POLYTECHNIC OF TORINO FACULTY OF ARCHITECTURE Degree in Architecture <u>Honors theses</u>

From earth to brick, a kiln project for the Bouenza' region in the Congo Republic by Brusamolin Alessandro

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"In the Bouenza' region of the Congo Republic, as in several other African locations, bricks and similar products are regularly fired in "clamp type furnaces". A prototype kiln of the reverse flame type, made with bricks and mortar and capable of burning agricultural byproducts from sugar cane, peanuts and rice has been developed.



For the evaluation, locally built green bricks have been fired and results compared with similar products obtained with the regular industrial process.



The excellent results achieved at a maximun temperature of 930 C have suggested a lower firing temperature (600 C) to still obtain a stable product together with a sensible production cost reduction.(Approx. 65%).

	Fired brick in experimental kiln						Fired brick in industrial kiln		
	Firing at 600°C			Firing at 930°C			Firing at 930°C		
Brick type	AS*	AA*	RC*	AS*	AA*	RC*	AS*	AA*	RC*
Brick 6x12x25cm of industrial manual moulding	8,1	13,22	34,7	16,1	13	57,5	11	9	55,5
Brick 12x12x25cm of experimental manual moulding	8,14	4,6	8,28	23,8	11	24,9			
Brick 12x12x25cm with 2,5% rice husk of experimental manual moulding	13,8	9	11,37	$AS = Specific - water - absorption \Rightarrow g/dm^2$ $AA = Water - absorption \Rightarrow \%$					
Brick 12x12x25cm with 5% rice husk of experimental manual moulding	17,8	9,4	8,12	$RC = C \text{ om } press - sterngth \Rightarrow MPa$ * = Average - values.					

Conclusions

The new process, since the positive results, has to be considered an advantageous alternative to the traditional modestly efficient firing system deemed responsible for large consumption of fire wood with consequent severe forest depletion.

