NATIONAL TECHNICAL UNIVERSITY OF ATHENS
SCHOOL OF CIVIL ENGINEERING
INSTITUTE OF STEEL STRUCTURES
Iroon Polytechniou Str. 9, 15780 Zografou, Greece

TEST REPORT
No EMK-TR032014

Applicant: Porta Block, Leoforos Karamanli 207 – 13672 AHARNES, Greece

Test specimen: Single leaf hinged door (Product Group 1 to ELOT EN 1627:2011) with 2 hinges and 15 locking points

Product name: PORTA BLOCK ROCK-15

Dimensions of test specimen: Height 1945 mm, Width 784 mm

Date of manufacture of the specimen: 01/11/2013

Infilling materials: MDF wood 7 mm – Steel sheet 1.1 mm – MDF wood 7 mm

Hardware: Lock SECUREMME Type SERIE 25 MOD 2500FD28
Cylinder SECUREMME Type Z4246X24

Locking conditions during testing: Fully locked

Installation instructions: Annex to test report EMK-TR022014

Relevant test report: EMK-TR022014 Resistance under static loading

Resistance class to manual burglary attempts: RC 4 to ELOT EN 1630:2011

The Director of the Institute

Athens 26 February 2014

Prof. Ioannis Vayas

1. Objective

This document describes the static tests according to ELOT EN 16228:2011 that have been performed on a security door with the assignment *Porta Block ROCK-15.* The tests were performed to examine if the door complies with the requirements in order to be classified in resistance class RC 4 according to the provisions of ELOT EN 1627:2011.

2. Test specimen

The test specimen (Figure 1) is a single leaf hinged security door with approximate overall dimensions 1945mm x 784 mm, which belongs to Product Group 1 in accordance with ELOT EN 1627:2011. The body of the door is a 1.1 mm galvanized steel sheet plated on both sides by 7 mm thick MDF panels. The steel core has three vertical U-shaped stiffeners from the same material spot welded to the steel sheet (Figure 2).
The door in supported by two hinges. It is locked by a main lock and by multiple locks on the vertical sides and one on the upper side (Figures 1, 2).

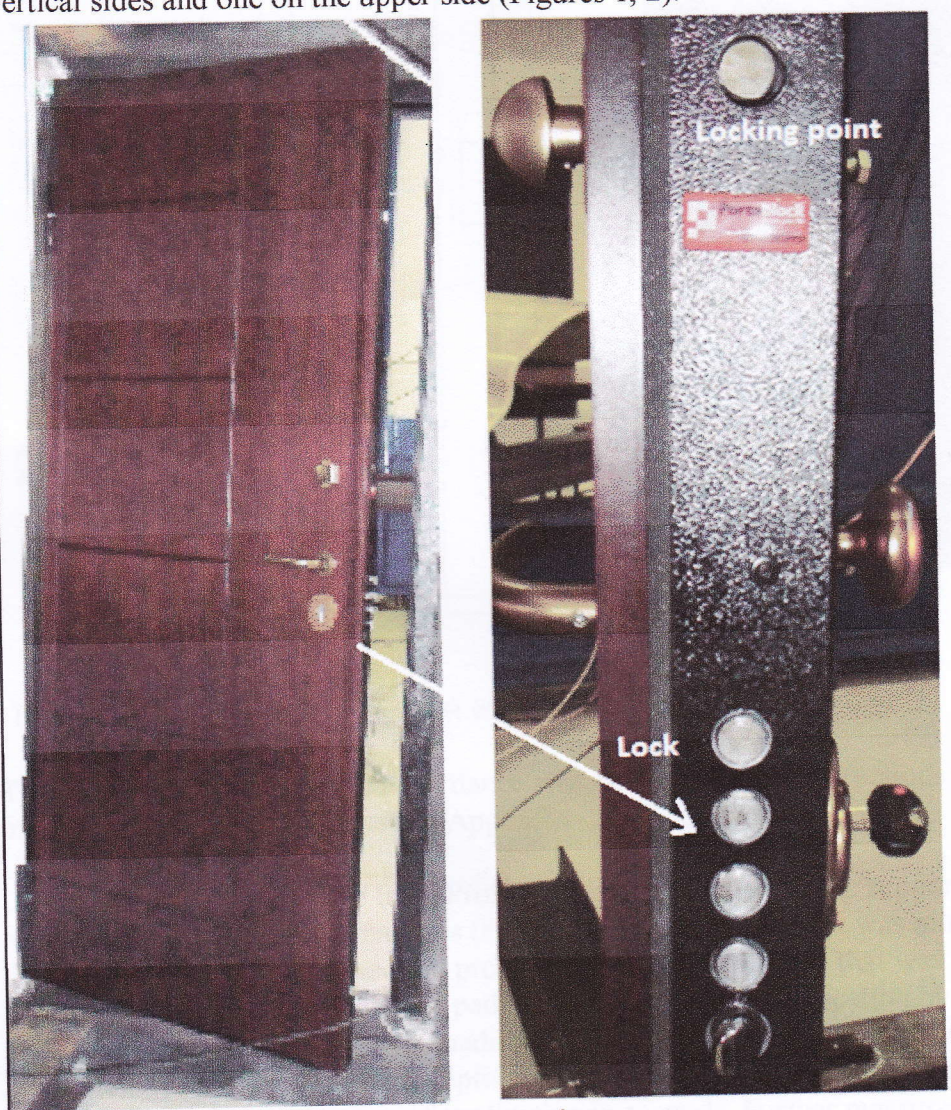


Figure 1 Lay out and locks of the test specimen

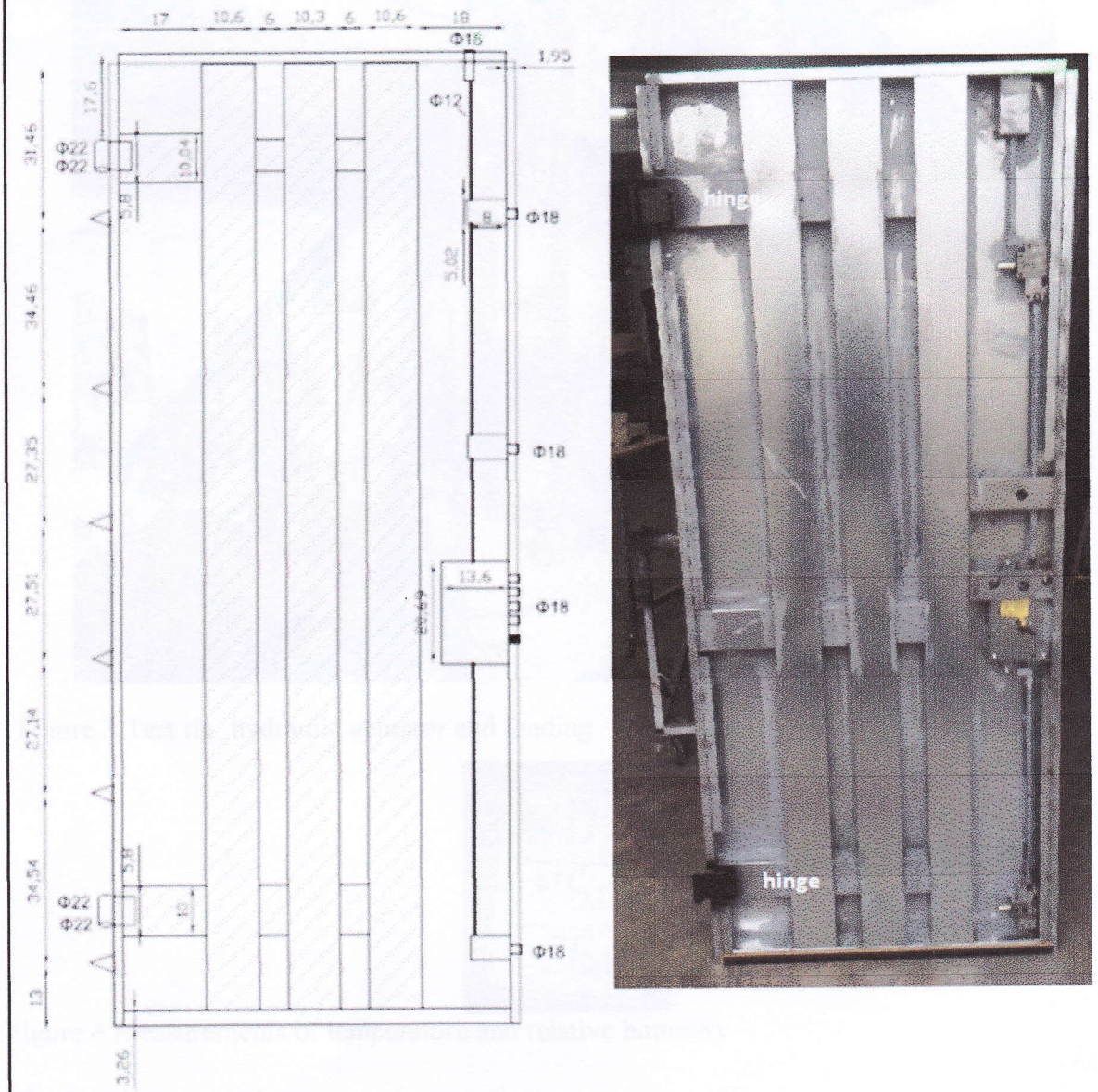


Figure 2 Geometry of the steel part of the door

The door shall be installed in accordance with the installation instructions provided by the manufacturer that are presented in Appendix of this report.

3. Test apparatus

The test rig is a rigid frame from Profiles HEA 160 with movable supports to allow mounting of various specimen sizes (Figure 3). The test specimen was mounted on a sub-frame consisting of hollow section profiles SHS 120x120x5 mm that was within the test rig. Loading is applied over a pressure pad as indicated in the specification by a hydraulic actuator of MALVASIA Electronics with loading capacity 20.000 N and stroke 300 mm. Loading is controlled by a servo-controller amplifier type SCA 202 of MALVASIA Electronics, which displays the force and the time of application in seconds. Further measurements included temperature and relative humidity (Figure 4).

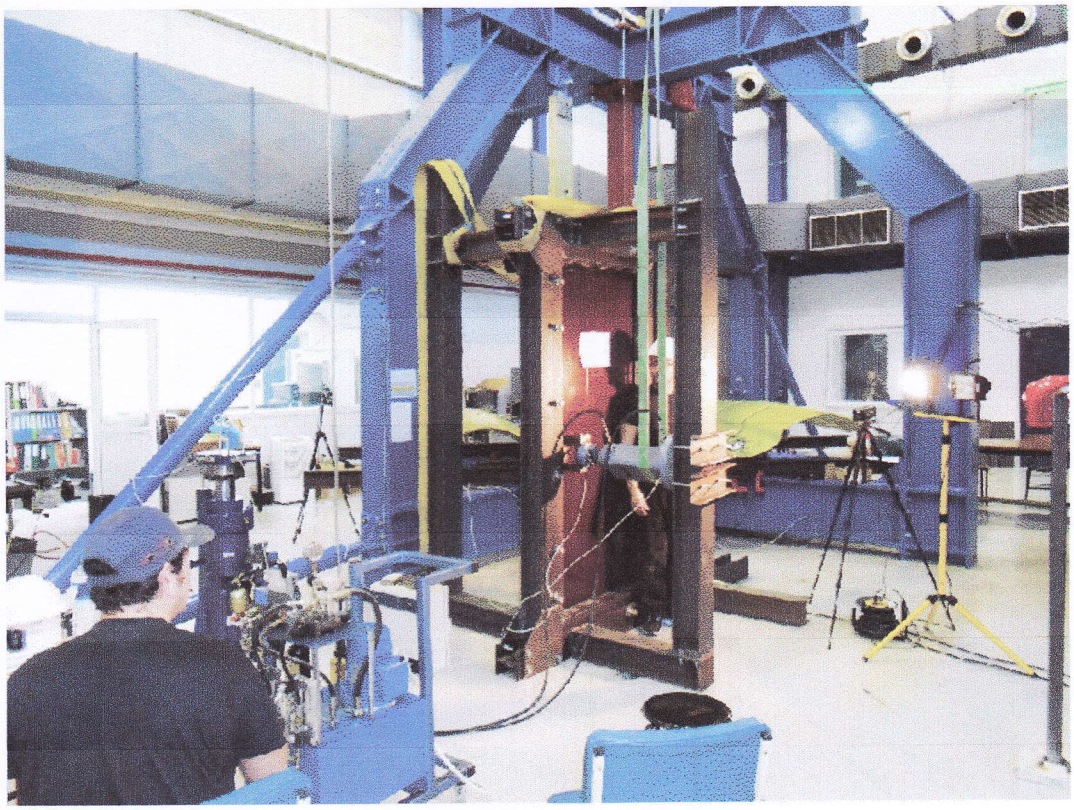


Figure 3 Test rig, hydraulic actuator and loading

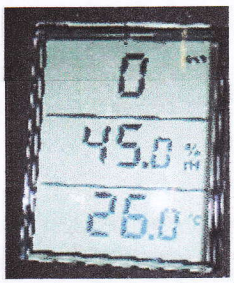


Figure 4 Measurements of temperature and relative humidity

4. Loading procedure

The tested door belongs to a Group 1 construction product in accordance with the specification. Loading was applied at loading points F1 and F3 as specified in ELOT EN 1628:2011. Loading points F1 were situated at the four corners of the door, while loading points F3 at the locking points (Figure 5). All loading points were marked prior to testing. Loading started from point F1-1, continued downwards to F3-1, F3-2…F1-2, then turned to F1-3 and continued upwards to F3-7, ..,F1-4. Forces F1 and F3 were equal to 10.000 N and were applied perpendicular to the leaf from the front to the back side so as to disassemble the door. Loading, whether F1 or F2, was applied progressively over a period of 15 sec and maintained over 10 sec. The overall loading time was accordingly 25 sec. Round gap gauges type A and B with diameters of 10 mm and correspondingly 25 mm were used to measure deformations during loading. The tests were fully recorded with a video recorder.

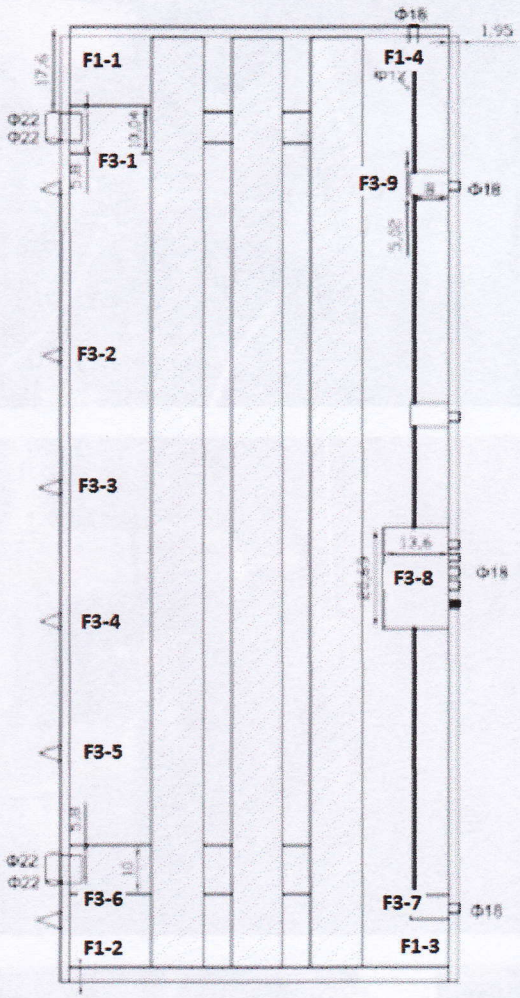


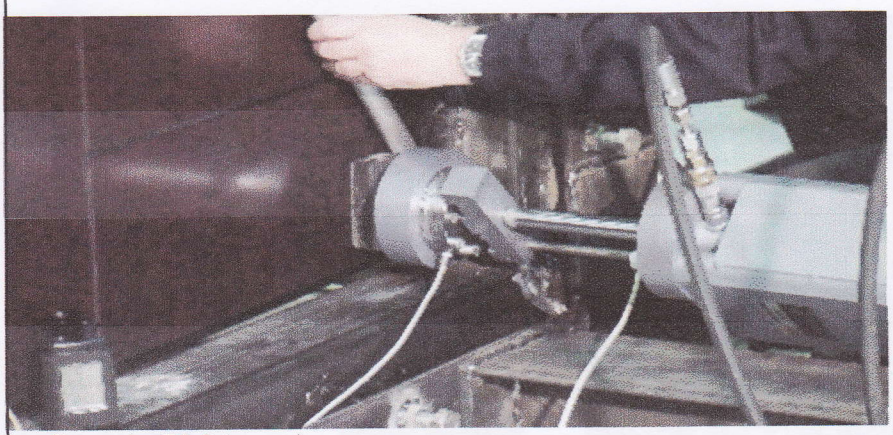
Figure 5 Indication of loading points F1 and F3

5. Test results

Prior and during the test the temperature ranged between 25,5^0 and 26,5^{0}C and the relative humidity was between 40 and 48%, i.e. the test room climate was within the limits prescribed in the specification. The tests were fully recorded with a video recorder.

The door passed successfully the test. The gauge type A could not pass through any aperture at loading points F3 and gauge type B could not pass through any aperture at loading points F1. Figure 6 shows pictures of the door during testing.

The tests showed that the locking side of the door is very stiff, while the hinge side is more flexible despite the fact that the number of locking points is larger at this side. Furthermore, it was observed that the hinges were subjected to permanent deformations after testing.



Loading point F1-3 (corner)

Loading point F3-8 (main lock)

Loading point F3-4 (lock)

Figure 6 Test specimens during loading

Figure 6 Test specimen during loading (continued)

In conclusion, the experimental campaign confirmed that the door may be classified in resistance class RC 4 according to the provisions of ELOT EN 1628:2011.

The Director of the Institute

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ
ΤΜΗΜΑ ΠΟΛ. ΜΗΧΑΝΙΚΩΝ
ΕΡΓΑΣΤΗΡΙΟ ΜΕΤΑΛΛΙΚΩΝ ΚΑΤΑΣΚΕΥΩΝ

Prof. Ioannis Vayas

The responsible of the Laboratory

Dr. Xenofon Lignos

Portablock
Secure your life

Athens, 15 March 2013

ΑΧΑΡΝΕΣ
Α. ΚΑΡΑΜΑΝΛΗ 207
Τ. 210 2847223 F. 210 2846952

ΑΘΗΝΑ
Β. ΚΩΝΣΤΑΝΤΙΝΟΥ 18
Τ. & F. 210 7226876

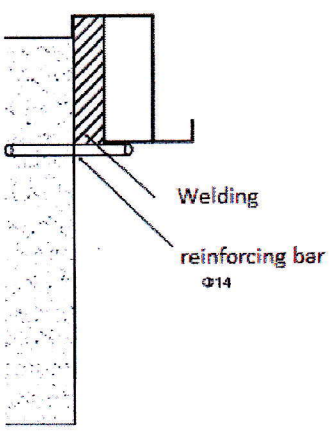
ΑΘΗΝΑ
3ης ΣΕΠΤΕΜΒΡΙΟΥ 61
Τ. & F. 210 8210618

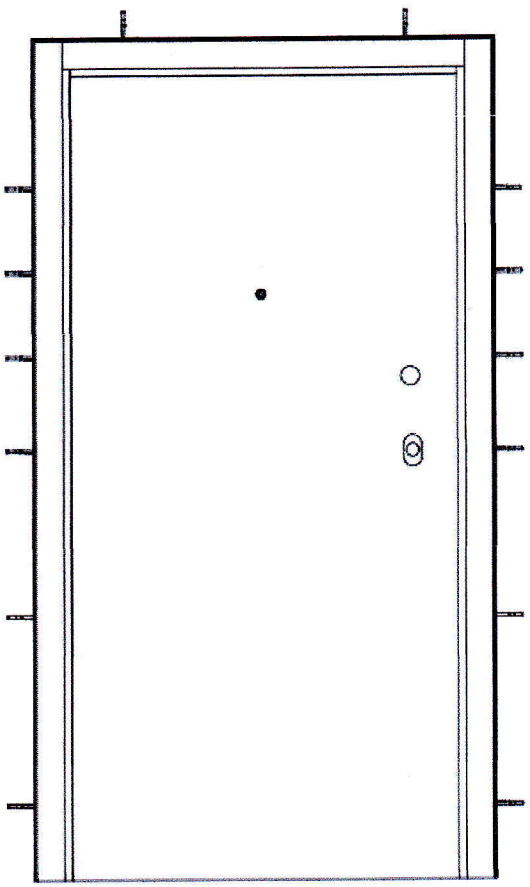
ΜΑΡΟΥΣΙ
Α. ΚΗΦΙΣΙΑΣ 181
Τ. & F. 210 6134051

e. info@portablock.gr w. portablock.gr

Installation Instructions security door "Rock-15"

1. Drilling of holes (Φ15) in the wall around the door with a hammer drilling machine, filling of the holes with epoxy resin (Epoxy Acrylate MOEPOX300) and anchoring of reinforcing bars (Φ14) every 400mm all around up to a depth of 150mm
2. Welding of the frame of the door to the previous reinforcing bars and alignment of the frame from the side of the hinges.
3. After rigid fastening of the door frame from the side of the hinges, hanging of the door in the frame.
4. Checking if the door fits well on the frame.
5. Checking if the door locks well and if the locking points of the door correspond to the points in the frame.
6. Adjustment of the windbreak on the lower side of the door to fit well.





Annex A to test report EMK-TR022014 of 24/02/2014

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ
ΤΜΗΜΑ ΠΟΛ. ΜΗΧΑΝΙΚΩΝ
ΕΡΓΑΣΤΗΡΙΟ ΜΕΤΑΛΛΙΚΩΝ ΚΑΤΑΣΚΕΥΩΝ

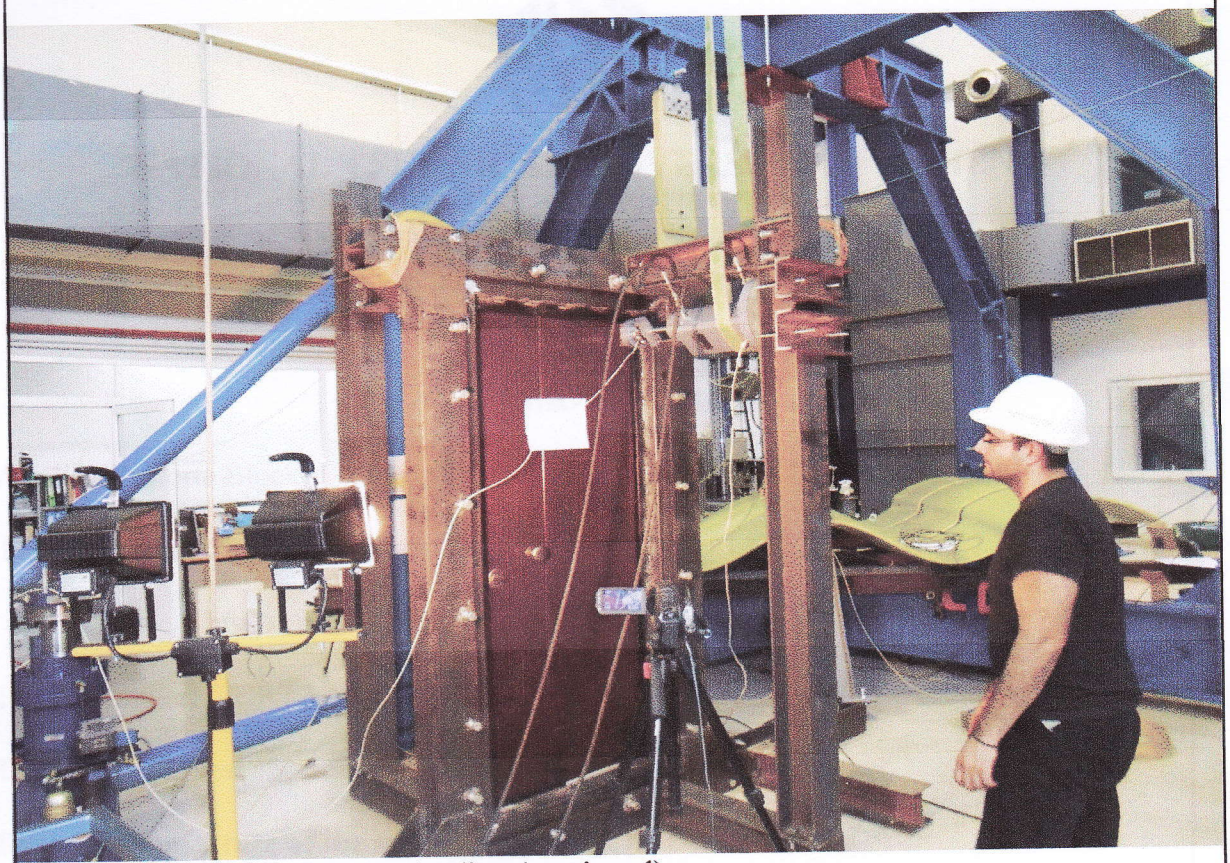


Figure 6 Test specimen during loading (continued)

In conclusion, the experimental campaign confirmed that the door may be classified in resistance class RC 4 according to the provisions of ELOT EN 1628:2011.

The Director of the Institute

Prof. Ioannis Vayas

The responsible of the Laboratory

Dr. Xenofon Lignos