  Monoextrusion  Coextrusion \_\_ Layers  
                  \_\_ Components                    \_\_ Components per layer
- Processed materials: \_\_\_\_\_
- IBC:  Yes  No
- Gusseted films:  Yes  No
- Die:  Fixed  Reversing  Rotating
- Haul-off:  Fixed  Reversing  Rotating
- Width of roll at haul-off: \_\_\_\_\_ mm
- Rotation time: Min. \_\_\_\_\_ min Max. \_\_\_\_\_ min
- Power supply: \_\_\_\_\_ VAC \_\_\_\_\_ Hz (single phase)
- Existing measuring and control units:  Thickness gauge  Profile control system  
 Width measurement  Width control  
 Meter weight control  Line speed control
- Brand of existing line: \_\_\_\_\_

**E-mail:** [kcs@kundig-hch.ch](mailto:kcs@kundig-hch.ch)

**Fax:** +41-55-250 36 01

## **Product overview**

### **K-300 Rotomat KT**

Online thickness gauge with rotating scanner

### **KNC-400 Rotomat KT**

Online thickness gauge for sticky  
and sensitive films

### **KNC-600 Linear Scanner**

Online thickness gauge for cast film

### **K-NDC Rotomat KT**

Nuclear online thickness gauge  
for barrier films

### **K-300 CF Gauge**

Online thickness gauge  
for quality supervision

### **S-50**

Online thickness gauge  
for quality supervision

### **S-100**

Capacitive online thickness gauge  
for barrier films

### **FE-8**

Width measurement and control  
for lines with or without IBC

### **FILMTEST**

Offline measurement for quality control

### **PROFILSTAR.NET**

Visualization for quality supervision and control

### **HCH. KÜNDIG & CIE. AG**

Joweid Zentrum 11  
CH-8630 Rüti ZH / Switzerland

Phone +41 (0) 55 250 3616

Fax +41 (0) 55 250 3601

kcs@kundig-hch.ch  
www.kundig-hch.ch