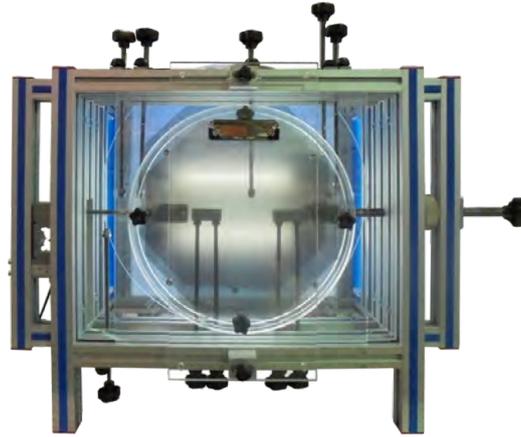


Photoelasticity Unit **EFO**

Photoelasticity Unit with Strain Gauges Measurement System **EFOC**

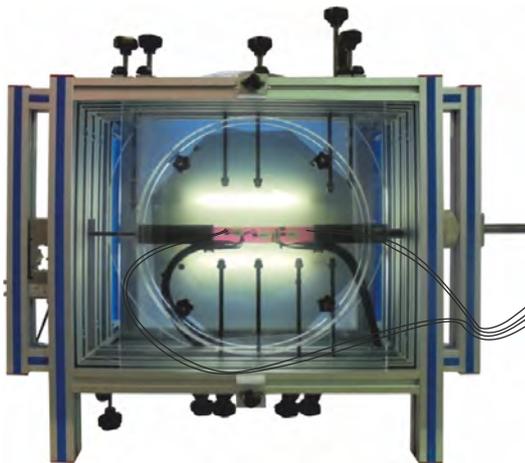
Photoelasticity Unit With Strain Gauges Measurement System and Artificial Vision System **EFOV**



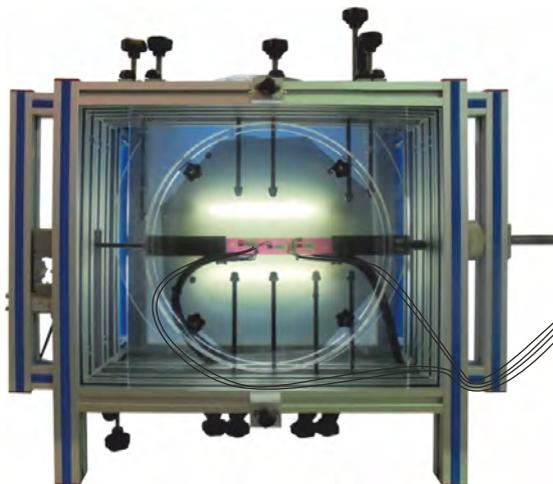
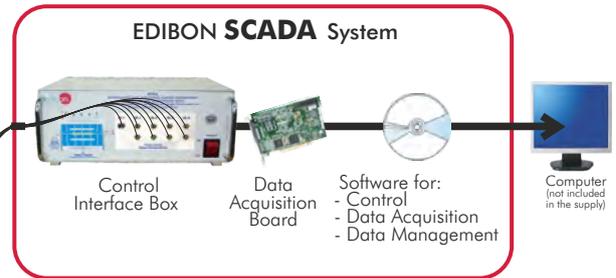
EFO. Photoelasticity Unit.

www.edibon.com

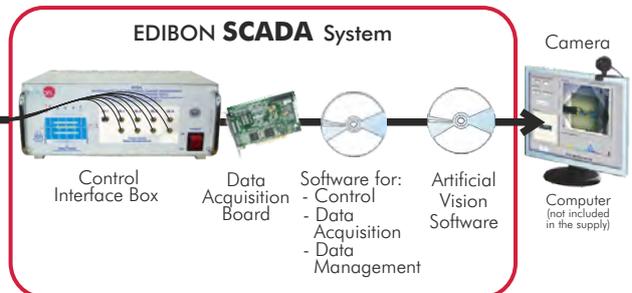
- ↳ Products
- ↳ Products range
- ↳ Units
- ↳ 7.-Mechanics & Materials



EFOC. Photoelasticity Unit with Strain Gauges Measurements System.



EFOV. Photoelasticity Unit With Strain Gauges Measurement System and Artificial Vision System.



ISO 9000: Quality Management (for Design, Manufacturing, Commercialization and After-sales service)



European Union Certificate (total safety)



Certificates ISO 14000 and ECO-Management and Audit Scheme (environmental management)



Worlddidac Quality Charter Certificate and Worlddidac Member

Photoelasticity is the method of analysing and recording mechanical stresses and strains in components.

The components used are test specimens or models made of transparent special material which becomes optically double-refractive under mechanical loading.

Using polarised light, the distribution of stress in test specimens is investigated.

The polarisation filters represent the distribution of stress in colours.

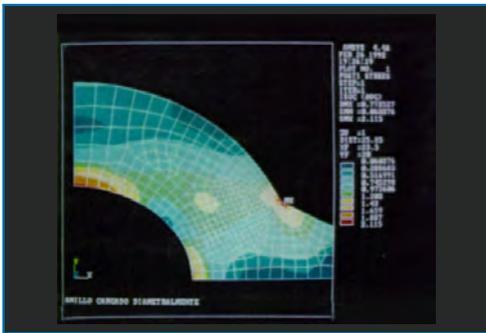
By using white or monochromatic light and different configuration of linear and circular polarizer / analyzer we can obtain the principal stresses direction and the principal stresses difference.

By using strain gauges we can measure the stress in a certain position and in one direction. With Photoelasticity we can observe the value in the whole element and in all directions.

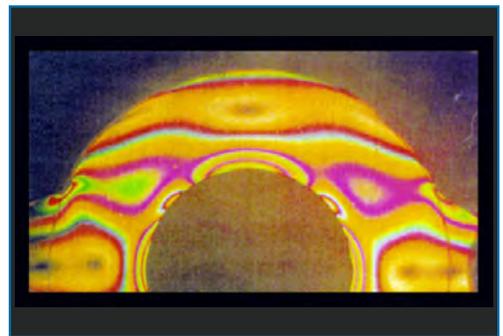
RESULTS

1. Differences between the simulation and the photoelastic reality

Software Simulation

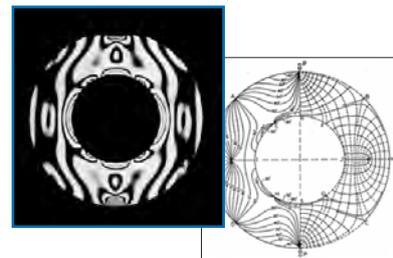
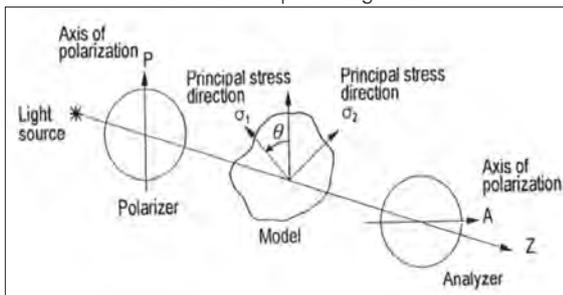


Real
(with EFO/EFOC/EFOV Units)



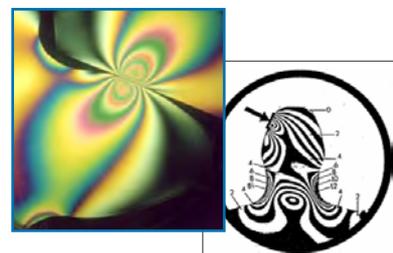
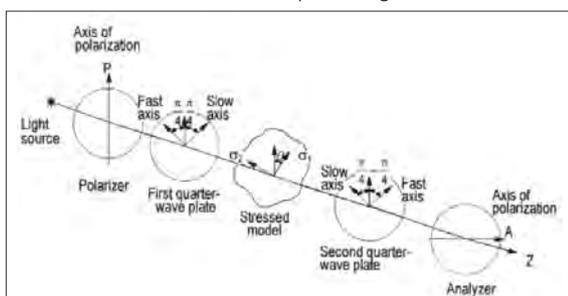
2. Main configurations with EFO/EFOC/EFOV Units

Plane Polariscopes configuration



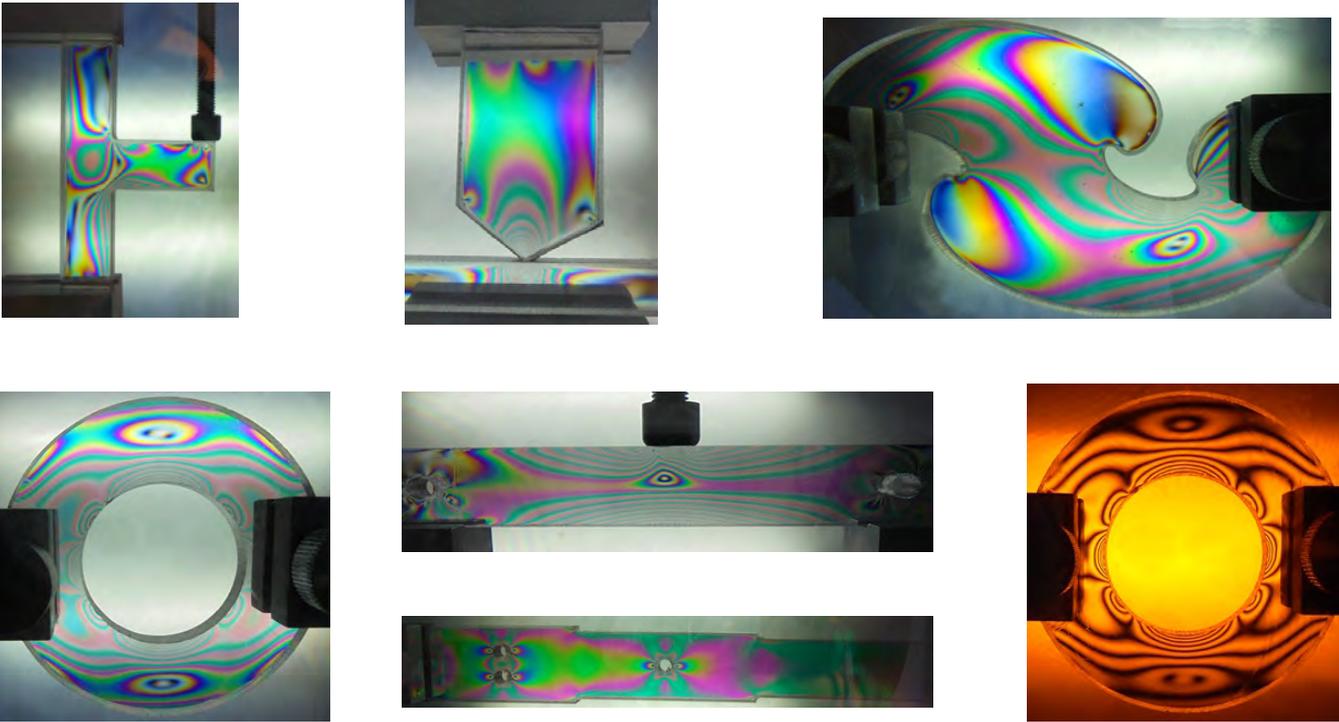
Plane polariscope configuration with monochromatic light, for isoclines and direction of principal stresses determination.

Circular Polariscopes configuration

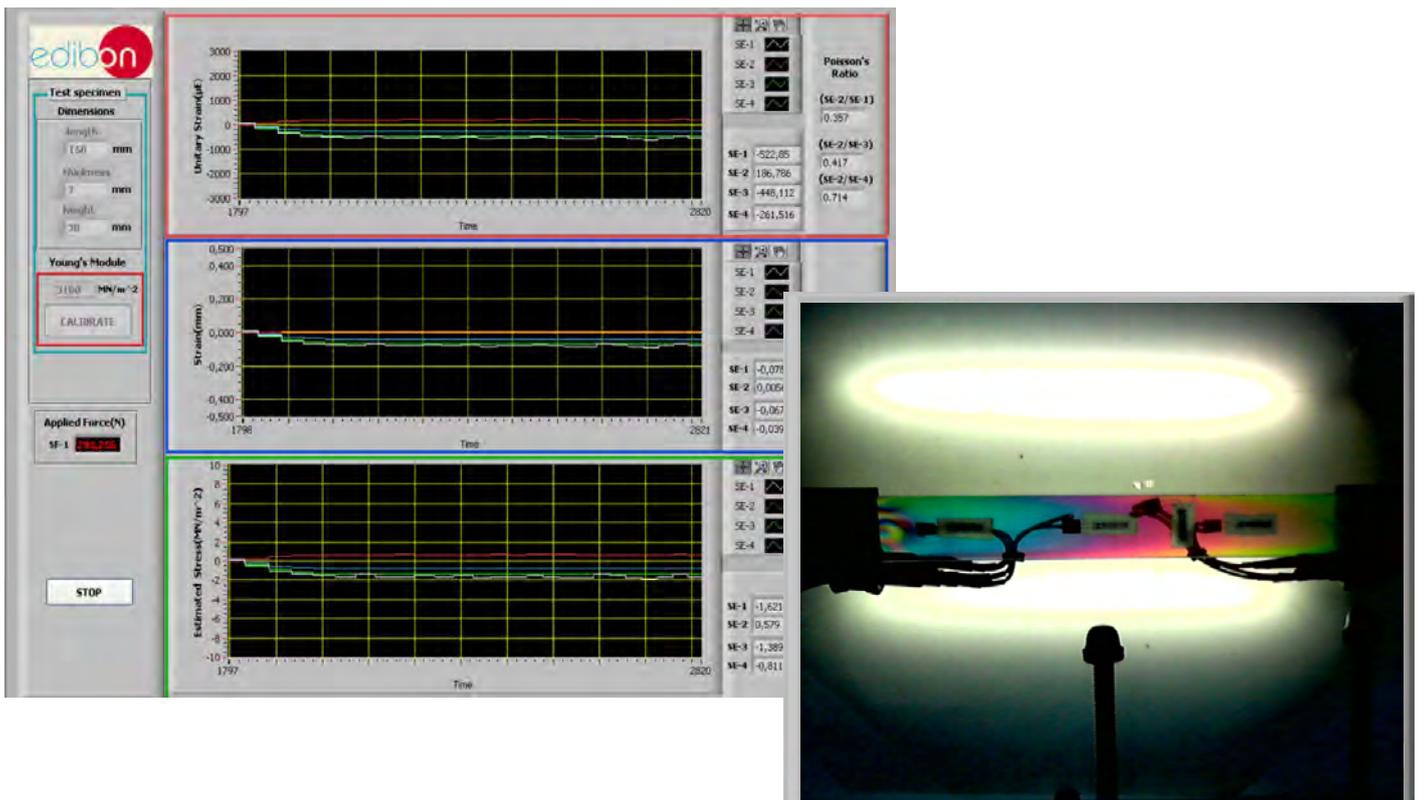


Circular polariscope configuration for isochromatics and principal stresses difference determination.

3. Some real results obtained from EFO/EFOC/EFOV Units and different specimens

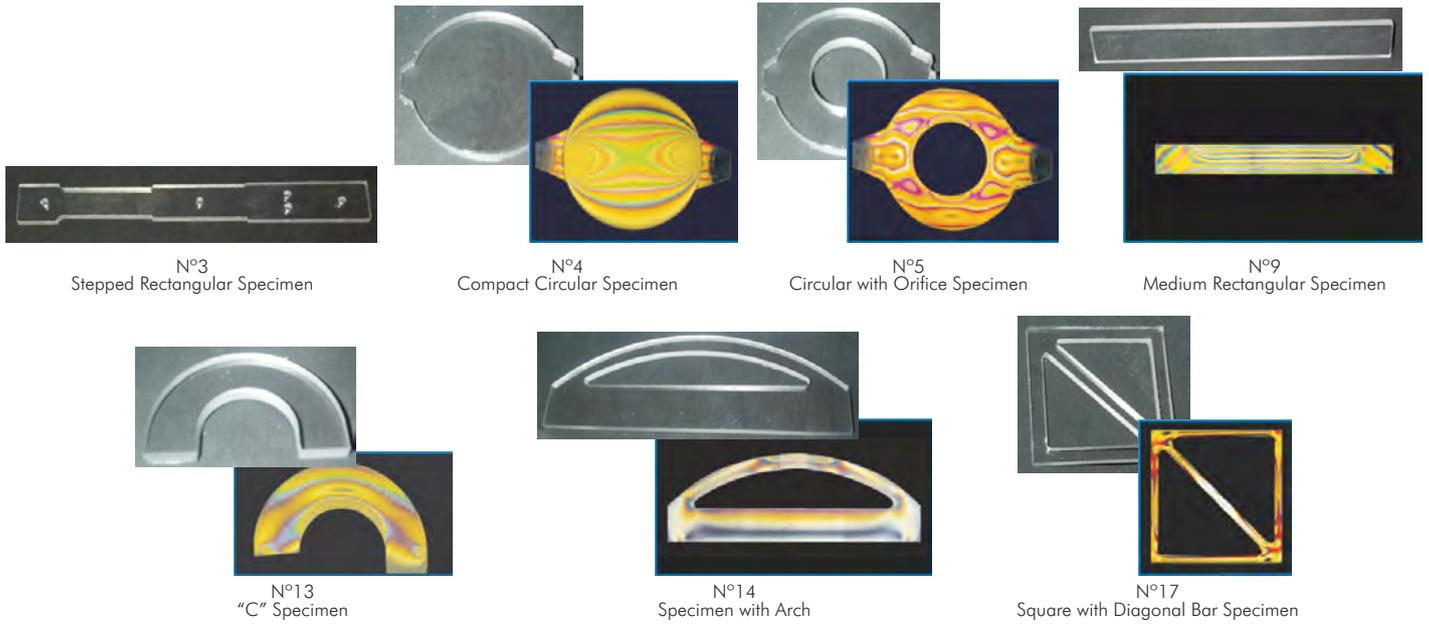


4. Some typical results for strain gauges analysis

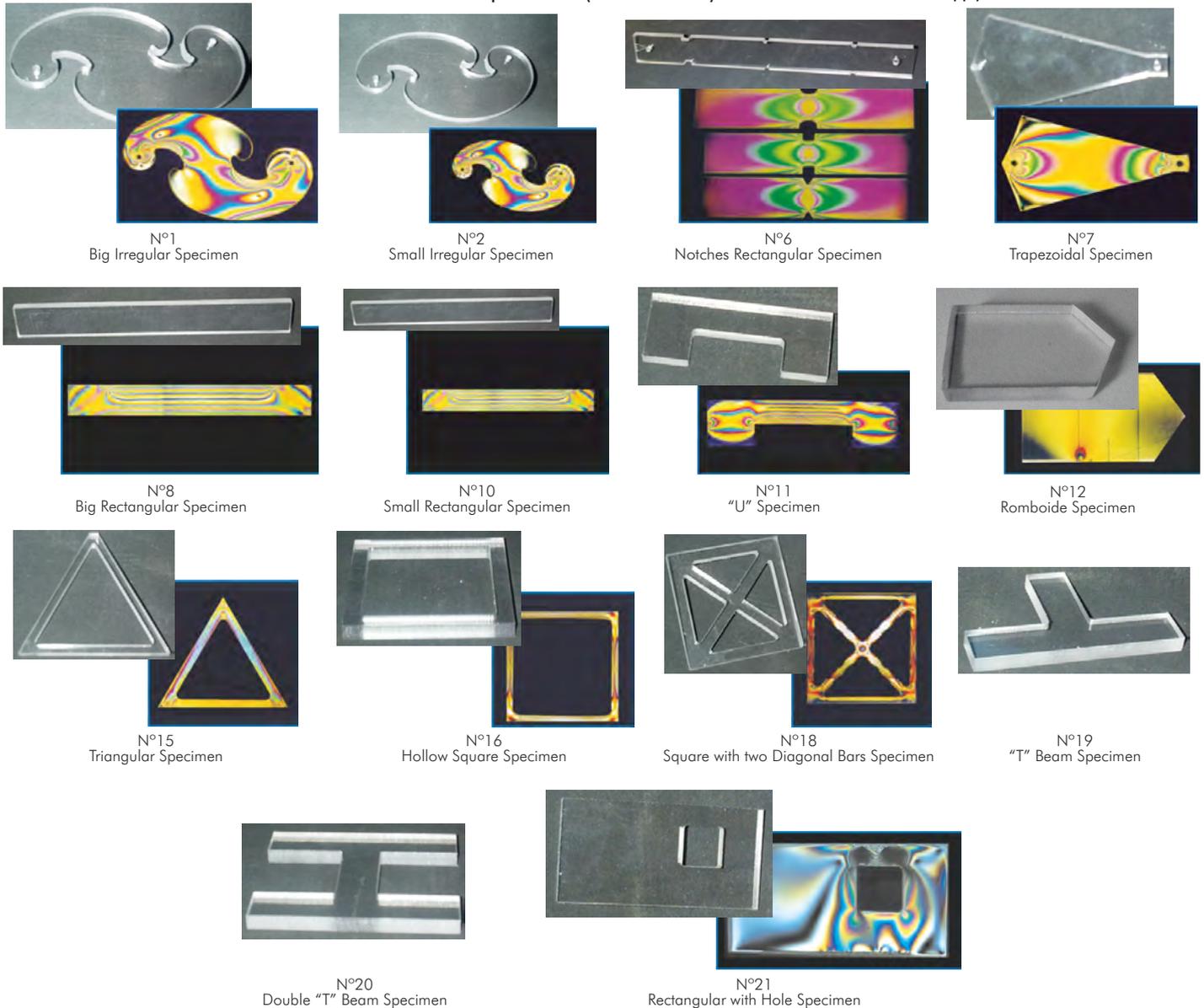


TEST SPECIMENS

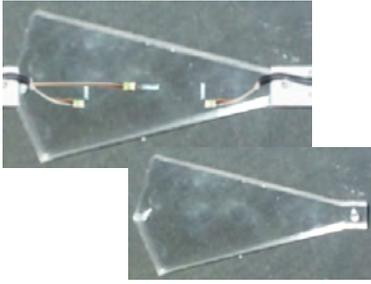
EFO-K1. Kit of Static Test Specimens (basic kit). Always included with the EFO/EFOC/EFOV unit.



EFO-K2. Kit of Static Test Specimens (Advanced kit). Not included in the standard supply.



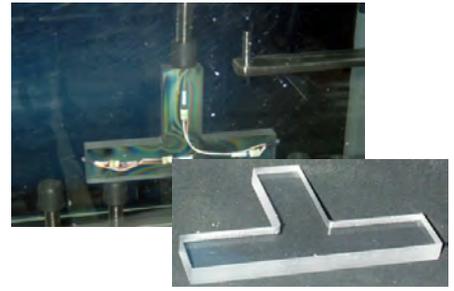
EFO-K3. Kit of Test Specimens with Strain Gauges (basic kit). Always included with the EFOC/EFOV Unit.



N°7-G
Trapezoidal Specimen with strain gauges
+
N°7
Trapezoidal Specimen



N°8-G.
Big Rectangular Specimen with strain gauges
+
N°8
Big Rectangular Specimen



N°19-G.
"T" Beam Specimen with strain gauges
+
N°19
"T" Beam Specimen

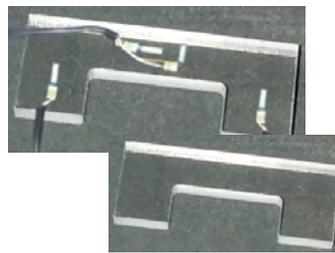
EFO-K4. Kit of Test Specimens with Strain Gauges (advanced kit). Not included in the standard supply. Only to be used with the EFOC/EFOV.



N°9-G.
Medium Rectangular Specimen
with strain gauges
+
N°9.
Medium Rectangular Specimen



N°10-G.
Small Rectangular Specimen
with strain gauges
+
N°10.
Small Rectangular Specimen



N°11-G.
"U" Specimen with strain gauges
+
N°11.
"U" Specimen

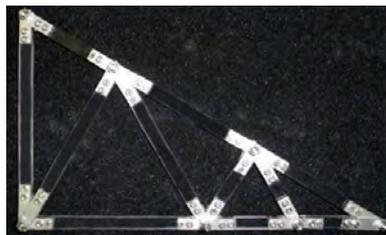


N°20-G.
Double "T" Beam Specimen
with strain gauges
+
N°20.
Double "T" Beam Specimen

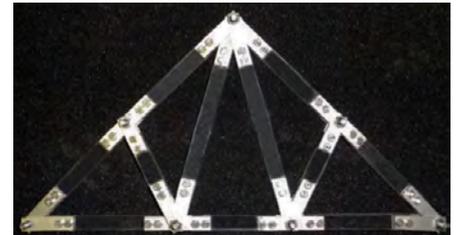
EFO-K5. Kit of Articulated Structures. Not included in the standard supply.



N°30
Articulated Structure 1



N°31
Articulated Structure 2

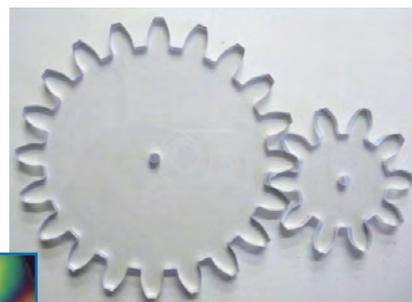


N°32
Articulated Structure 3

EFO-K6. Kit of Dynamic Panels. Not included in the standard supply.



N°40
Dynamic Panel 1



N°41
Dynamic Panel 2



EXERCISES AND PRACTICAL POSSIBILITIES

- 1.- Introduction to photoelasticity: optical elements, isochromatic, isoclinic, band order, band factor, edge tension sign, etc.
- 2.- Determination of principal stress difference.
- 3.- Isochromatics.
- 4.- Illustration of the themes about elasticity, strength of materials and structures using photoelastic tests.
- 5.- Pure traction/optical-tensional law.
- 6.- Diametrically compressed disc.
- 7.- Ring with diametrical compression traction.
- 8.- Ring with diametrical compression.
- 9.- Plate with circular drill with traction.
- 10.- Comparison of the effects from different engraves in piece with traction.
- 11.- Pure traction in a piece with section linearly variable.
- 12.- Pure flexion.
- 13.- Simple flexion.
- 14.- Simple flexion, compound beams.
- 15.- Compound flexion.
- 16.- Compound central core of the section.
- 17.- Piece with a great curvature subjected to flexion.
- 18.- Arch built-in with a central charge.
- 19.- Triangular structure.
- 20.- Comparison of the structures.
- 21.- Comparison of the effect of different notches.
- 22.- Strain and stress analysis and measurements with strain gauges using computer.
- 23.- Image acquisition and treatment with software.

ADDITIONAL AND OPTIONAL TEST SPECIMENS

-EFO-K2. Kit of Static Test Specimens (advanced kit), formed by:

- Nº1. Big Irregular Specimen.
- Nº2. Small Irregular Specimen.
- Nº6. Notches Rectangular Specimen.
- Nº7. Trapezoidal Specimen.
- Nº8. Big Rectangular Specimen.
- Nº10. Small Rectangular Specimen.
- Nº11. "U" Specimen.
- Nº12. Romboide Specimen.
- Nº15. Triangular Specimen.
- Nº16. Hollow Square Specimen.
- Nº18. Square with two Diagonal Bars Specimen.
- Nº19. "T" Beam Specimen.
- Nº20. Double "T" Beam Specimen.
- Nº21. Rectangular with Hole Specimen.

-EFO-K4. Kit of Test Specimens with Strain Gauges (advanced kit), formed by:

- Nº9-G. Medium Rectangular Specimen with strain gauges + Nº9. Medium Rectangular Specimen.
- Nº10-G. Small Rectangular Specimen with strain gauges + Nº10. Small Rectangular Specimen.
- Nº11-G. "U" Specimen with strain gauges + Nº11. "U" Specimen.
- Nº20-G. Double "T" Beam Specimen with strain gauges + Nº20. Double "T" Beam Specimen.

(Only to be used with the EFOC/EFOV).

-EFO-K5. Kit of Articulated Structures, formed by:

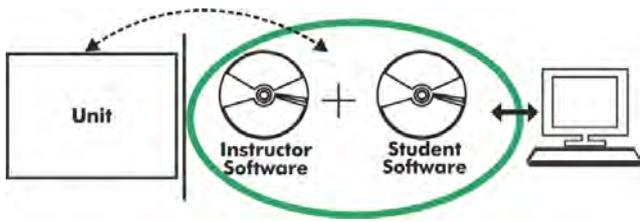
- Nº30. Articulated Structure 1.
- Nº31. Articulated Structure 2.
- Nº32. Articulated Structure 3.

-EFO-K6. Kit of Dynamic Panels, formed by:

- Nº40. Dynamic Panel 1.
- Nº41. Dynamic Panel 2.

Optional

EFOC/EFOV/ICAL. Interactive Computer Aided Instruction Software System:



Without any physical connection between unit and computer (PC), this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF). Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.

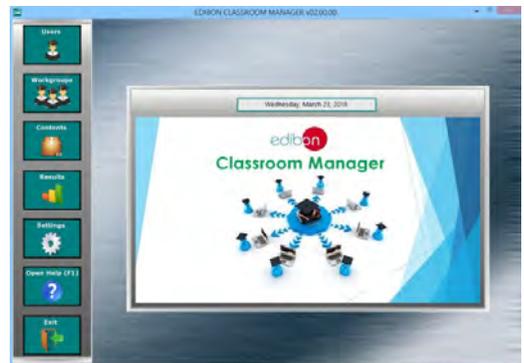
Instructor Software

- ECM-SOF-SOF. EDIBON Classroom Manager (Instructor Software).

ECM-SOF-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual students, workgroups, units, etc... so the teacher can know in real time the level of understanding of any student in the classroom.

Innovative features:

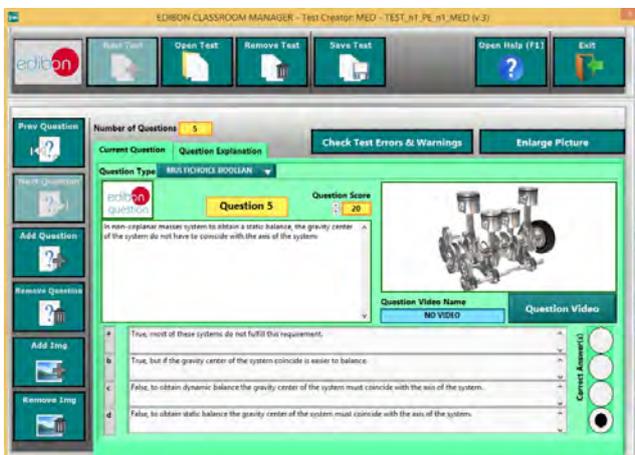
- User Data Base Management.
- Administration and assignment of Workgroups, Tasks and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.
- Updatable Contents.
- Report generation, User Progression Monitoring and Statistics.



ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application main screen



ICAL. EDIBON Calculations Program Package - Formula Editor Screen



ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question



ERS. EDIBON Results & Statistics Program Package - Student Scores Histogram

Optional
Student Software

-ESL-SOF. EDIBON Student Labsoft (Student Software).

ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are provided by EDIBON to allow the students start working from the first session. Reports and statistics are available to know their progression at any time, as well as explanations for every exercise to reinforce the theoretically acquired technical knowledge.

Innovative features:

Student Log-In & Self-Registration.

Existing Tasks checking & Monitoring.

Default contents & scheduled tasks available to be used from the first session.

Practical Exercises accomplishment by following the Manual provided by EDIBON.

Evaluation Methods to prove your knowledge and progression.

Test self-correction.

Calculations computing and plotting.

Equation System Solver Engine.

User Monitoring Learning & Printable Reports.

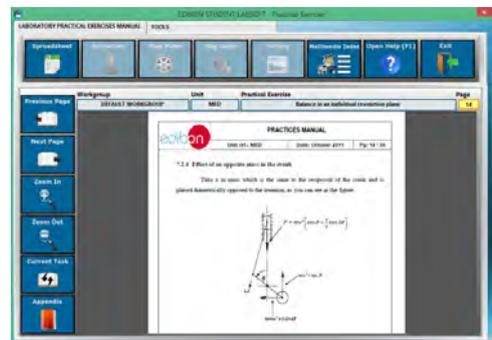
Multimedia-Supported auxiliary resources.



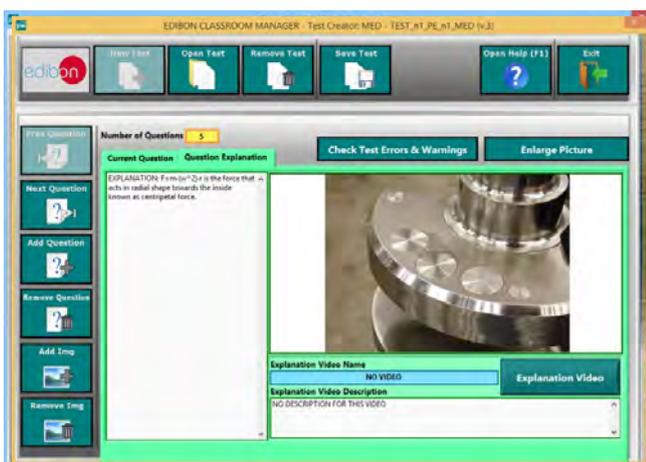
ESL-SOF. EDIBON Student LabSoft (Student Software) Application Main Screen

For more information see ICAI catalogue. Click on the following link:

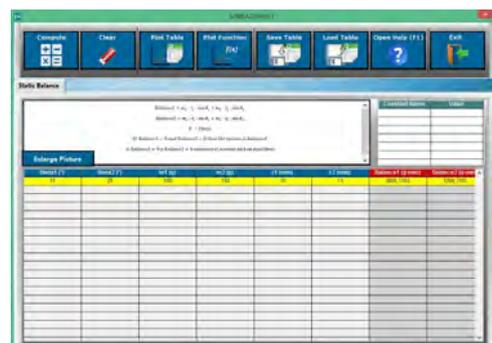
www.edibon.com/products/catalogues/en/ICAI.pdf



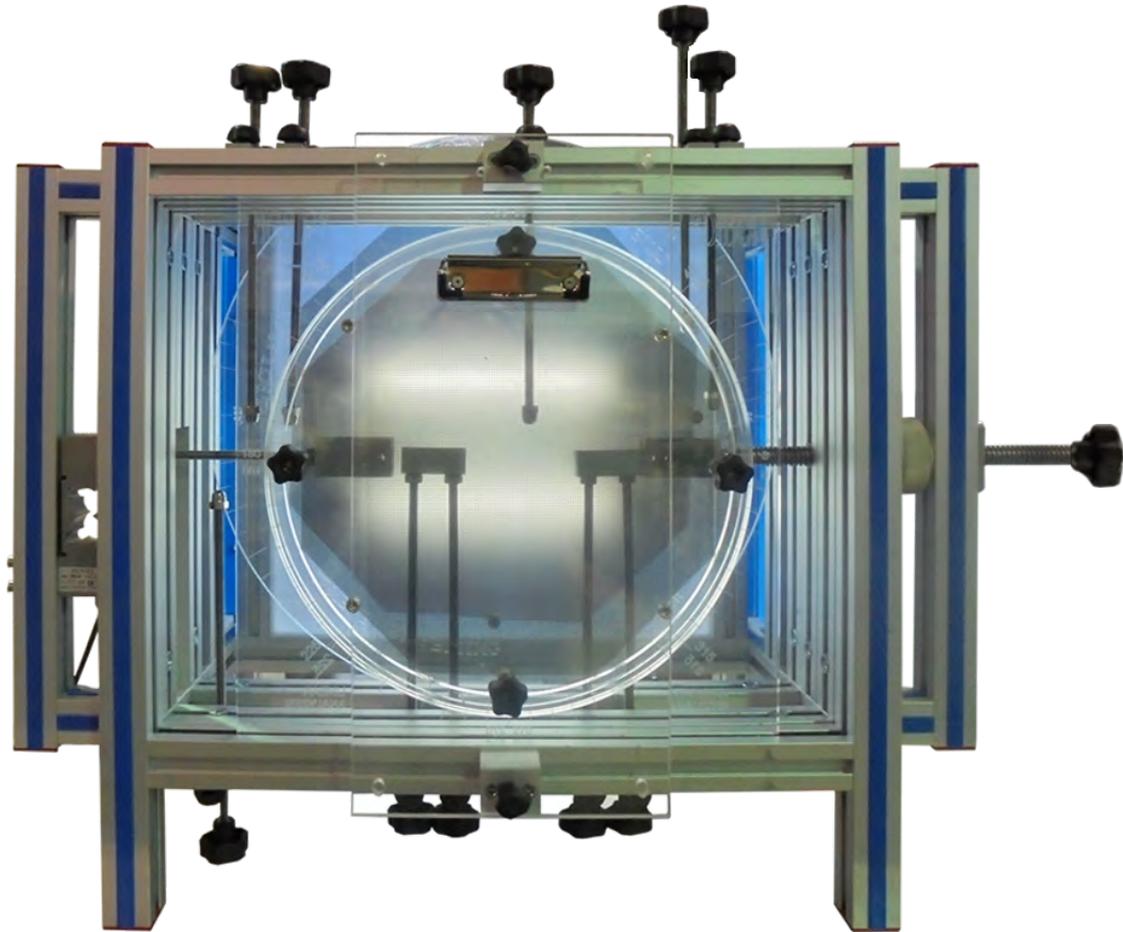
EPE. EDIBON Practical Exercise Program Package Main Screen



ERS. EDIBON Results & Statistics Program Package-Question Explanation



ECAL. EDIBON Calculations Program Package Main Screen



GENERAL DESCRIPTION

Unit for photoelasticity practices, illustrating the subjects of the Photoelasticity theory, the Elasticity theory, Strength of Materials, and Structure theory.

It is very suitable for the introduction and study of photoelasticity: optical elements, isochromatic, isoclinic, band order, band factor, edge tensing, etc.

Using this unit photoelastic experiments and practices of transparent test specimens (models) may be performed.

The different test specimens are subjected to loading by external forces and have polarised light shone through them.

A load application element can apply tensile, bending, compressive, and distributed and punctual loads to the specimen.

The stresses and strains occurring in the test specimen are represented as bright spots or figures of different colours, and we can visualise the distribution of stress.

We offer a wide range of test specimens for making a variety of practices and experiments.

These specimens show a full color and high contrast results and are also made of a special very hard material that avoids breaking during daily use.

SPECIFICATIONS

Bench-top unit.
Anodized aluminium structure.
Main metallic elements in stainless steel.
Light source, two fluorescent tubes of 30 cm and 8W.
Monochromatic light 35W.
Opalescent diffuser plate.
Double effect polarizing filters (linear polarization and circular polarization), of 30 x 30 cm and protected by methacrylate plates.
Load frame with pulling jack.
Load cell for direct force measurement.
10 pressure screws and accessories.
This unit is supplied with:

-EFO-K1. Kit of Static Test Specimens (basic kit), formed by:

- N°3. Stepped Rectangular Specimen.
- N°4. Compact Circular Specimen.
- N°5. Circular with Orifice Specimen.
- N°9. Medium Rectangular Specimen.
- N°13. "C" Specimen.
- N°14. Specimen with Arch.
- N°17. Square with Diagonal Bar Specimen.

Cables and accessories, for normal operation.

Manuals:

This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance, & Practices Manuals.

Additional and optional Test Specimens (not included in the standard supply):

-EFO-K2. Kit of Static Test Specimens (advanced kit), formed by:

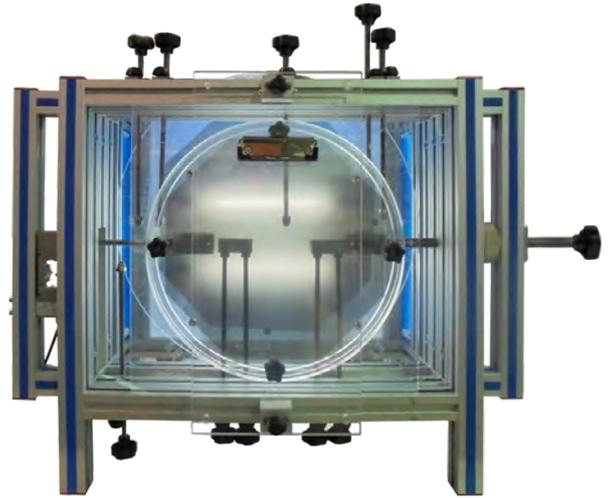
- N°1. Big Irregular Specimen.
- N°2. Small Irregular Specimen.
- N°6. Notches Rectangular Specimen.
- N°7. Trapezoidal Specimen.
- N°8. Big Rectangular Specimen.
- N°10. Small Rectangular Specimen.
- N°11. "U" Specimen.
- N°12. Romboide Specimen.
- N°15. Triangular Specimen.
- N°16. Hollow Square Specimen.
- N°18. Square with two Diagonal Bars Specimen.
- N°19. "T" Beam Specimen.
- N°20. Double "T" Beam Specimen.
- N°21. Rectangular with Hole Specimen.

-EFO-K5. Kit of Articulated Structures, formed by:

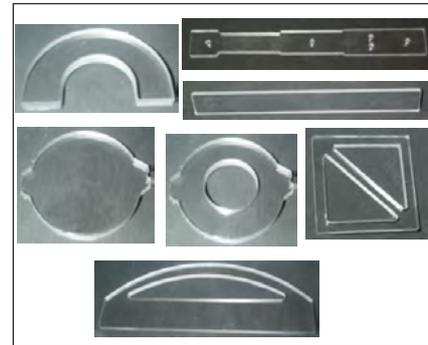
- N°30. Articulated Structure 1.
- N°31. Articulated Structure 2.
- N°32. Articulated Structure 3.

-EFO-K6. Kit of Dynamic Panels, formed by:

- N°40. Dynamic Panel 1.
- N°41. Dynamic Panel 2.



EFO. Unit



EFO-K1. Kit of Static Test Specimens (basic kit)

REQUIRED SERVICES

-Electrical supply: single-phase, 220V./50Hz or 110V./60Hz.

DIMENSIONS & WEIGHT

-Dimensions: 750 x 400 x 550 mm. approx.
(29.53 x 15.75 x 21.65 inches approx.).
-Weight : 20 Kg. approx. (44 pounds approx.).

AVAILABLE VERSIONS

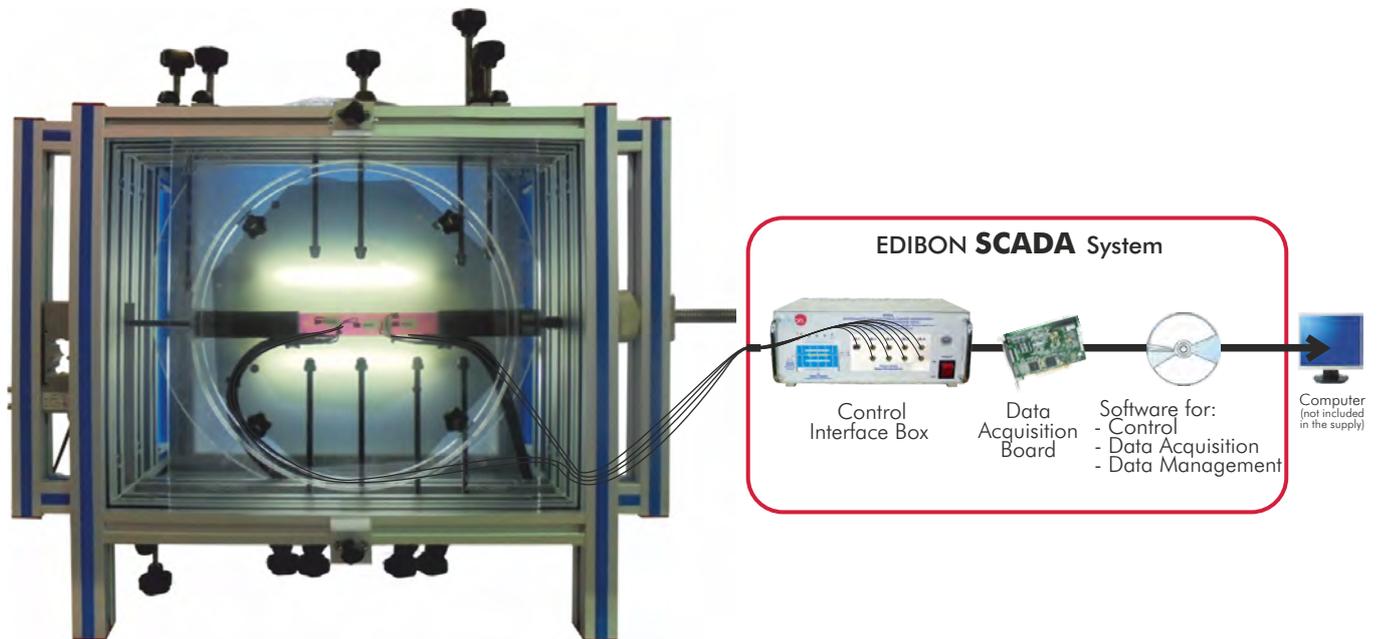
-EFO. Photoelasticity Unit.

Offered in this catalogue:

-EFOC. Photoelasticity Unit with Strain Gauges Measurement System.

Offered in other catalogues:

-EFOV. Photoelasticity Unit with Strain Gauges Measurement System and Artificial Vision System.



GENERAL DESCRIPTION

Unit for photoelasticity practices, illustrating the subjects of the Photoelasticity theory, the Elasticity theory, Strength of Materials, and Structure theory.

It is very suitable for the introduction and study of photoelasticity: optical elements, isochromatic, isoclinic, band order, band factor, edge tensing, and for strain and stress analysis and measurement with strain gauges.

With the aid of the SCADA system it is possible to analyze and process the captured data during test experiments, making measurements with strain gauges.

Using this unit photoelastic experiments and practices of transparent test specimens (models) may be performed.

The different test specimens are subjected to loading by external forces and have polarised light shone through them.

A load application element can apply tensile, bending, compressive, and distributed and punctual loads to the specimen.

The stresses and strains occurring in the test specimen are represented as bright spots or figures of different colours, and we can visualise the distribution of stress.

We offer a wide range of test specimens for making a variety of practices and experiments.

These specimens show a full color and high contrast results and are also made of a special very hard material that avoids breaking during daily use.

The unit includes specimens with strain gauges and the accessories (electronic, mechanical and software) for acquiring all the values in the computer in real time and allows to compare the advantages of one method with the other.

It is also very useful for Young`s module determination of the material and fringe order and band order calculation.

This Computer Controlled Unit is supplied with the EDIBON Computer Control System (SCADA), and includes: The unit itself + a Control Interface Box + a Data Acquisition Board + Computer Control, Data Acquisition and Data Management Software Packages, for controlling the process and all parameters involved in the process.

SPECIFICATIONS

Items always included in the minimum supply

① EFOC. Unit:

-EFO. Unit.

- Bench-top unit.
- Anodized aluminium structure.
- Main metallic elements in stainless steel.
- Light source, two fluorescent tubes of 30 cm and 8W.
- Monochromatic light 35W.
- Opalescent diffuser plate.
- Double effect polarizing filters (linear polarization and circular polarization), of 30 x 30 cm and protected by methacrylate plates.
- Load frame with pulling jack.
- 10 pressure screws and accessories.

This unit is supplied with:

-EFO-K1. Kit of Static Test Specimens (basic kit), formed by:

- N°3. Stepped Rectangular Specimen.
- N°4. Compact Circular Specimen.
- N°5. Circular with Orifice Specimen.
- N°9. Medium Rectangular Specimen.
- N°13. "C" Specimen.
- N°14. Specimen with Arch.
- N°17. Square with Diagonal Bar Specimen.

-EFO-K3. Kit of Test Specimens with Strain Gauges (basic kit), formed by:

- N°7-G. Trapezoidal Specimen with strain gauges + N°7. Trapezoidal Specimen.
- N°8-G. Big Rectangular Specimen with strain gauges + N°8. Big Rectangular Specimen.
- N°19-G. "T" Beam Specimen with strain gauges + N°19. "T" Beam Specimen.

-EFOC-KIT.

- Load cell for direct force measurement.
- Electronics, hardware and software for strain gauges measurement from PC, and direct force measurement applied to the specimens:

- Control Interface Box:

- Metallic box.
- Sensors connectors.
- Main switch.

- USB Data Acquisition Board:

- National Instruments High Speed Multifunction Data Acquisition Board (500kS/s).
- Signal Streaming technology through USB to ensure high speed and bidirectional data transfer.
- USB compatibility: USB2.0 Hi Speed (480Mbits/s) or full speed.
- Truly Plug & Play: the PC will automatically detect the new device and install the software.

- Computer Control+Data Acquisition+Data Management Software:

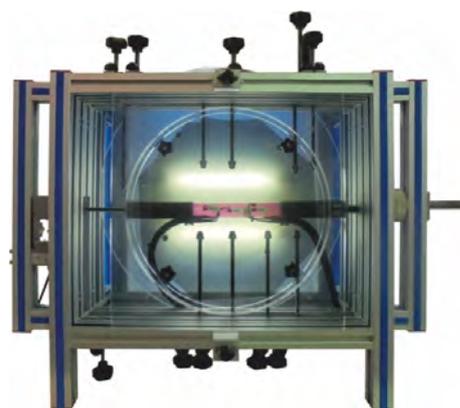
- Compatible with actual Windows operating systems.
- Control and Data Acquisition in real time.
- Management, processing, comparison and storage of data.

Main functions of the Software:

- Analysis and measurement of the strains.
- Young 's module calculation.
- Poisson 's ration calculation.
- Measurement the force applied.
- Analysis and measurement of stresses.
- Register of the (experimental) practical exercises.
- Calibration of sensors.

② Cables and Accessories, for normal operation.

③ Manuals: This unit is supplied with 8 manuals: Required Services, Assembly and Installation, Interface and Control Software, Starting-up, Safety, Maintenance, Calibration & Practices Manuals.



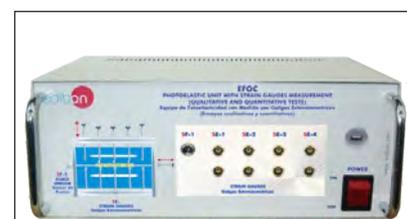
EFOC. Unit



EFO-K1. Kit of Static Test Specimens (basic kit)



EFO-K3. Kit of Test Specimens with Strain Gauges (basic kit)



EFOC-KIT

Specificacions

Additional and optional Test Specimens: (not included in the standard supply)

-EFO-K2. Kit of Static Test Specimens (advanced kit), formed by:

- N°1. Big Irregular Specimen.
- N°2. Small Irregular Specimen.
- N°6. Notches Rectangular Specimen.
- N°7. Trapezoidal Specimen.
- N°8. Big Rectangular Specimen.
- N°10. Small Rectangular Specimen.
- N°11. "U" Specimen.
- N°12. Romboide Specimen.
- N°15. Triangular Specimen.
- N°16. Hollow Square Specimen.
- N°18. Square with two Diagonal Bars Specimen.
- N°19. "T" Beam Specimen.
- N°20. Double "T" Beam Specimen.
- N°21. Rectangular with Hole Specimen.

-EFO-K4. Kit of Test Specimens with Strain Gauges (advanced kit), formed by:

- N°9-G. Medium Rectangular Specimen with strain gauges + N°9. Medium Rectangular Specimen.
- N°10-G. Small Rectangular Specimen with strain gauges + N°10. Small Rectangular Specimen.
- N°11-G. "U" Specimen with strain gauges + N°11. "U" Specimen.
- N°20-G. Double "T" Beam Specimen with strain gauges + N°20. Double "T" Beam Specimen.

-EFO-K5. Kit of Articulated Structures, formed by:

- N°30. Articulated Structure 1.
- N°31. Articulated Structure 2.
- N°32. Articulated Structure 3.

-EFO-K6. Kit of Dynamic Panels, formed by:

- N°40. Dynamic Panel 1.
- N°41. Dynamic Panel 2.

* References 1 to 3: EFOC + Cables and Accessories + Manuals are included in the minimum supply for enabling normal and full operation.

REQUIRED SERVICES

- Electrical supply: single-phase, 220V./50Hz or 110V./60Hz.
- Computer (PC).

DIMENSIONS & WEIGHTS

EFOC:

Unit:

- Dimensions: 750 x 400 x 550 mm. approx.
(29.53 x 15.75 x 21.65 inches approx.).
- Weight :22 Kg. approx. (48.5 pounds approx.).

Control Interface Box:

- Dimensions: 310 x 220 x 180 mm. approx.
(12.20 x 8.66 x 7.09 inches approx.).
- Weight :3 Kg. approx. (6.6 pounds approx.).

AVAILABLE VERSIONS

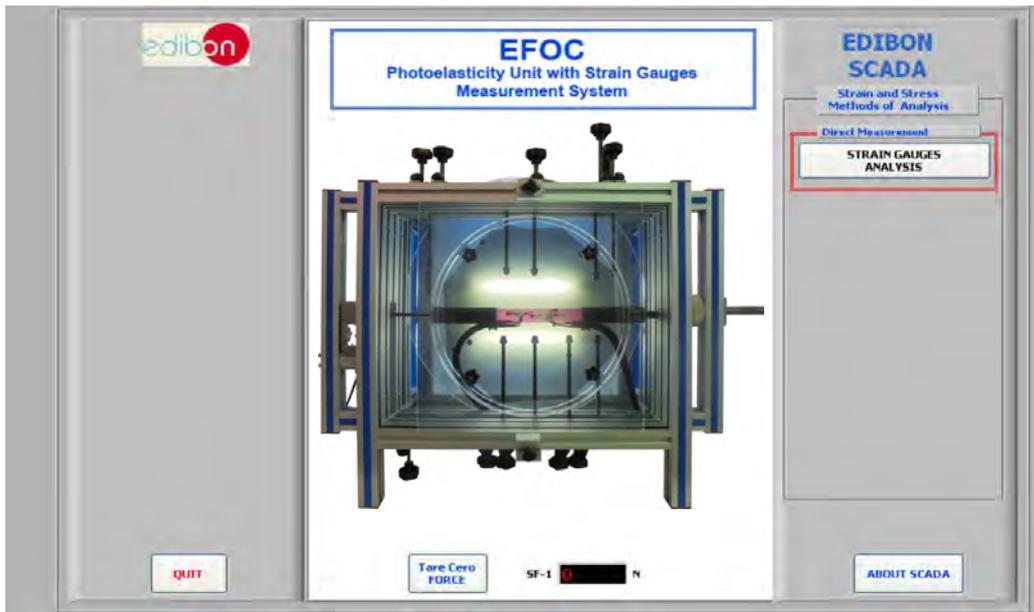
Offered in this catalogue:

- EFOC. Photoelasticity Unit with Strain Gauges Measurement System.

Offered in other catalogues:

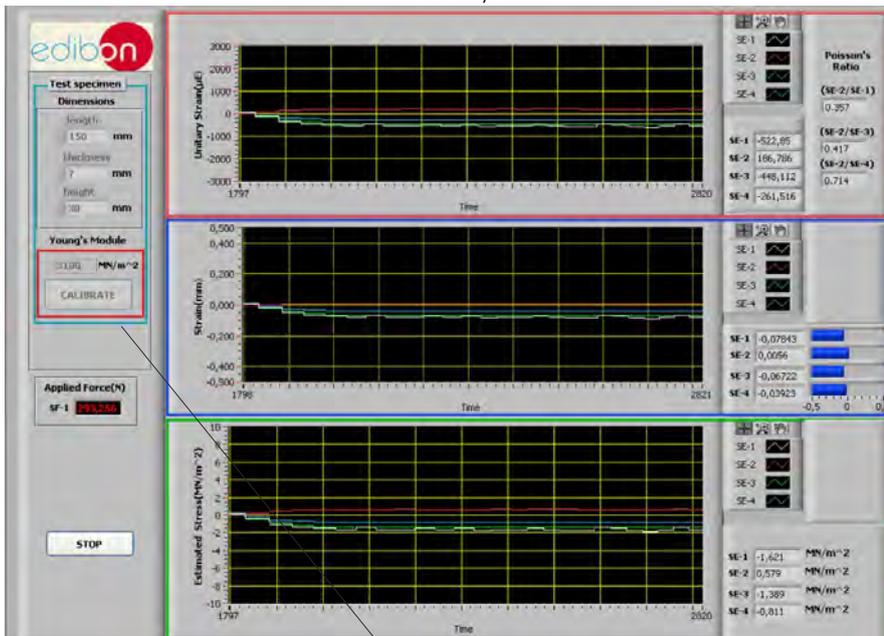
- EFO. Photoelasticity Unit.
- EFOV. Photoelasticity Unit with Strain Gauges Measurement System and Artificial Vision System.

SCADA
Main screen



This is the main screen, where the different tasks that can be carried out with this unit are shown. On the right-hand side of the screen, we find the button that controls the action to carry out on the deformation analysis measured with strain gauges.

"Strain & Stress analysis" tool



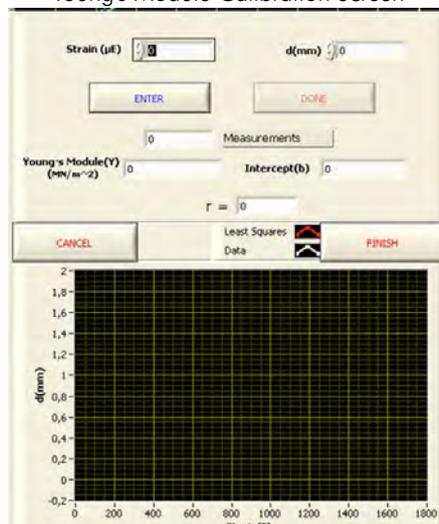
This screen can graphically represent in real time values taken by the sensors and visualise the evolution of those measures in the time.

The digital indicators of the right-hand side are labeled with the names of the sensors.

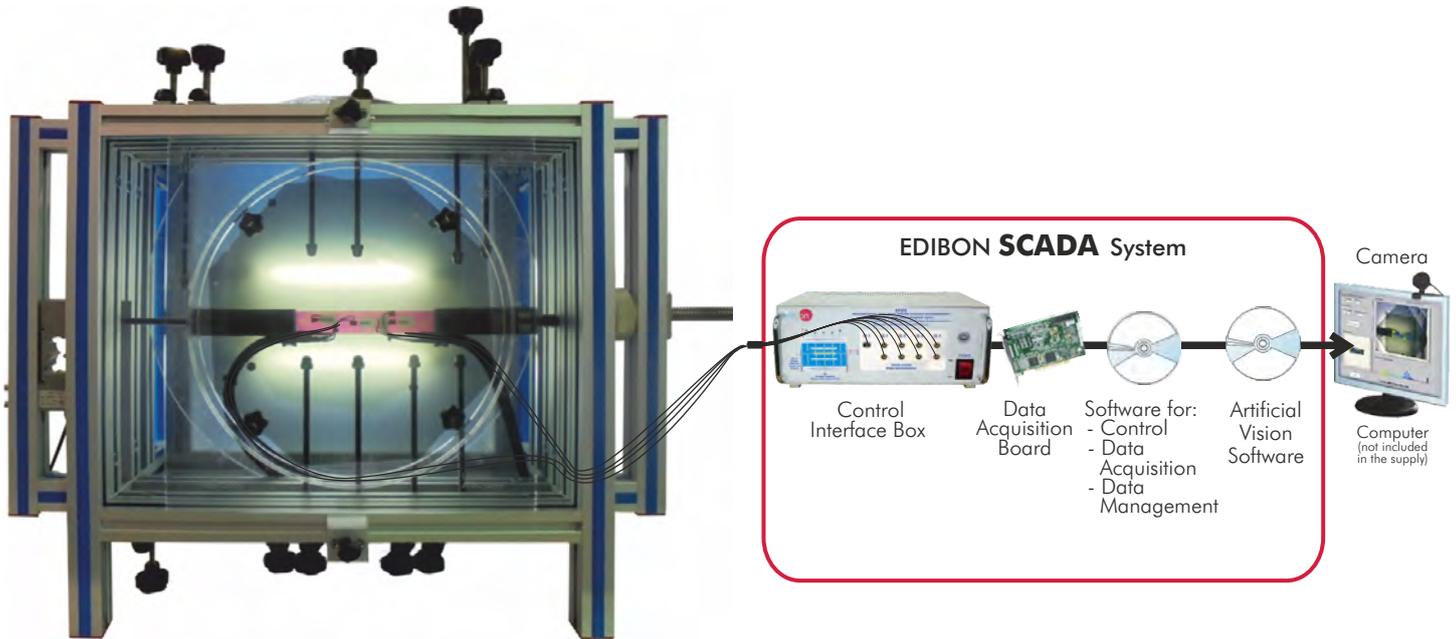
On the left-hand side of the screen, we find the necessary controls to introduce the geometrical data of the specimen with gauges to analyse.

Clicking on the START button, the data acquisition, in real time, begins for strain measurement and stress suffered on the four points of the specimen.

Young's Module Calibration Screen



This screen has the necessary tools to obtain the value of Young's module of the specimen, applying least squares method.



GENERAL DESCRIPTION

Unit for photoelasticity practices, illustrating the subjects of the Photoelasticity theory, the Elasticity theory, Strength of Materials, and Structure theory.

It is very suitable for the introduction and study of photoelasticity: optical elements, isochromatic, isoclinic, band order, band factor, edge tensing, and for strain and stress analysis and measurement with strain gauges.

With the aid of the SCADA system it is possible to analyze and process the captured data during test experiments, making measurements with strain gauges. The artificial vision software allows analyze and process the captured images during test experiments.

Using this unit photoelastic experiments and practices of transparent test specimens (models) may be performed.

The different test specimens are subjected to loading by external forces and have polarised light shone through them.

A load application element can apply tensile, bending, compressive, and distributed and punctual loads to the specimen.

The stresses and strains occurring in the test specimen are represented as bright spots or figures of different colours, and we can visualise the distribution of stress.

We offer a wide range of test specimens for making a variety of practices and experiments.

These specimens show a full color and high contrast results and are also made of a special very hard material that avoids breaking during daily use.

The unit includes specimens with strain gauges and the accessories (electronic, mechanical and software) for acquiring all the values in the computer in real time and allows to compare the advantages of one method with the other.

It is also very useful for Young`s module determination of the material and fringe order and band order calculation.

This unit also allows to capture images with PC and do different treatments to help in identifying stresses values and stresses directions.

This Computer Controlled Unit is supplied with the EDIBON Computer Control System (SCADA), and includes: The unit itself + a Control Interface Box + a Data Acquisition Board + Computer Control, Data Acquisition and Data Management Software Packages, for controlling the process and all parameters involved in the process.

Items always included in the minimum supply

① EFOV. Unit:

- EFO. Unit.
- Bench-top unit.
- Anodized aluminium structure.
- Main metallic elements in stainless steel.
- Light source, two fluorescent tubes of 30 cm and 8W.
- Monochromatic light 35W.
- Opalescent diffuser plate.
- Double effect polarizing filters (linear polarization and circular polarization), of 30 x 30 cm and protected by methacrylate plates.
- Load frame with pulling jack.
- 10 pressure screws and accessories.

This unit is supplied with:

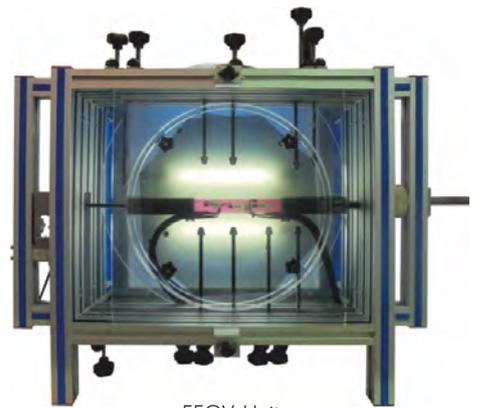
- EFO-K1. Kit of Static Test Specimens (basic kit), formed by:
 - N°3. Stepped Rectangular Specimen.
 - N°4. Compact Circular Specimen.
 - N°5. Circular with Orifice Specimen.
 - N°9. Medium Rectangular Specimen.
 - N°13. "C" Specimen.
 - N°14. Specimen with Arch.
 - N°17. Square with Diagonal Bar Specimen.
- EFO-K3. Kit of Test Specimens with Strain Gauges (basic kit), formed by:
 - N°7-G. Trapezoidal Specimen with strain gauges + N°7. Trapezoidal Specimen.
 - N°8-G. Big Rectangular Specimen with strain gauges + N°8. Big Rectangular Specimen.
 - N°19-G. "T" Beam Specimen with strain gauges + N°19. "T" Beam Specimen.

-EFOC-KIT

- Load cell for direct force measurement.
- Electronics, hardware and software for strain gauges measurement from PC, and direct force measurement applied to the specimens:
 - Control Interface Box:
 - Metallic box.
 - Sensors connectors.
 - Main switch.
 - USB Data Acquisition Board:
 - National Instruments High Speed Multifunction Data Acquisition Board (500kS/s).
 - Signal Streaming technology through USB to ensure high speed and bidirectional data transfer.
 - USB compatibility: USB2.0 Hi Speed (480Mbits/s) or full speed.
 - Truly Plug & Play: the PC will automatically detect the new device and install the software.
 - Computer Control+Data Acquisition+Data Management Software:
 - Compatible with actual Windows operating systems.
 - Control and Data Acquisition in real time.
 - Management, processing, comparison and storage of data.

Main functions of the Software:

- Analysis and measurement of the strains.
- Young ´s module calculation.
- Poisson ´s ration calculation.
- Measurement the force applied.
- Analysis and measurement of stresses.
- Register of the (experimental) practical exercises.
- Calibration of sensors.



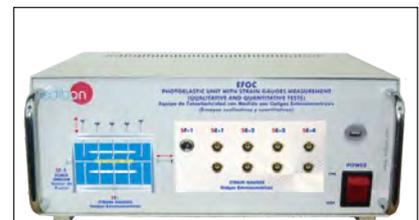
EFOV. Unit



EFO-K1. Kit of Static Test Specimens (basic kit)



EFO-K3. Kit of Test Specimens with Strain Gauges (basic kit)



EFOC-KIT

-EFOV-KIT.

Hardware (webcam) and software for image acquisition and treatment.

Main functions of the Software:

- Generation of directional field and analysis of isoclines.
- Analysis of the color spectrum in one pictures or part of the picture.
- Analysis and determination of the fringe factor.
- Quantitative measurement between points of interest.
- Visualization and storage of pictures and videos from the webcam.

② **Cables and Accessories**, for normal operation.

③ **Manuals:** This unit is **supplied with 8 manuals:** Required Services, Assembly and Installation, Interface and Control Software, Starting-up, Safety, Maintenance, Calibration & Practices Manuals.



EFOV-KIT

Additional and optional Test Specimens: (not included in the standard supply)

-EFO-K2. Kit of Static Test Specimens (advanced kit), formed by:

- Nº1. Big Irregular Specimen.
- Nº2. Small Irregular Specimen.
- Nº6. Notches Rectangular Specimen.
- Nº7. Trapezoidal Specimen.
- Nº8. Big Rectangular Specimen.
- Nº10. Small Rectangular Specimen.
- Nº11. "U" Specimen.
- Nº12. Romboide Specimen.
- Nº15. Triangular Specimen.
- Nº16. Hollow Square Specimen.
- Nº18. Square with two Diagonal Bars Specimen.
- Nº19. "T" Beam Specimen.
- Nº20. Double "T" Beam Specimen.
- Nº21. Rectangular with Hole Specimen.

-EFO-K4.Kit of Test Specimens with Strain Gauges (advanced kit), formed by:

- Nº9-G. Medium Rectangular Specimen with strain gauges + Nº9. Medium Rectangular Specimen.
- Nº10-G. Small Rectangular Specimen with strain gauges + Nº10. Small Rectangular Specimen.
- Nº11-G. "U" Specimen with strain gauges + Nº11. "U" Specimen.
- Nº20-G. Double "T" Beam Specimen with strain gauges + Nº20. Double "T" Beam Specimen.

-EFO-K5.Kit of Articulated Structures, formed by:

- Nº30. Articulated Structure 1.
- Nº31. Articulated Structure 2.
- Nº32. Articulated Structure 3.

-EFO-K6. Kit of Dynamic Panels, formed by:

- Nº40. Dynamic Panel 1.
- Nº41. Dynamic Panel 2.

* References 1 to 3: EFOV + Cables and Accessories + Manuals are included in the minimum supply for enabling normal and full operation.

REQUIRED SERVICES

- Electrical supply: single-phase, 220V./50Hz or 110V./60Hz.
- Computer (PC).

DIMENSIONS & WEIGHTS

EFOV:

Unit:

-Dimensions: 750 x 400 x 550 mm. approx.
(29.53 x 15.75 x 21.65 inches approx.).

-Weight :22 Kg. approx. (48.5 pounds approx.).

Control Interface Box:

-Dimensions: 310 x 220 x 180 mm. approx.
(12.20 x 8.66 x 7.09 inches approx.).

-Weight :3 Kg. approx. (6.6 pounds approx.).

AVAILABLE VERSIONS

Offered in this catalogue:

-EFOV. Photoelasticity Unit with Strain Gauges Measurement System and Artificial Vision System.

Offered in other catalogues:

-EFO. Photoelasticity Unit.

-EFOC. Photoelasticity Unit with Strain Gauges Measurement System.

SCADA
Main screen



This is the main screen, where the different tasks that can be carried out with this unit are shown.

There are two main sections:

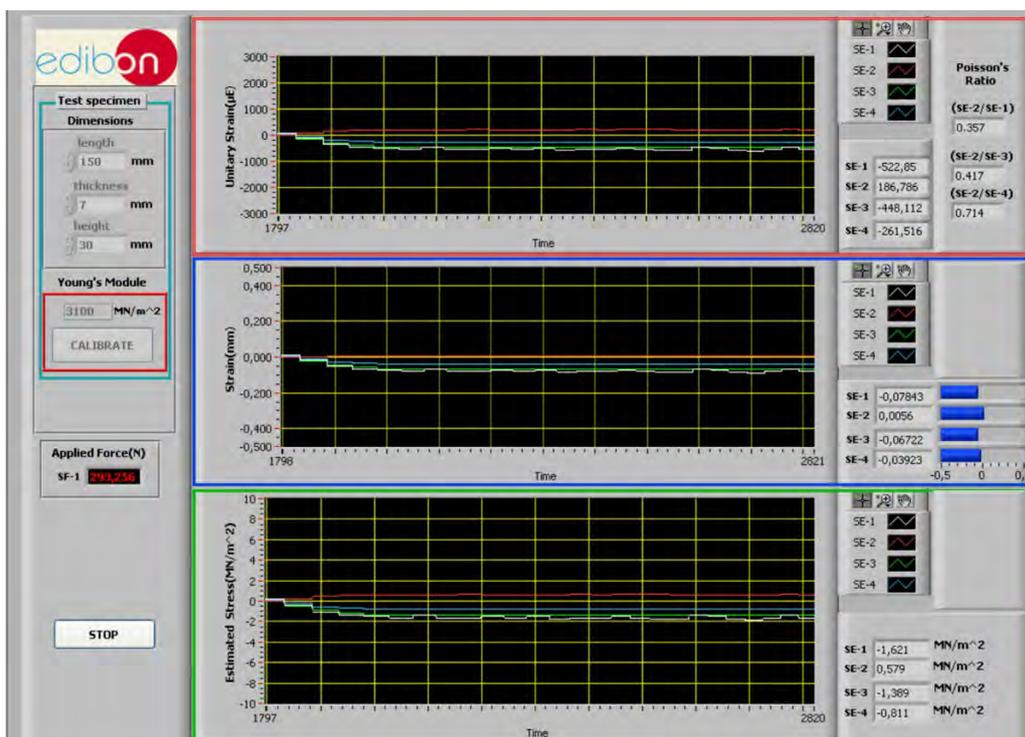
A Strain Gauges Measurement System.

On the right-hand side of the screen, we find the button that controls the action to carry out on the deformation analysis measured with strain gauges.

B Artificial Vision System.

On the left-hand side of the screen, we find the main buttons to control the action to be carried out in the photoelasticity analysis.

A.1 "Strain & Stress analysis" tool



This screen can graphically represent in real time values taken by the sensors and visualise the evolution of those measures in the time.

The digital indicators of the right-hand side are labeled with the names of the sensors.

On the left-hand side of the screen, we find the necessary controls to introduce the geometrical data of the specimen with gauges to analyse.

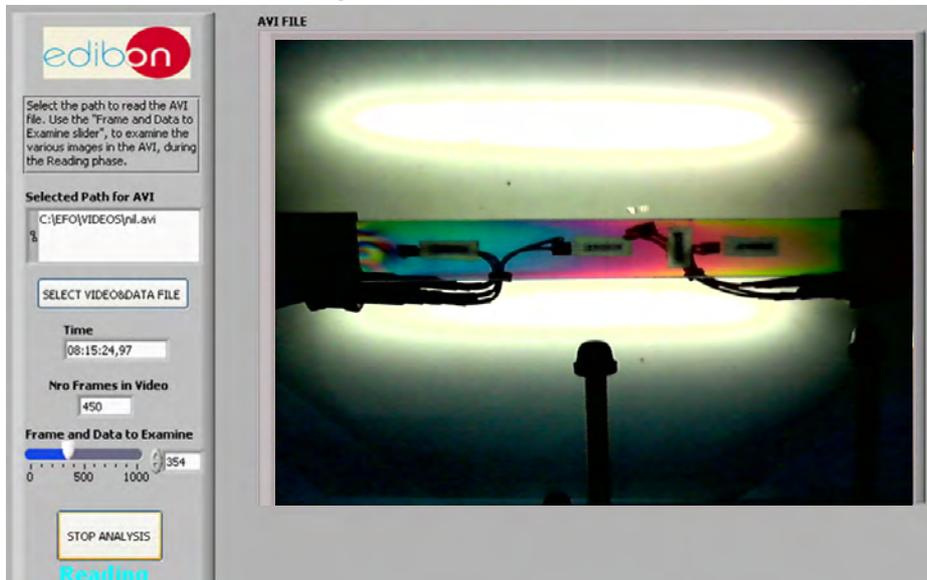
Clicking on the START button, the data acquisition, in real time, begins for strain measurement and stress suffered on the four points of the specimen.

Ⓑ.1 Photo tool



With this tool, new photos can be captured and saved while the experiments are being carried out, as well as to manage the folders and photo files stored in the computer.

Ⓑ.2 Video tool



With this tool, new videos can be captured and saved, as well as to manage folders and video files stored in the computer, while the experiments are being carried out.

On the left-hand side panel, we find the virtual cursor "Frame and Data to Examine", which allows to analyse the saved video, frame by frame; it is very useful if we want to save a photograph of any of the analysed frames.

Besides, It allows to select, according to time length, the size of the video file captured frame by frame.

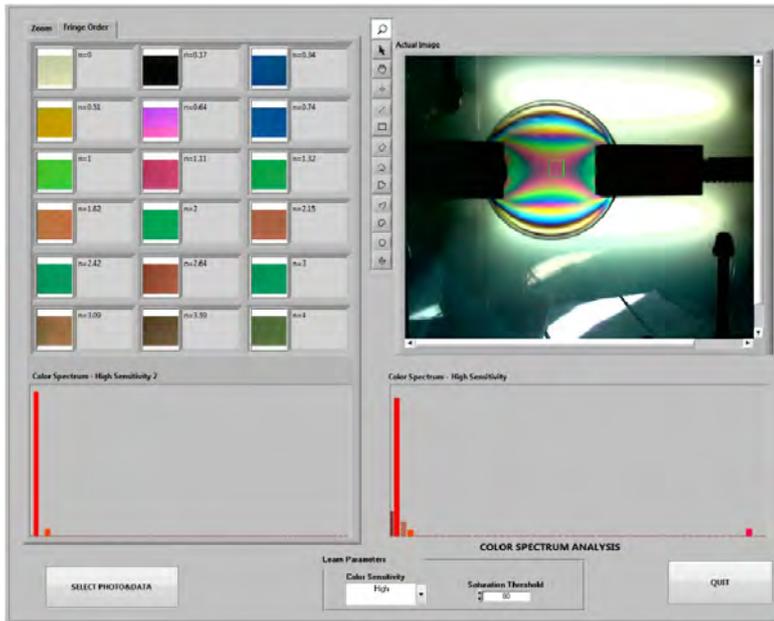
Ⓑ.3 Color plane component



With this tool, photos captured can be analysed, extracting a specific colour component, while the experiments are being carried out.

On the left-hand side panel, we find the selector "Select Color Plane". Clicking on it, we can select the colour plane to eliminate on the analysed photograph.

Ⓑ.4 Color spectrum



With this tool, the intensity spectrum of the main colours can be analysed on a photograph or in an interesting part of it, while the experiments are being carried out.

On the left-hand side, different options can be chosen on the selection of the photograph analysed. The selected section of the photograph will be shown on a separate window.

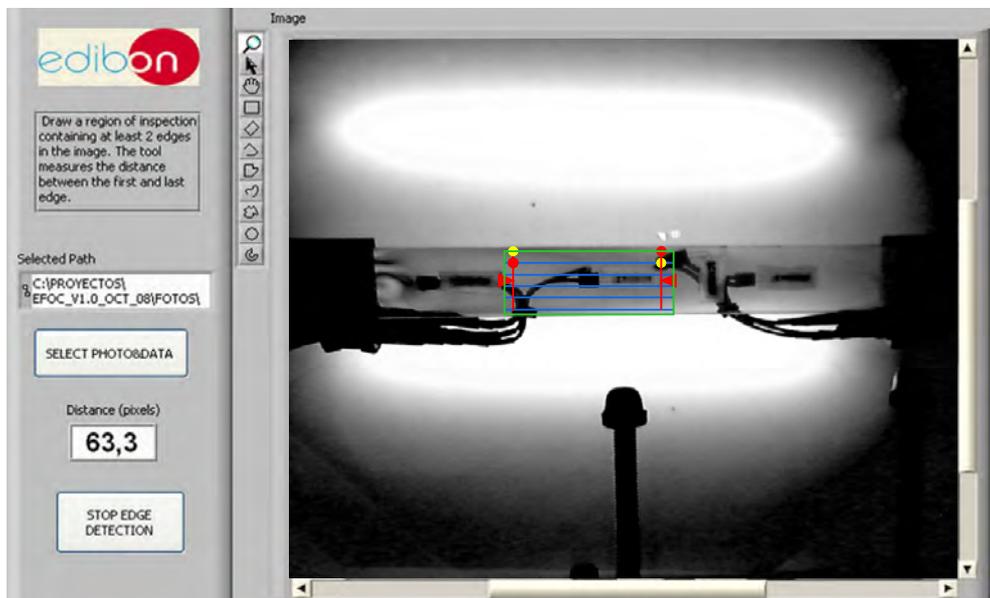
Ⓑ.5 Distance between points



With this tool, the distance between two interest points, drawn over an image, can be quantitatively measured, while the experiments are being carried out.

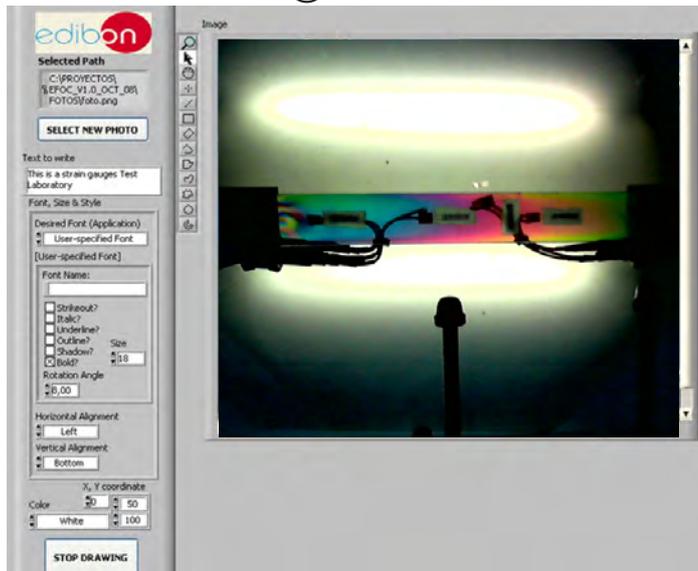
We draw a line between the points in which we want to measure the distance. Afterwards, the distance in pixels between the selected points will be shown.

Ⓑ.6 Distance between edges



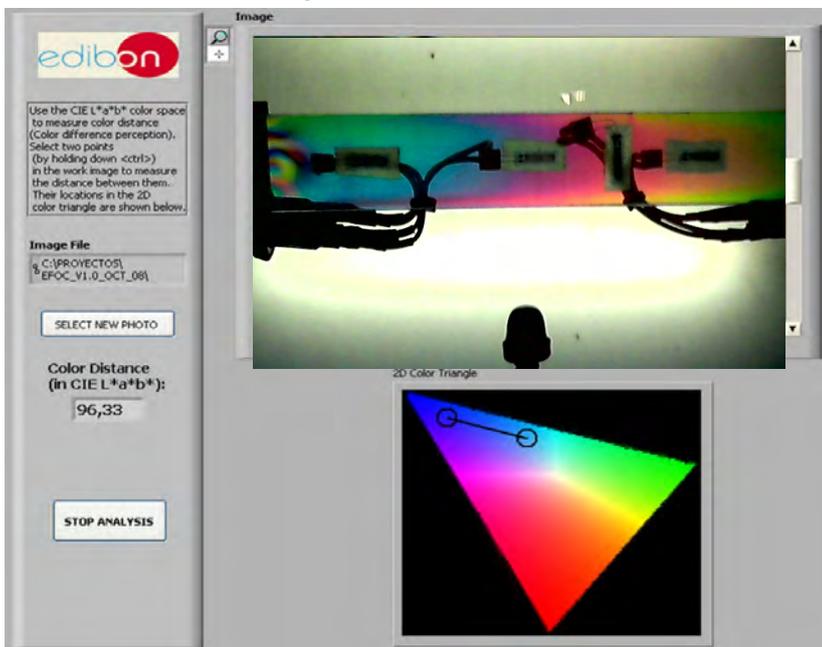
With this tool, the distance between the specific edges, drawn in an image, can be quantitatively measured, while the experiments are being carried out.

B.7 Draw text



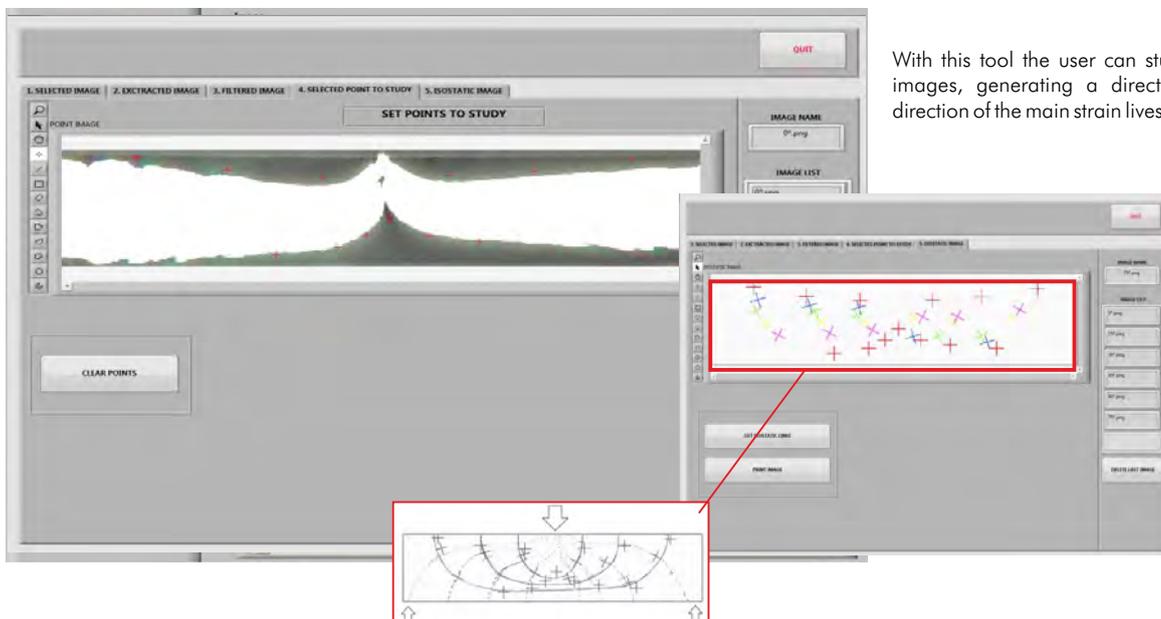
With this tool, notes and comments can be written over the analysed photographs, to be saved afterwards, while the experiments are being carried out.

B.8 Color distance



With this tool, the difference between two specific colours can be quantitatively measured, while the experiments are being carried out.

B.9 "Isostatic Analysis" tool



With this tool the user can study and modify a series of images, generating a directional field from which the direction of the main strain lives can be identified.

* Specifications subject to change without previous notice, due to the convenience of improvements of the product.



C/Del Agua, 14. Poligono Industrial San José de Valderas.
28918 LEGANÉS. (Madrid). SPAIN.
Phone: 34-91-6199363 FAX: 34-91-6198647
E-mail: edibon@edibon.com WEB site: www.edibon.com

REPRESENTATIVE:

Issue: ED03/16
Date: October/2016