

TECHNICAL FACTSHEET | n. 2

22/08/2018

ECONOMICK INNOVATIVE INSULATION

ECONOMICK

INNOVATIVE INSULATION

SHORT DESCRIPTION |

Economick kiln insulation has the goal to reduce energy consumption and to have a cold face temperature below 60°C.

Thanks to thermal simulation SE.TE.C. got the best compromise between low conductivity and thermal inertia.

THERMAL SIMULATION |

The table illustrates the different simulation tests carried out by means of a specific software, with the aim of analysing various insulation materials performances. The final materials were selected following a best value per money criteria

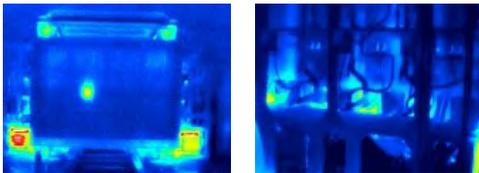
TEST	MAX OUTSIDE TEMPERATURE (°C)	HEAT ABSORPTION INSIDE (MJ/m ²)	HEAT RELEASE OUTSIDE (MJ/m ²)	TOTAL HEAT BALANCE INSIDE (MJ/m ²)	TOTAL THICKNESS (mm)
1	54,8	37,56	14.69	22,87	380
2 ECONOMICK	46,2	36,90	15.89	21,01	380
3	53,1	37,42	14.82	22,60	380
4	49,5	37,39	15.06	22,33	330
5	55,8	35,90	13.68	22,22	355
6	62,6	35,60	12.04	23,56	355
7	58,5	38,23	14.17	24,06	370
8	55,2	34,44	12.62	21,82	365
9 NORMAL SHUTTLE KILN	90,9	62,26	28.86	33,40	327

LEGEND

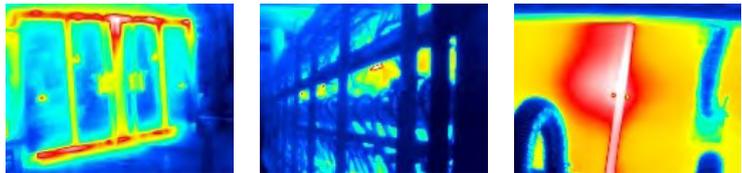
- MAX OUTSIDE TEMPERATURE: maximum temperature detected in contact with outside walls
- HEAT ABSORPTION INSIDE: amount of heat absorbed by kiln internal walls, per m² of wall
- HEAT RELEASE OUTSIDE: amount of heat released by the external kiln wall to the working environment, per m² of wall
- TOTAL HEAT BALANCE INSIDE: amount of heat "blocked" within kiln walls (difference between absorbed and released heat), per m² of wall
- TOTAL THICKNESS: total thickness of kiln walls (comprehensive of all layers)

As shown in the following pictures, Economick kiln has higher insulating performances than traditional shuttle kilns, thanks to its innovative walls composition.

ECONOMICK KILN



NORMAL SHUTTLE KILN



- Red color shows kiln parts with higher amount of heat released to external environment.
- Blue color shows parts with better insulating performances.

ADDED VALUE |

Economick kiln insulation provides for a 10-15% reduction of energy consumption with respect to a normal insulation.

The use of microporous material permits to have a cold face temperature $<50^{\circ}\text{C}$ and so to improve safety and working condition in the kiln area. The low thermal inertia allows short firing cycles (<12 hours).

INNOVATIVE FEATURES |

-  MICROPOROUS LAYER TO PROVIDE COLD FACE TEMPERATURE $<50^{\circ}\text{C}$
More safety and better working condition in the kiln area
-  LOW THERMAL INERTIA
To have very short firing cycle: <12 hour to have more flexibility in the sanitaryware production
-  THERMAL SIMULATION
To study the best compromise for every firing cycle.

PARTNERS |

SETEC GROUP

| www.setecsr.it

LIFE CYCLE ENGINEERING

| www.lcengineering.eu

KERASAN

| www.kerasan.it

PROJECT DESCRIPTION |

ECONOMICK project will develop an innovative shuttle kiln for ceramic production, which consumes about 45% less energy than actually existing ones and, consequently, allows the industry to reduce costs, CO₂, NO_x, HF, SO_x and dust emissions, and raw materials.

Intermittent (or shuttle) kilns are used in about 50% of the ceramic sectors, excluding only tiles industry. Producers of sanitary and table ware, refractory or artistic ceramics use a shuttle kiln for refining ceramic artefacts with some defects, while smaller factories use such a kiln also for first firing, alternatively to a tunnel kiln that requires high production levels.

Thanks to a computerized management of air and gas flow, the almost complete reuse of warm air from cooling and advanced materials for thermal insulation, the ECONOMICK kiln will ensure a specific consumption of 1300-1400 kcal/kg of firing product, comparable to the performance of a good tunnel kiln.

By substituting their tunnel kilns with ECONOMICK kiln, European industries- in particular SMEs – will drastically reduce their costs. This will strongly boost their capacity to maintain or improve their market share, especially in the high-end market.

www.economick.eu

CONTACT | SE.T.E.C. (project coordinator)

tel | +39 0761 540606

email | info@setecsr.it