ILMetro stations combine up to five LayTec in-line metrology systems for a comprehensive control of industrial thin film production processes by non-contact measurements. Each station can be customized to specific requirements and hence usually comprises a different combination of metrology systems.

**Features**

**Measurement parameters**
- Individual layer thickness of complex layer stacks with nm-accuracy
- Sheet resistance
- Transmission spectrum
- Reflectance spectrum
- Photoluminescence spectrum
- Chemical composition
- Haze
- Surface roughness

**Full integration into manufacturing line**
- Designed for 24 / 7 operation in industrial environments
- Non-contact measurements
- Customization:
  - Mechanical, optical and communication adaptation to all types of production line including conveyors, roll-to-roll, clean room and process chambers
  - Communication with production line via ProfiBus, OPC, EtherCat. Other types of field bus upon request.
  - Transmission of measurement results (including measurement parameters, e.g., module ID, position) into local and remote database and MES
- ILMetro-to-ILMetro communication via TCP:IP
Benefits

- Improved process control by combined evaluation of various metrology techniques
- Uniformity information across the production line by providing multiple measurement heads
- Using results from upstream ILMetro for data evaluation at downstream ILMetro

Description of the parts

Modularity

Up to five metrology systems to be selected from the following industry-proven LayTec in-line metrology systems. Each system may yield multiple measurement heads:

<table>
<thead>
<tr>
<th>Metrology system</th>
<th>In-line metrology method</th>
<th>Parameter to be measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flames</td>
<td>Reflectometry and transmission spectroscopy in UV and visible spectral range</td>
<td>Layer thickness</td>
</tr>
<tr>
<td></td>
<td>Reflectometry and transmission spectroscopy in near infrared spectral range</td>
<td>Layer thickness</td>
</tr>
<tr>
<td>PearL</td>
<td>Photoluminescence spectroscopy</td>
<td>Layer composition (derived from peak position)</td>
</tr>
<tr>
<td>Hazel</td>
<td>Haze measurement</td>
<td>Surface roughness</td>
</tr>
<tr>
<td>Eddy</td>
<td>Eddy current measurements</td>
<td>Sheet resistance</td>
</tr>
</tbody>
</table>

Further details on these metrology systems are provided by their respective data sheets.

Industrial grade cabinet

- Protection class IP55
- Touchscreen (15") for visualisation and operation
- Uninterruptible power supply
- Signal lights
- Emergency-off switch
- Light grey, dark grey, other colours upon request
- Customized size available
Operating conditions

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>220 V AC / 230 V AC / 240 V AC</td>
</tr>
<tr>
<td></td>
<td>Other voltages upon request</td>
</tr>
<tr>
<td>Supply frequency</td>
<td>50 Hz / 60 Hz ±5 Hz</td>
</tr>
<tr>
<td>Maximum power consumption</td>
<td>400 W + 100 W for each metrology system</td>
</tr>
<tr>
<td>Weight</td>
<td>Depending on configuration, approx. 300 kg</td>
</tr>
<tr>
<td>Operation temperature</td>
<td>15°C – 28°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-10°C – 45°C</td>
</tr>
<tr>
<td>Max. operation humidity</td>
<td>50 %</td>
</tr>
<tr>
<td>Max. storage humidity</td>
<td>80 %</td>
</tr>
</tbody>
</table>

Control computer

- CPU: Intel Xeon Processor E5-2603 v3 (6C, 15MB Cache, 1.6GHz)
- HDD min. 500 GB, RAID 1
- DVD-writer, card reader, mouse, keyboard
- Multiple Gbit / s LAN interfaces
- Operating system: Windows 10 pro MUI (multi language version)

(Last to technical changes)

LayTec Insight metrology software

- Data acquisition
- Customized data evaluation

Sets of reference samples

Details depending on configuration and type of application.

Technical documentation

- User manual
- CE declaration of conformity
- Other documentation available upon request

Adaptation to in-line and roll-to-roll production processes

- Mechanical adaptation
- Optical adaptation
- Auxiliary sensors for tracking moving substrates / samples:
  - Ultra-sonic sensors
  - Light barriers
  - Rotary encoder
  - etc.
- Communication interfaces (e.g., DP / DP couplers)

(Subject to customization)
Typical industries
- Glass
- Display
- Photovoltaic
- Printed electronics
- Carbon fibre

Typical fields of application
- Incoming inspection
- Process control
- QA
- Pass / fail tests
- Binning

Further Details
- Measurement rate of milliseconds
- Remote service and software maintenance
- CE certification

Specifications are subject to further technical development and may differ from those given in the data sheet. In certain cases, performance may be limited by reactor type and/or growth conditions. Please consult our technical sales team to see how LayTec metrology can best serve your specific application.

For further information please contact:

LayTec AG
Seesener Str. 10-13
10709 Berlin, Germany
Tel.: +49 (0)30 89 00 55-0
Fax: +49 (0)30 89 00 55-180
Email: info@laytec.de
Web: laytec.de

Developed, manufactured, qualified in Germany.