



Rheology Solutions

Rheology Solutions is the sole Australian distributor of this product range and we welcome the opportunity of discussing your application requirements.

*We hope the information you are seeking is contained within this file.
If you have any questions, or require further information please contact us.
We look forward to being of further service.*

Regards from the Team at Rheology Solutions.

RHEOLOGY SOLUTIONS PTY LTD. ACN 082 479 632

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The solution for the extrusion & converting industry



Web Inspection System | FSP600

Complete QC during production process



Web Inspection System FSP 600

The web inspection system FSP600 allows the detection of every defect-type which often appears in film production and is feared by manufacturers because it reduces the film quality enormously e.g. gels, black specks, fish eyes, holes, wrinkles, scratches, coating voids, water drops, oil stains, insects, die lines, contaminations and bubbles.

It is used for the 100 % surface control of transparent and opaque or coloured films for running speeds up to 1000 m/min. and resolutions from 25 µm.

The used lighting technologies namely transmission or reflection mode consists of high frequent fluorescence lamps with a special designed focussing rod or high power blue/red/white LED`s with chip on board technology (COB) and passive cooling management.

The defects are classified according to customised defect classes like flies, gels, black specs, scratches, bubbles, fisheyes, holes or repeating defects. The images of these defects are stored for further analysis. The high end system uses Fuzzy Logic. The easy touch in function enables the operator to select and name the defect classes by evaluating the defect images. Then a classifier automatically determines the parameters for these classes.



Furthermore, the operator has the possibility to evaluate the defect image with 3-D analyser: The film test evaluation software enables the customer to reanalyse the defect information according to other specifications. The sophisticated software enables the operator to analyse the roll quality

and to print customised quality protocols of the rolls. It is possible to report the defects to various customised lanes in machine direction. The system warns the operator with an alarm lamp if critical defects or an amount of critical defects per qm, 10 qm or 100 qm occur:





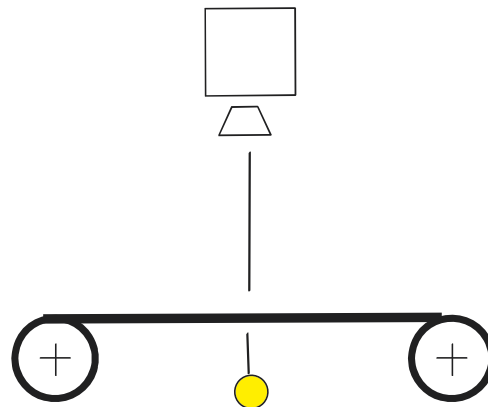
Measuring principles & lighting technologies

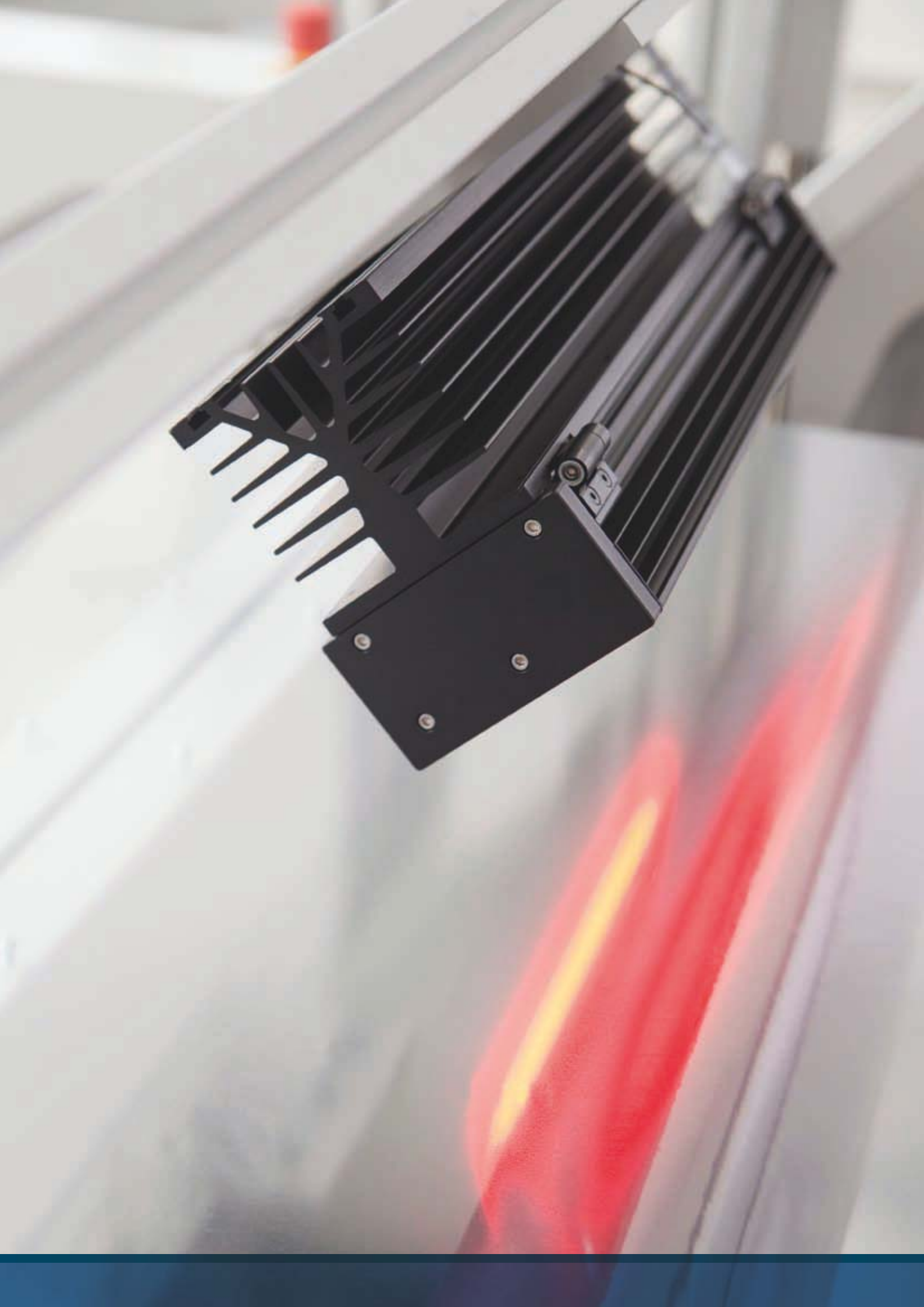
The FSP600 system uses different measuring principles and lighting technologies to achieve the best possible result of defect detection. Depending on the material and, which chemical composition, physical characteristics, transparent or non-transparent/opaque, or depending on the coating of the film, it is essential to utilise solutions complementary to customer requirements.

The measuring principles transmission and reflection, in combination with the several lighting options, high frequent fluorescent lamps with focus rod, high power Chip on Board (COB), blue/white/red/infrared LEDs and metal halide lamps with fibre optics, provide for customer satisfaction: depending on the production speed and the required resolution, the adequate lighting unit is chosen.

Transmission lighting

The transmission lighting is mainly used to detect every kind of defect in transparent and translucent films. It can be designed as bright or darkfield illumination depending on the application.

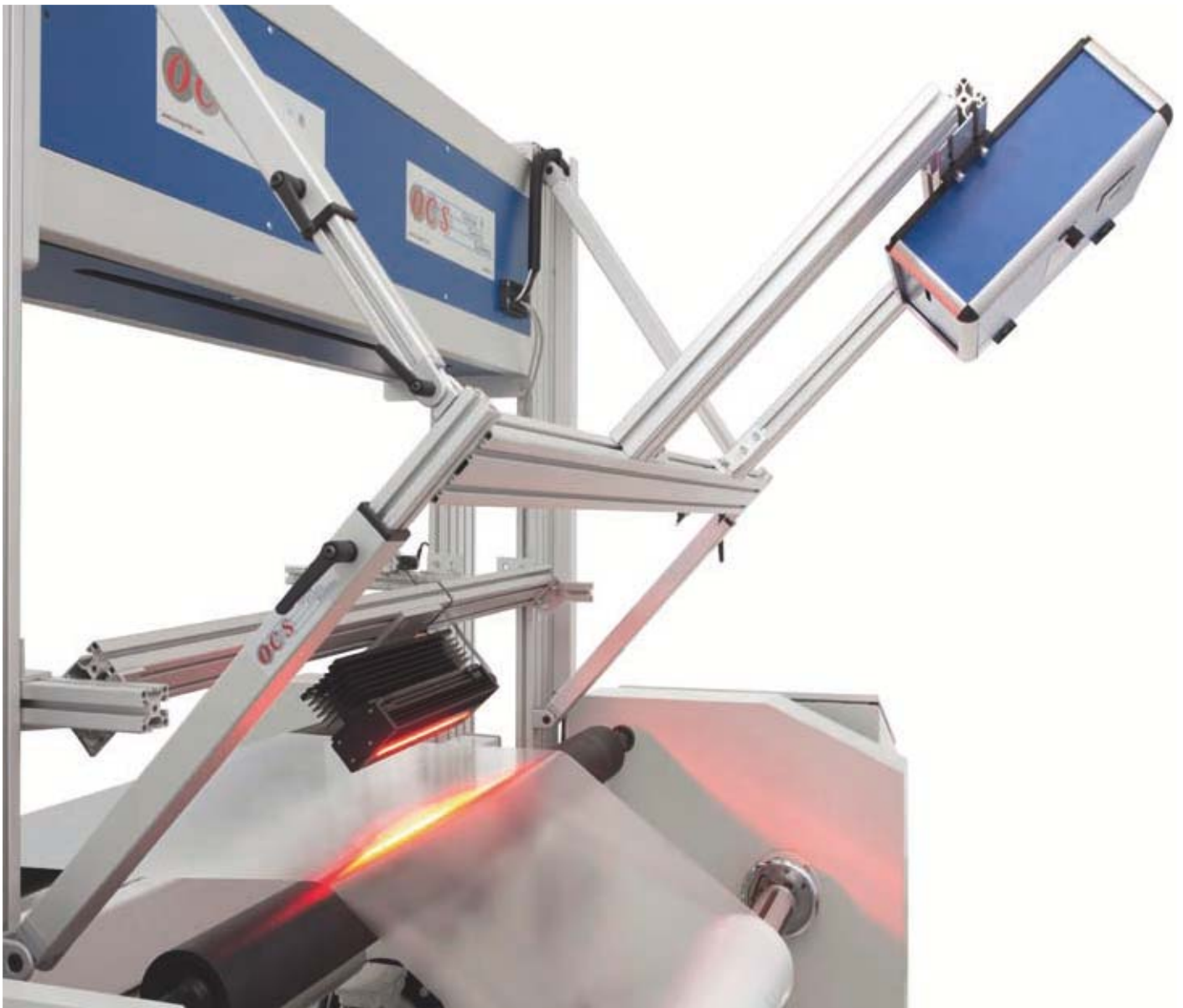
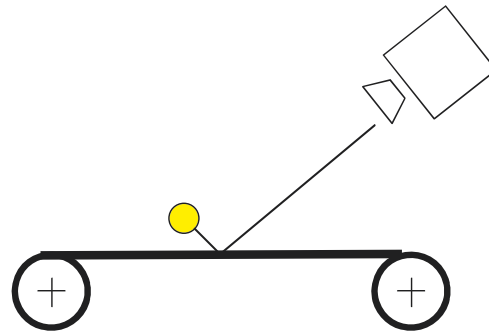




Reflection lighting

The reflection lighting is mainly used to detect coating voids and other surface irregularities in opaque films and on other light resistance materials.

A combination of both lighting technologies enables the producer to run transparent as well as opaque films with one camera beam. This is often used e.g. for PET thermoforming films.



Detectable defects and fields of application

The FSP600 web inspection system allows the detection of every kind of irregularity in real time analysis which often compromises the quality of the film and the end product. Further more it is distinguished for the possibility to display the found defects in several descriptive ways: mosaic display, defect rolling map, 3-D pictures, etc. The deviance from the grey scale value of the defects causes their demonstration in different colours. The yellow and light blue threshold show their deviance concerning to a higher, dark blue and green show their deviance concerning to a lower grey scale value. The intelligent Fuzzy Technology classifies the defects automatically by their parameters.

The extended hole detection (EHD), a sophisticated software, enables the detection of holes in clear films and distinguish their parts from holes in white or opaque films.

The representative mosaic container (RMC) displays the 100 most representative defect photos in one container:

The all-embracing FSP600 quality control with fast defect analysis and representation of the inspection results during the production is essential and applicable in all fields of film production and converting. Beneficial is the possibility of the direct intervention in the production process to avoid the deterioration of the quality. Furthermore a differentiation of defects concerning to their origin, inadequate raw material or problems in the production process, is possible.

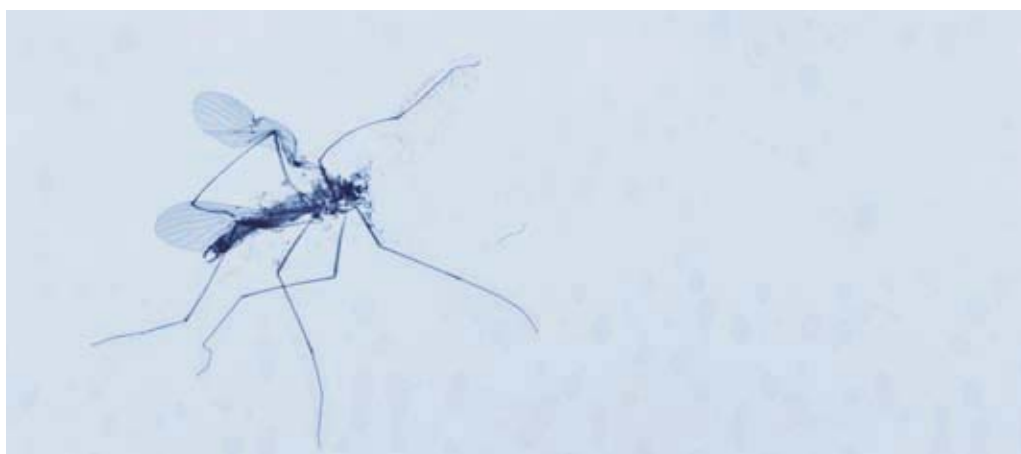


- Gels
- Black specks
- Fish eyes
- Holes
- Wrinkles
- Scratches
- Coating voids

- Water drops
- Oil stains
- Insects
- Contaminations
- Bubbles
- Die lines
- Craters

Fields of application

- Cast, blown film & sheet lines
(PP, PET, PE, ABS, PC, PMMA, etc.)
- Coating lines
- Calendaring lines
- Bi-orientation stretch film lines
- Aluminium: extrusion coating & lacquering lines
- Technical films
- Surface protection films
- Medical/pharmacy films
- Optical films
- Food/barrier films
- Hygiene/diaper/non-woven films & laminates
- Automotive films

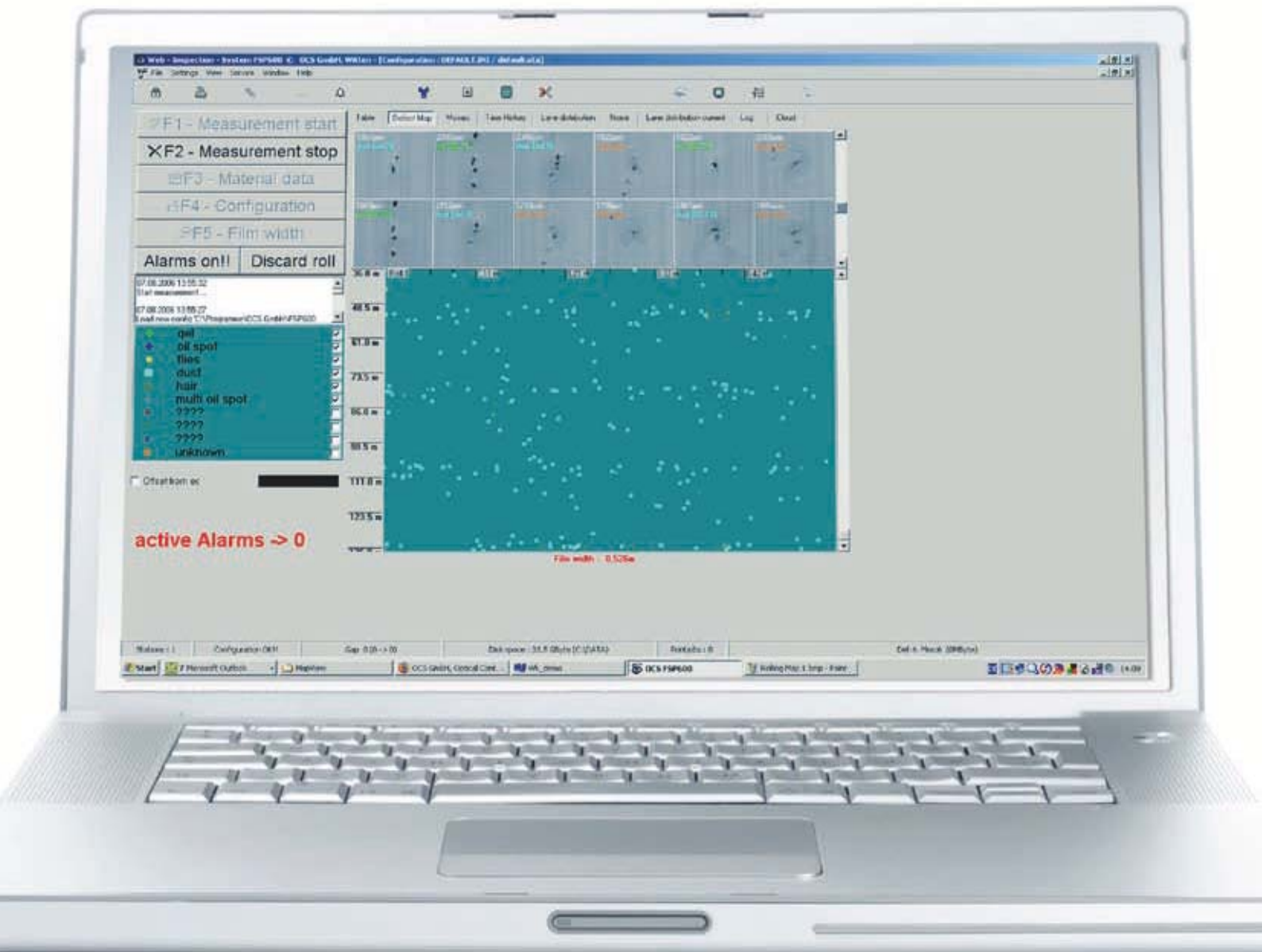




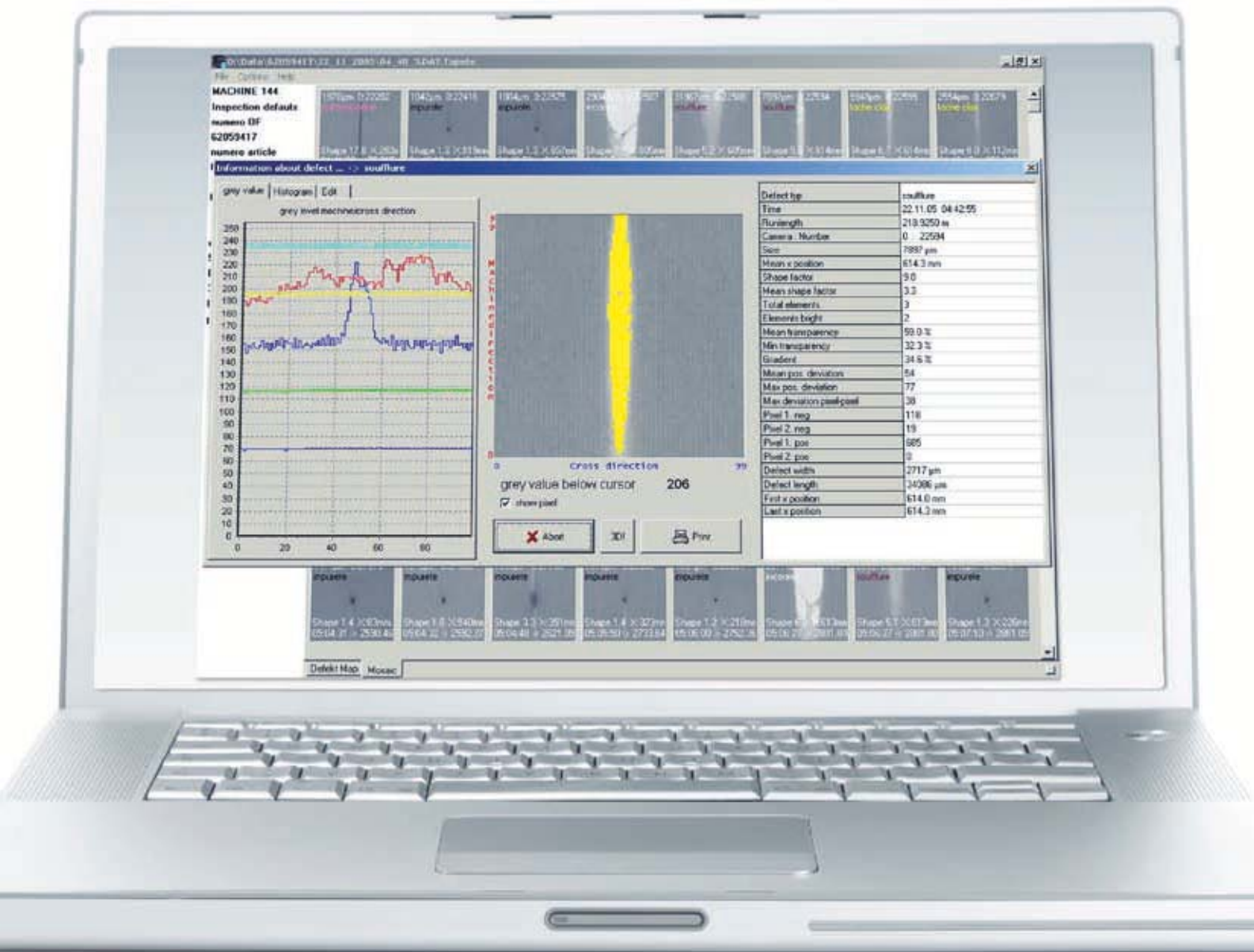
Performance Characteristics

- **Advanced embedded PC technology**
An embedded PC is integrated with the camera in a closed housing and buffer more than 1000 defect photos per second
- **Real-time defect analysis**
Fast analysis and representation of the inspection results to interfere directly into the production process
- **Easy teach-in classification**
Intelligent Fuzzy Technology classifies the defects automatically by their parameters
- **Statistics**
Statistical information (absolute, per 10 qm, 100 qm) depending on defect size and type





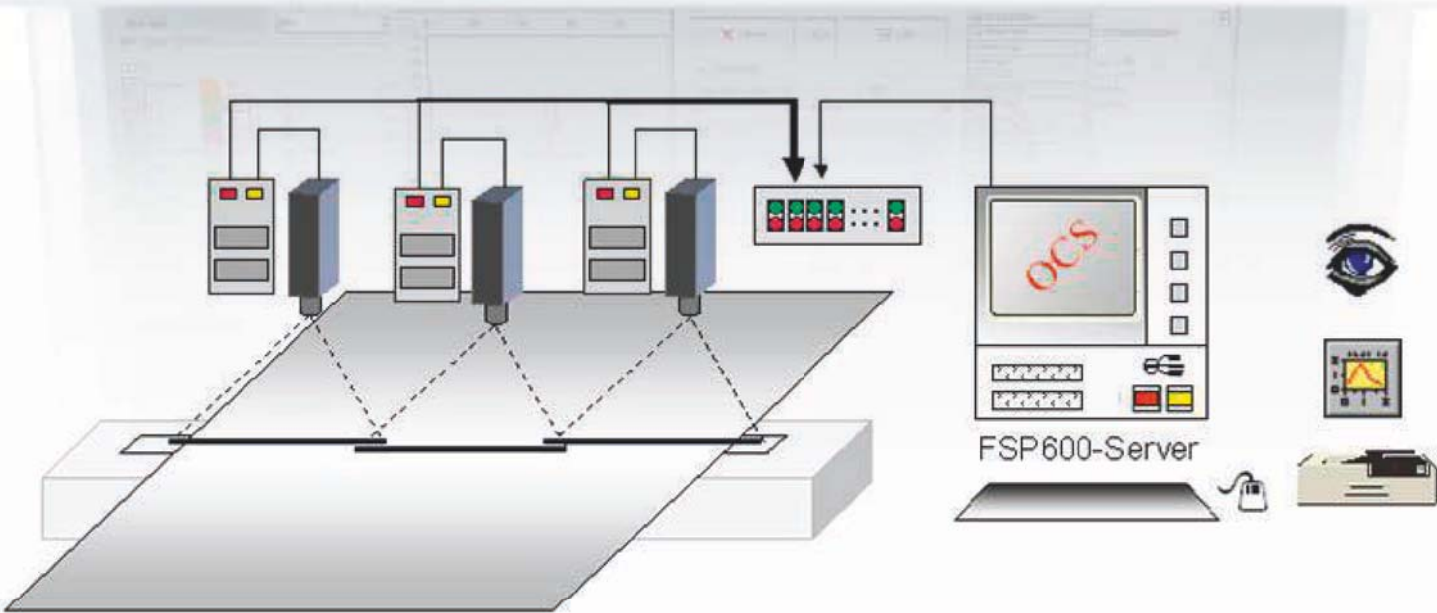
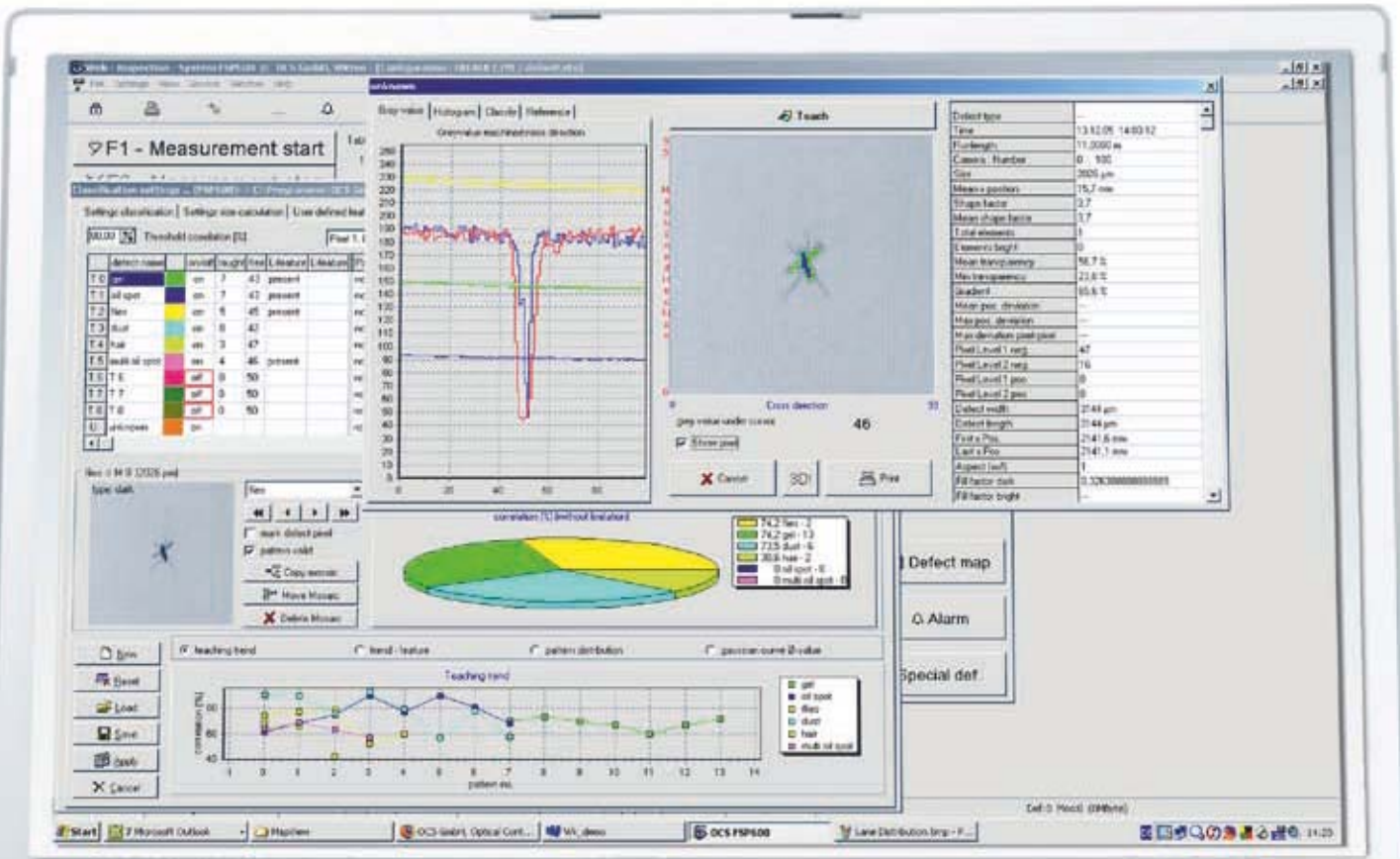
- **Representative mosaic container (RMC)**
 Displaying the 100 most representative defect photos in one container (e.g. only one gel photo if there have been 1000, but the one fly will be also shown)
- **Extended hole detection (EHD)**
 Sophisticated software made for the detection of holes in clear films and to distinguish their parts from holes in white or opaque films
- **Time trend**
 Graphical view of the detected defect classes, width or opacity subject to time, running meters or lanes
- **Open database**
 The recorded data can be converted into all standard file formats (Access, Excel...) Optional are My SQL or Oracle interfaces are available
- **Width measurement**
 The system controls the width of the film and alarms the operator when the width changes
- **Opacity measurement**
 On-line measurement of the absolute and relative transparency values



- **Lane reporting**
The defects will be reported up to 25 various lanes with individual printouts. The lane width can be configured automatically or individually
- **3D-defect analysis**
Powerful software tool for sophisticated defect image analysis
- **Repeating defect alarm & alarm comment**
The system gives an alarm (acoustic, marker, log in alarm file and on rolling map) and the operator has the possibility to comment it in the rolling map (e.g. screen change or additive change)
- **Streak detection**
Highly sophisticated 2D-filter operations in real-time detect low-contrast defects within the surface in machine direction
- **Quality traffic light & film grade**
SW tool to check the film quality quickly
Using weighted defect types for grading
- **Customised defect printout**
The RTF printout manager allows the generating of an individual defect protocol including company logo and specific defect types or size classes. Also defect types and size classes are eliminable in the printout

- **Reverse turn offline management**
Possibility to change the machine direction in the rolling map and on the defect table for defect finding on the rewinder
- **OCS viewer**
Automatic display of GUI screenshots from up to four FSP600 systems on one monitor





Technical Data

- Camera
CCD line scan camera
Resolution: from 20 μm
(against film width and running speed)
- Lighting
HF-cycled, high performance fluorescent light
Blue, white and red LED`s
- Device interface
Ethernet 10/100 M Base T
- Remote control
Extender, Service, Ethernet, ISDN/Internet
- Size dimension
Against film width and designated resolution
- Power supply
230 V AC, 6 A/115 V AC, 12 A
- Temperature
10 - 40 $^{\circ}\text{C}$
- Computer
Industrial Intel®Core™ 2 Duo
Up-to-date-technology
- Software
Operating system Windows XP Professional
(latest technology)
- Physical interface
(DC per external server)
Ethernet 100/1000 M Base, USB, RS485,
RS232, digital & analogue I/O
- Communication protocol
(DC per external server)
MODBUS RTU, MODBUS TCP/IP, OPC, SQL,
Oracle, SAP, file transfer, PROFIBUS
Implementation to other Fieldbus-Systems
possible

Technical alterations are subject to change
without prior notice



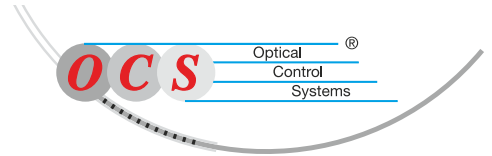
OCS Web Inspection Cooperations

Scores of well-known film manufacturers and companies of the converting industry trust in the emersed quality control of their products by OCS web inspection equipment.

The close cooperation between OCS and Brückner ServTech or OCS and Windmüller & Hölscher are examples of distinguished teamwork between producers and responds to customer requirements working OCS solutions.



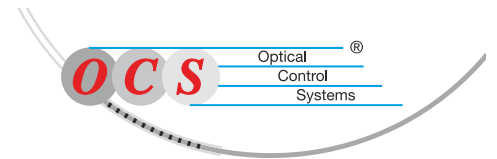
WINDMÜLLER & HÖLSCHER



Cooperation Windmüller & Hölscher & OCS

The Brückner ServTech GmbH offers the FSP600 web inspection system for the Biax film market and has a mobile FSP frame available in its pilot plant station.

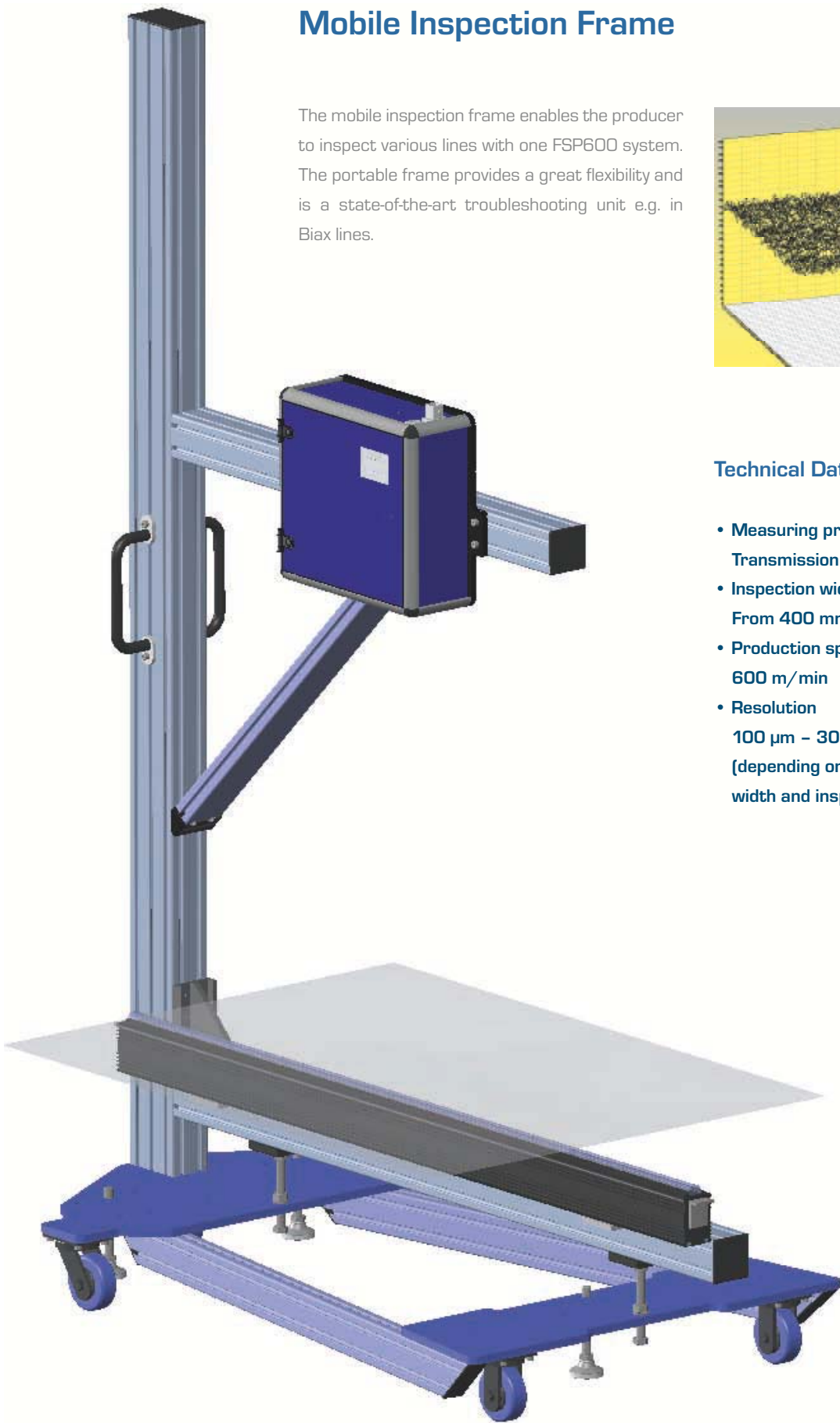
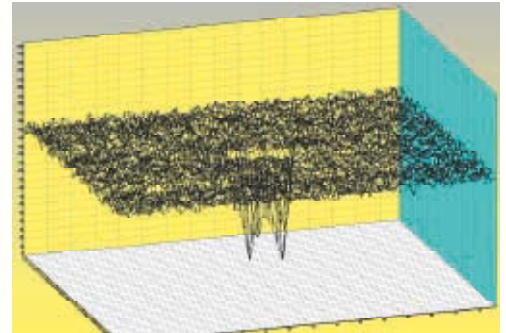
The Windmüller & Hölscher KG exhibits the FSP600 system working in the blown film (width about 2800 mm) and cast film production in its pilot plant station. Furthermore it has the mobile FSP frame available.



Cooperation Brückner ServTech & OCS

Mobile Inspection Frame

The mobile inspection frame enables the producer to inspect various lines with one FSP600 system. The portable frame provides a great flexibility and is a state-of-the-art troubleshooting unit e.g. in Biax lines.

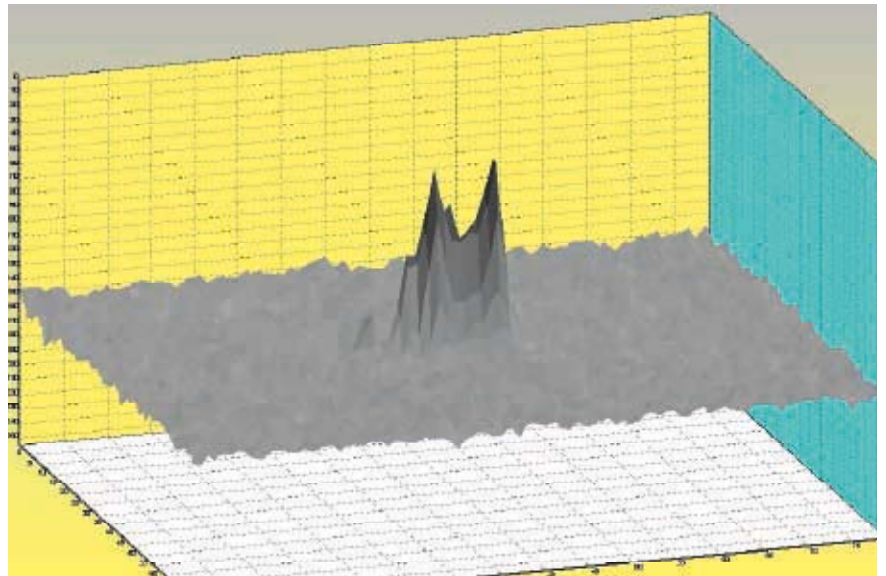


Technical Data

- **Measuring principle**
Transmission
- **Inspection width**
From 400 mm – 1200 mm
- **Production speed**
600 m/min
- **Resolution**
100 μ m – 300 μ m
(depending on desired inspection width and inspection speed)

Sample Testing System ST4

For an offline film defect analysis, film samples with the size of DIN A4 & DIN A3 can be analysed in detail with resolutions down to 20 μm . The scanner also helps to design inline inspection systems for production regarding the defect detection feasibility, the resolution, the right inspection angle and lighting technology.



Technical Data

- **Measuring principle**
Transmission modus & reflection modus with various inspection angles
- **Lighting technology**
High frequent fluorescent lamps with focus rod
High power Chip on Board (COB) blue/white/red/infrared LEDs
- **Resolution**
From 20 μm to 400 μm
- **Sample size**
DIN A3 or DIN A4



FSP600 Training Centre

The OCS headquarter exhibits a factory-owned technical and training centre which offers courses of introduction for the professional use of the FSP600 system at regular interval dates. The future system's administrators acquire substantial expertise when they work with and configure the FSP600 system under real conditions and try their future handhold with professional support.

Furthermore the pilot plant station offers the possibility to test whole film rolls under real re-winder conditions. Future customers could send the bulked sample material to OCS for a detailed detection and are sent back a detailed feasibility study about all kinds of found defects or the future customer himself supervises the quality control of the film sample in a live demonstration.





Technical Data

- **Measuring principle**
Transmission modus (darkfield and brightfield) & reflection modus
- **Lighting technology**
High frequent fluorescent lamps with focus rod
High power Chip on Board (COB) blue/white/red/infrared LEDs
- **Resolution**
From 50 μm to 500 μm
- **Winder**
Core: 3" (76 mm)
Film width: 200 mm – 1000 mm
Max. roll \varnothing : 500 mm
Max. speed 100 m/min



»*Inspired synergy*«

OCS



WINDMÖLLER & HÖLSCHER

LOHMANN TAPES

NORDENIA

ALCAN PACKAGING

ELOCOAT

BRÜCKNER

KLÖCKNER PENTAPLAST

INEOS

MITSUBISHI

EVONIK RÖHM

EXXONMOBIL

AMCOR FLEXIBLES

AEP

SABIC

VALERON

SILVALAC

LYONDELLBASELL

DOW

TOTAL

DOW

ETIMEX

SICHT-PACK HAGNER

INDIAN OIL

NOVA

RKW

CONSTANTIA

RENOLIT

WIPAK

FATRA

BAYER

CRYOVAC

ORBITA

TRIOPLANEX

BISCHOF & KLEIN

KOROZO

SÜDPACK

CRANE & CO.

LENZING PLASTICS

PETROCHINA

KWH PLAST

BASF

EXXONMOBIL

TRIOPLAST

AVERY DENNISON

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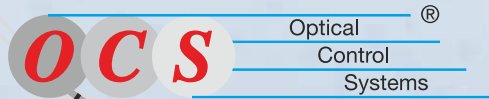
TREOFAN

C.I. KASEI

INTEPLAST

To ensure excellent product quality for their customers, scores of well-known raw material manufacturers are in possession of OCS equipment.

During production process, the optimum quality of your product can also be ensured...



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