

# K-NDC Rotomat KT

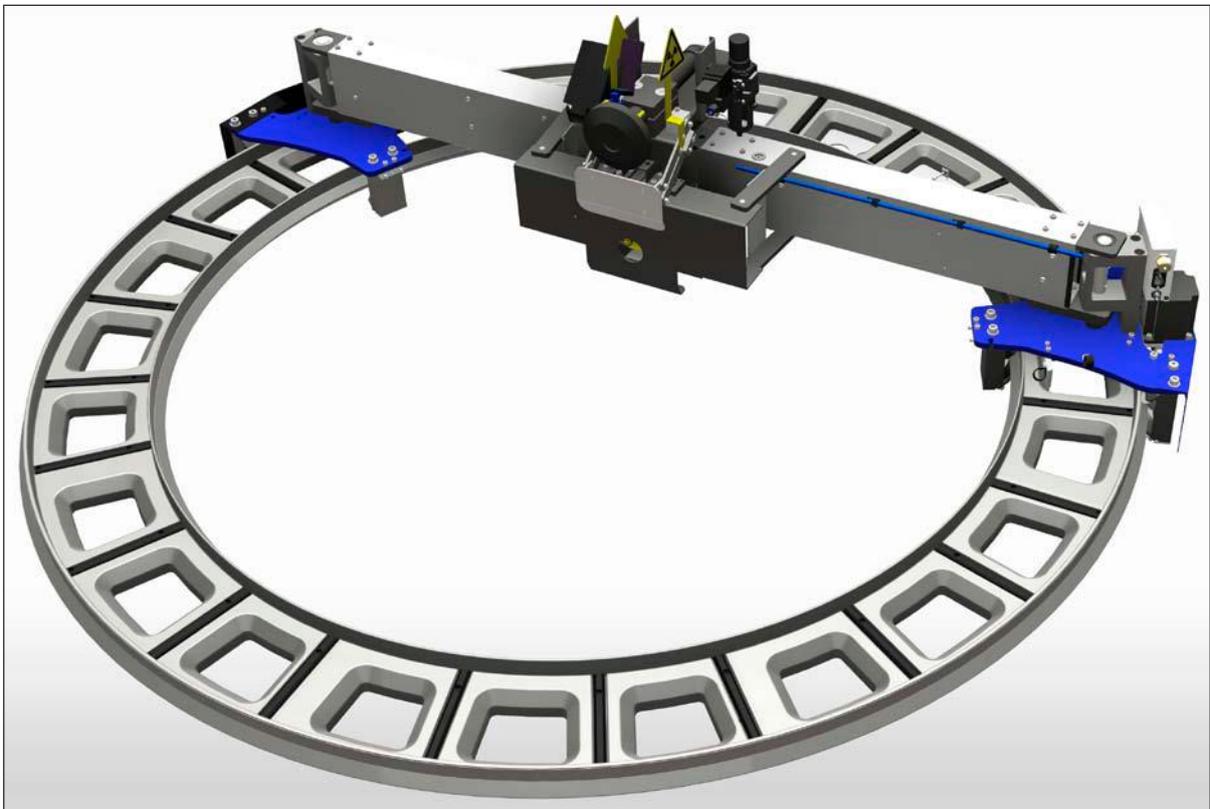
**KÜNDIG CONTROL SYSTEMS**  
The Gauge Manufacturer for Film Extrusion  **SWISS  
MADE**

***Nuclear  
thickness  
gauge for  
barrier films***

## ■ K-NDC Rotomat KT

The K-NDC Rotomat KT is a thickness measuring system for blown film lines and measures online the thickness of the film. The nuclear sensor can measure every kind of material. By means of an air cushion it will be avoided that the sensor touches the film. Due to these particular features, the K-NDC Rotomat KT is the best solution to measure barrier films.

By measuring the thickness and the quick availability of the measuring data, the production process can be instantaneously modified. Thus, the quality of the film will be improved and will keep a constant high level through the whole production process. In addition, the scrap during product change will be reduced. Consequently, raw material will be saved due to profile optimization.

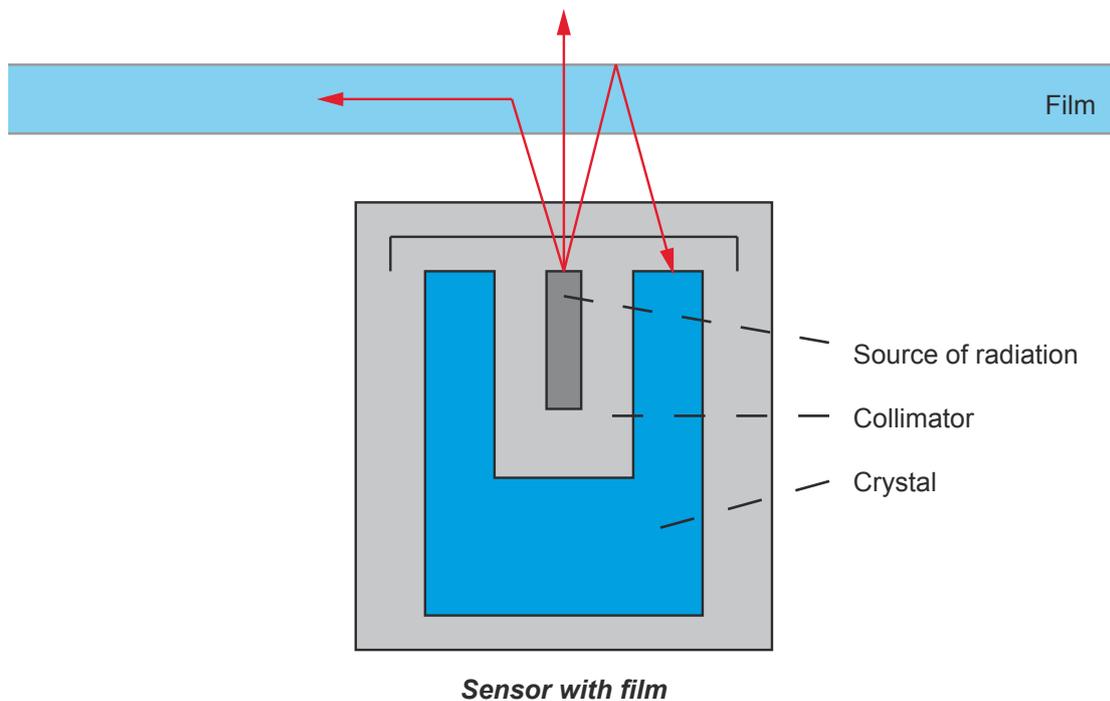


*K-NDC Rotomat KT*

The system can easily be installed by the own factory operators and set immediately ready for operation. The thickness measuring unit is in every almost maintenance free and provides a great availability.

## ■ The nuclear measuring principle

The systems of the series 103 use a source of radiation that it is assembled in a cylinder made by protective Wolfram and a collimator that it is mounted in the middle of a crystal detector. The radiator, the collimator and the crystal are covered by a high quality steel plate. The collimator drives the radiation to the measured product and avoids the radiation to go behind the sensor or directly into the crystal.



Depending on the mass of the product part of the radiation that reach the product will be partially absorbed, another part will go through it, and the rest will be reflected in form of a "softer" radiation (photons) in the crystal. The bigger the mass per unit area, the more photons will be irradiated back.

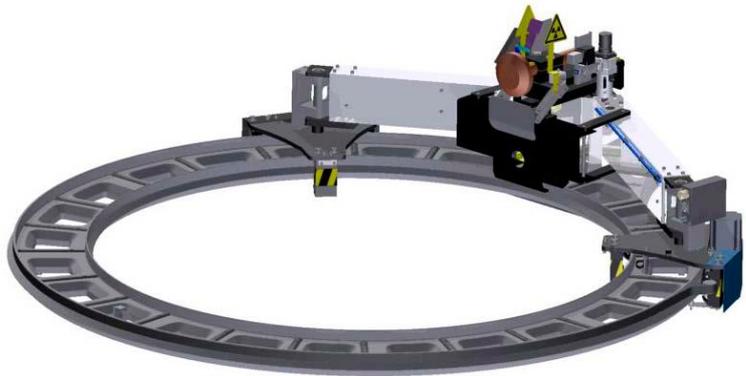
## ■ Country-specific regulations

- The importation and the operation of isotopic measuring instruments in the majority of countries goes together with certain obligations. These obligations are different in every country and must be clarified for every one of them.
- In certain countries the use of an automatic shutter is mandatory. This part covers the radiation source with a metal plate, as soon as the instrument is switched off or if there is a power failure. This shutter is available upon request.
- Isotopic instruments must be professionally disposed after use.

## ■ Standard sizes

Using the bending traverse technology a very wide range of bubble size can be covered with a small space requirement. It takes only four different installation sizes to measure anything between 255 and 3900 mm layflat.

Both arms of the bending traverse are moved by a recirculating ballscrew. That allows a much faster movement in radial direction compared to systems with telescopic or linear adjustments.



Size [mm]	Layflat range * min. - max.[mm]	Bubble diameter min. - max. [mm]	Surrounding diameter [mm]
1200	255 - 1800	80 - 1200	2200
1730	505 - 2600	240 - 1730	2800
2130	865 - 3200	470 - 2130	3200
2600	1150 - 3900	650 - 2600	3700

\* 4 % shrink and 40 mm wobbling considered

## ■ Special sizes for big bubbles

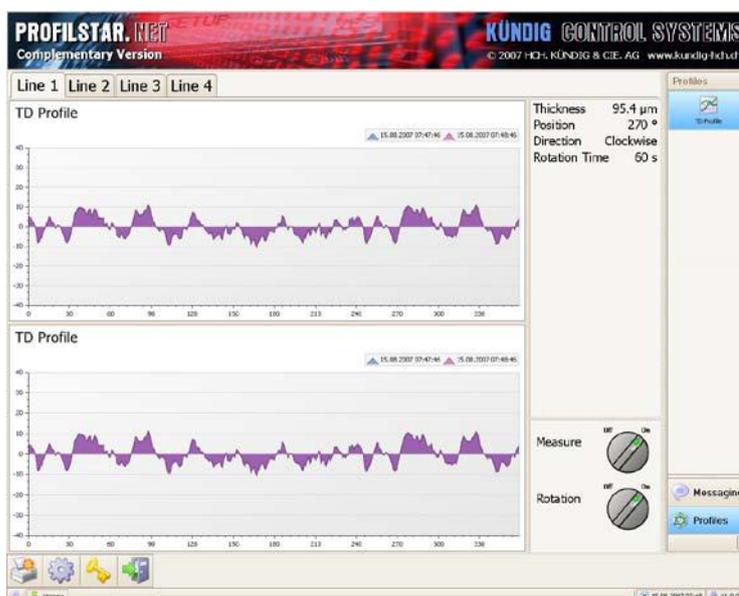
For those applications where greater than 4000mm layflat is produced, such as agricultural and geomembrane films, we offer custom made units.

For very large units, we recommend a fixed traverse to maintain mechanical stability. We can cover virtually any range and size. Standard components are utilized which allows us to offer custom solutions with the best cost/performance ratio.

## ■ Connections and interfaces

### PROFILSTAR.NET

The PROFILSTAR.NET is a complete visualization system for process optimization and quality control. Up to 16 lines, equipped with Kündig thickness gauges and / or layflat control systems, can be connected to one PROFILSTAR.NET unit.



### PCD-LINK via RS-422 or UDP/IP Ethernet

The proven PCD-LINK protocol, used for the communication between control system and any Kündig measuring device, is available via UDP/IP Ethernet and also as RS-422 with the new data processor. So it is still compatible with existing host computers but at the same time offers a new and very cost efficient version.

Both ports can be used at the same time, for example one port for the control system and the other port to record the data.

### KCS-API and KCS-Process

For a fast and easy integration of Kündig measuring devices into Windows based control systems, we now offer a KCS-API (Application Programming Interface) in the widely used programming language C. The KCS-API is delivered as a DLL (Dynamic Link Library) and a KCS Process (Windows application) that acts as a driver.

### Analog output / Digital signals

Still available is a connection with an analog signal. In this case, the measured thickness value is transmitted as an analog signal, while the rotation signals are presented in a digital form. Digital inputs can be used to control the thickness gauge.



## ■ Technical data K-NDC Rotomat KT

### Electrical interface values

Power supply	110 - 240 VAC, 50/60 Hz
Power consumption	max. 110 VA
Air pressure consumption	7.2 m <sup>3</sup> /h

### Ambient temperature

Data processor	max. 55 °C
GBS-103W thickness sensor	max. 55 °C
GBS-103W data processor	max. 45 °C

### Thickness measurement

Measuring principle	Gamma rays back scatter
Source type	Americium-241 (150 mci / 5.55 GBq)
Measuring range	10 to 500 μm
Measuring interval	0.2 to 1.0 sec.

## ■ Calculation of amortization

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

## 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: \_\_\_\_\_

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## **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-7**

Width measurement and control  
for lines with or without IBC

### **FILMTEST**

Offline measurement for quality control

### **PROFILSTAR.NET**

Visualization for quality supervision and control

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