INSTITUT FÜR ZIEGELFORSCHUNG ESSEN E.V.

Am Zehnthof 197 · D-45307 Essen · Telefon +49 (0)201 592130 · Telefax +49 (0)201 5921320

www.izf.de · info@izf.de

Test Report No.: BP 739/17-brick

CALCULATION OF THE THERMAL CONDUCTIVITY AND THERMAL RESISTANCE OF CLAY BLOCKS

for

Ledra Brick Factory Ltd.

Nicosia, Cyprus

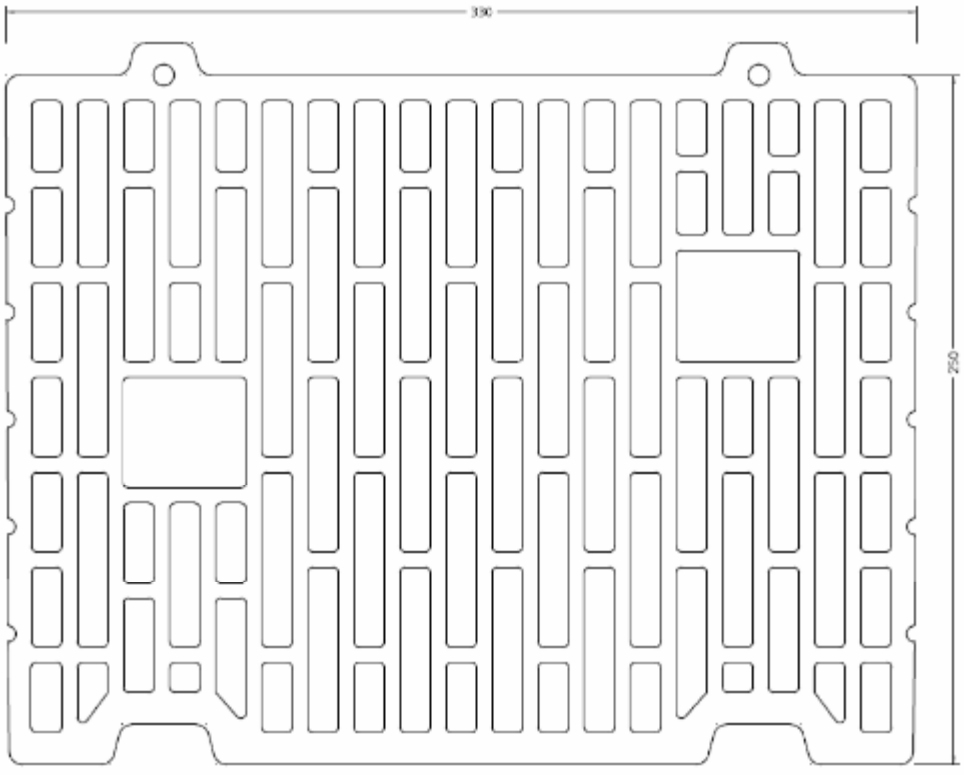
This report contains 3 pages and 2 pages annex.

Customer: **LEDRA BRICK FACTORY LTD.**
P.O. Box. 23986,
1687 Nicosia, Cyprus

Scope of work: Computer based calculation of the thermal conductivity of a perforated brick block with the method of finite-difference according to the European Standard EN 1745:2012.
Calculation of the thermal conductivity of the holes were done according to Standard ISO EN 6946:2008

Description of the bricks to be calculated:

The brick is named “19LB33”.
The size of the block is 330 mm x 250 mm x 250 mm,
with two grooves and tongues. 19 rows of holes



Calculation of the thermal conductivity:

Assumed size and geometry of the brick in mm:

Thickness:	330.0 (in heat flow direction)
Length:	250.0 (transverse to the heat flow direction)
Height:	200.0
Outer webbing:	~10.0/~12.0
Internal webbing:	<6.0

Thermal conductivity of the materials: in W/(m·K):

Solid brick material:	0.341 W/(m·K) (acc. to results of ΚΑΠΕ laboratory test number 60-2 on 05/11/2012)
Holes:	different (calculated acc. to EN ISO 6946)

Temperaturdifference: 20 K
(inside – outside)

Results: thermal conductivity of the block, based on the assumed data:

$$\lambda_Z = 0{,}096 \text{ W/(m·K)},$$

thermal resistance of the block:

$$\Delta = 3{,}44 \text{ (m²·K)/W}$$

Essen, den 18/12/2017/Ri.

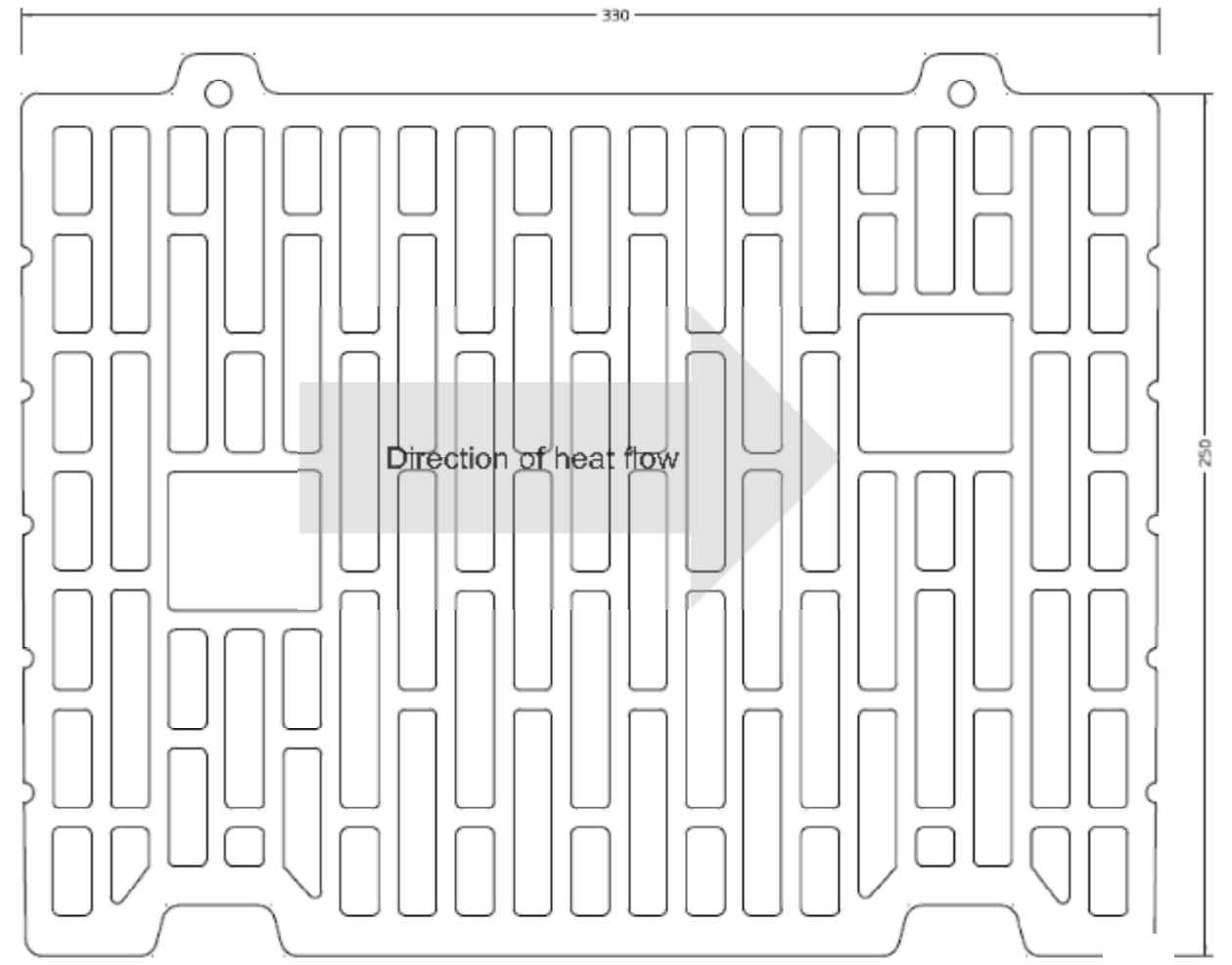
Responsible Projectleader:

(Dipl.-Ing. E. Rimpel)

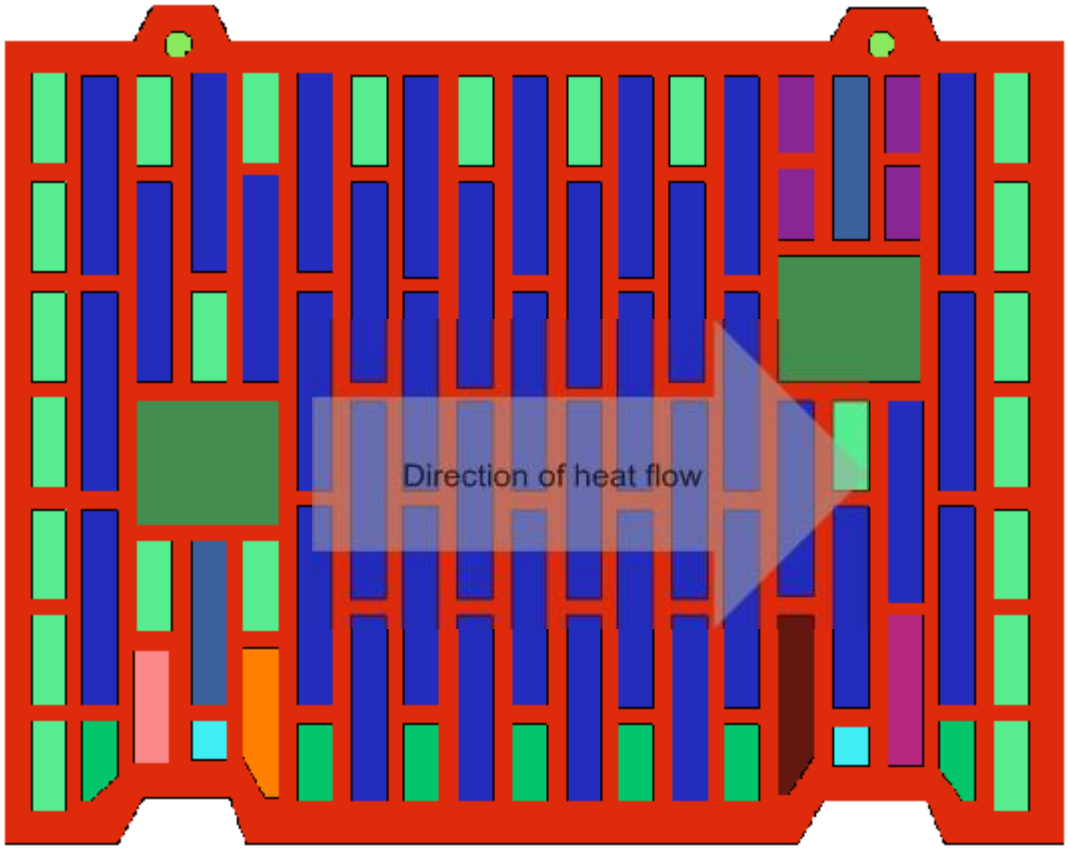
Annex 1: Calculated Brick

1.1 Web design:

Dimension of fired brick



1.2 Material distribution of the brick:



1.3 Heat flow through the brick: