

Kachelofen Workshop

in Nova Scotia with Ernst Kiesling

(written by John Rousseau)

"We have a saying around here," laughed Ernst Keisling. "If you don't like the weather, then wait ten minutes' and then it will change".

Canada's maritime province of Nova Scotia was the scene of a Kachelofen Workshop led by Austrian-born Ernst Keisling in May 2002. Attending the workshop were MHA members Jerry Frisch, Rod Zander, Rebecca & Dan Carnes and John Rousseau. Meetings and accommodations were at the Second Paradise Retreat near Lunenburg and overlooking the picturesque Mahone Bay. During the week, course participants experienced driving rain, howling winds and a deluge of hail. When the sun finally did shine, the black flies descended.



The Crew: Front l/r: Alan Pare, Cole Baker, John Rousseau
Back l/r: Dann Carnes, Rod Zander, Jerry Frisch & Ernst Kiesling. Also attending: Rebecca Carnes who took the picture.

For the first day and a half, Ernst introduced the group to a complex series of calculations to help a heater builder plan a correctly-sized heater for a given site. The first step was to assess the site and the customer's heating needs. The second step took this information

and calculated the heat requirement for the room or rooms in kilowatt hours. A windy or shaded site, high elevation, or a house with poor insulation are some of the things Ernst has been able to assign a value and factor into the equation. A heater built with firebrick and stucco will transfer heat at a different rate than one built with firebrick and glazed ceramic. Once the heat requirement of the rooms was figured and the type of heater decided, the required heating surface area of the heater is arrived at.

The technical calculation then plods through some 20 steps to arrive at the final heater design. Along the way issues such as the amount of firewood needed, number of daily firings and volume of combustion gases are factored in. Ernst provided graphs and tables to help plot the size of the firebox, the size of the "outburn" or first exit from the firebox and the total length of the combustion channels. After practicing these calculations on several theoretical examples the course participants became comfortable with the procedure.

Veteran heater builder, Jerry Frisch, found the process quite useful. "Before this (workshop) we were just winging it. Now we know exactly how long to make the channels."

These calculations, diagrams and tables were the heart of the workshop. In Ernst' native Austria kachelofens or grundofens are standard fare in many houses. Building these heaters is a lively trade and there are many master kachelofen builders. As a teacher in this trade, Ernst was in the position to acquire data on hundreds of heaters. From this data he has been able to extrapolate from the underlying physics and arrive at a basic formula to guide the heater builder.

In the afternoon of the second day, Ernst took the class on a tour to show some heaters under construction, his shop and his home. Unique to the Kacheofens built by Ernst are the 5 cm thick "kachels" or tiles produced by his energetic wife, Maria, in her ceramic shop. With her vivid imagination, she uses startling glaze colours and unique shapes to create a new art form in

heater construction. Ernst and Maria's house, on a wooded hillside overlooking a secluded lake, has two heaters and a half-round masonry range and oven. Both heaters are built into room-dividing interior walls so that their surfaces can radiate heat into many rooms.

Kachelofen construction began on the third day. The base was already prepared by Ernst' crew. Maria's kachels were unpacked and laid out. Much of Ernst' materials and an impressive array of heavy, cast hardware comes from Austria where he taught Kachelofen construction for years before emigrating to Canada in 1993. The exterior of the kachelofen - tiles and outer firebrick - were installed using a semi-hydraulic mortar. These were pre-drilled on their backs to allow them to be wired together. After building up the exterior for a few rows, the firebox and inner channels were commenced. Ernst uses a simple clay mortar, not refractory cement, for the inner firebrick.

After every exterior row was installed, the necessary but time consuming process of wiring the tiles and firebricks to each other was completed. Ernst explained that if the fire door should be closed before all the combustion was complete and then suddenly re-opened, the rush of oxygen would produce a small shock that might damage the heater if it were not wired together. The walls of the kachelofen are some 11 cm thick - thinner than many masonry heaters - which allows a faster heat transfer.

It took three days to build the kachelofen to the stage where it was ready to stucco. Although there was not enough time to apply the stucco, Ernst explained that the special



First Fire

Austrian stucco he uses would not crack in the constant expansion and contraction of a kachelofen. He uses the same stucco mixture to grout between the tiles. A celebratory round of Canadian beers was shared as Ernst started a small fire in the firebox. Interestingly, the air supply for the fire is supplied by leaving the door open. There is no shut-off damper at the chimney. When the fire is out the airtight door is simply shut.

The course participants were very positive about the workshop. Rebecca and Dan Carnes believe the kachelofen will be well-received by their customers in the Raleigh/Durham area of North Carolina. This workshop was Rod

Zander's second pilgrimage to Nova Scotia to meet Ernst and find out more about the technical calculations and the extraordinary kachels. Everyone felt that Ernst' patience, competence and friendly, easy-going manner make him an excellent teacher.

On Saturday, the last day of the workshop, Ernst and Maria invited everyone to their house for a farewell noon-time meal. While Maria cooked some special Austrian dishes, Ernst led the group through another set of heater calculations just to make sure everyone understood the process. After dinner the group went up to the shop for a demonstration of the Austrian stucco.

Ernst and Maria are developing a hardware, materials and tools catalogue which they hope will increase sales in Canada and the US. Ernst realizes he cannot travel to every customer so he is training heater builders to be familiar with the kachelofen. Ernst will work with a heater builder to produce an acceptable design for a customer and then ship the hardware and Maria's custom kachels.

For more information and to view the kachelofens, see Ernst & Maria's website at www.canadiankachelofen.com or email them at ermared@ns.sympatico.ca