Fired Up About Bricks - Improving Brick Making in Rwanda

by Pierre Thisdale

In Rwanda, there is increasing demand for good, affordable housing. Although Rwandans have always built permanent structures out of brick, the cottage-industry method of brickmaking is inefficient and wasteful of fuel and materials.

Fortunately, researchers at the Université nationale du Rwanda have developed a new technique for manufacturing bricks with the help of colleagues from the University of Sherbrooke in Quebec. They decided to adapt a simple technique widely used in Quebec in the past. The new, standard-size bricks are of better quality and more durable than the old Rwandan cottage product. The new procedure may well even bring down the cost of bricks. In addition, the new ovens should meet the country's yearly demand, now over 70 million bricks, sooner.

The Rwandan team is headed by Jean-Baptiste Katabarwa, Dean of the Faculty of Applied Sciences at the Université nationale du Rwanda. Pierre-Claude Aitcin, a material science specialist from the University of Sherbrooke, coordinates the Canadian team. "We sent two extremely competent people [to Rwanda], who get on very well with the Rwandan team. That enabled us to finish the project well ahead of schedule," says Pierre-Claude Aitcin. "We also had considerable support," in Rwanda, provided by the Marist Brothers, a religious community that runs a training school for local people: "Our students are mainly young people aged 18 or 19, who would be considered dropouts [in Canada]."

The role of the scientists from the University of Sherbrooke consisted of demonstrating how to construct the ovens and improving the brick-making process. Four ovens, called igloos, were built using a simple technique that could be easily acquired by local artisans. These ovens maintain an even temperature of about 1,000 C, compared to the fluctuating temperature of the open wood fires previously used by the craftspeople of the marshes.

The properties of the clay were also altered by adding rice husks. "This gives several technological advantages over traditional bricks," Aitcin points out. The bricks do not shrink as much, crack less and are lighter. "We have also made insulation bricks that take up the first row inside the oven. By adding a lot of sawdust to the clay, a highly porous brick is produced that retains heat better, thereby reducing the oven's heat loss accordingly."

SPINOFFS FOR THE ENVIRONMENT

In addition to the qualities of the new brick, the oven's technology and the clay's new composition will enable a considerable amount of material formerly regarded as waste to be salvaged. A large quantity of eucalyptus wood used as fuel can apparently also be saved: plans even exist to fuel the ovens with waste car oil.
In conclusion, Aitcin points out that "the Rwandan group managing the ovens currently has orders for over 800,000 bricks: this is enough to build approximately 20 houses. Our responsibility was limited to showing them how to construct the ovens; it is now up to the local people to build more ovens with the knowledge and training they have acquired." The idea has already caught the attention of two entrepreneurs who are interested in the technology for its commercial potential and who intend to market the improved brick.

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