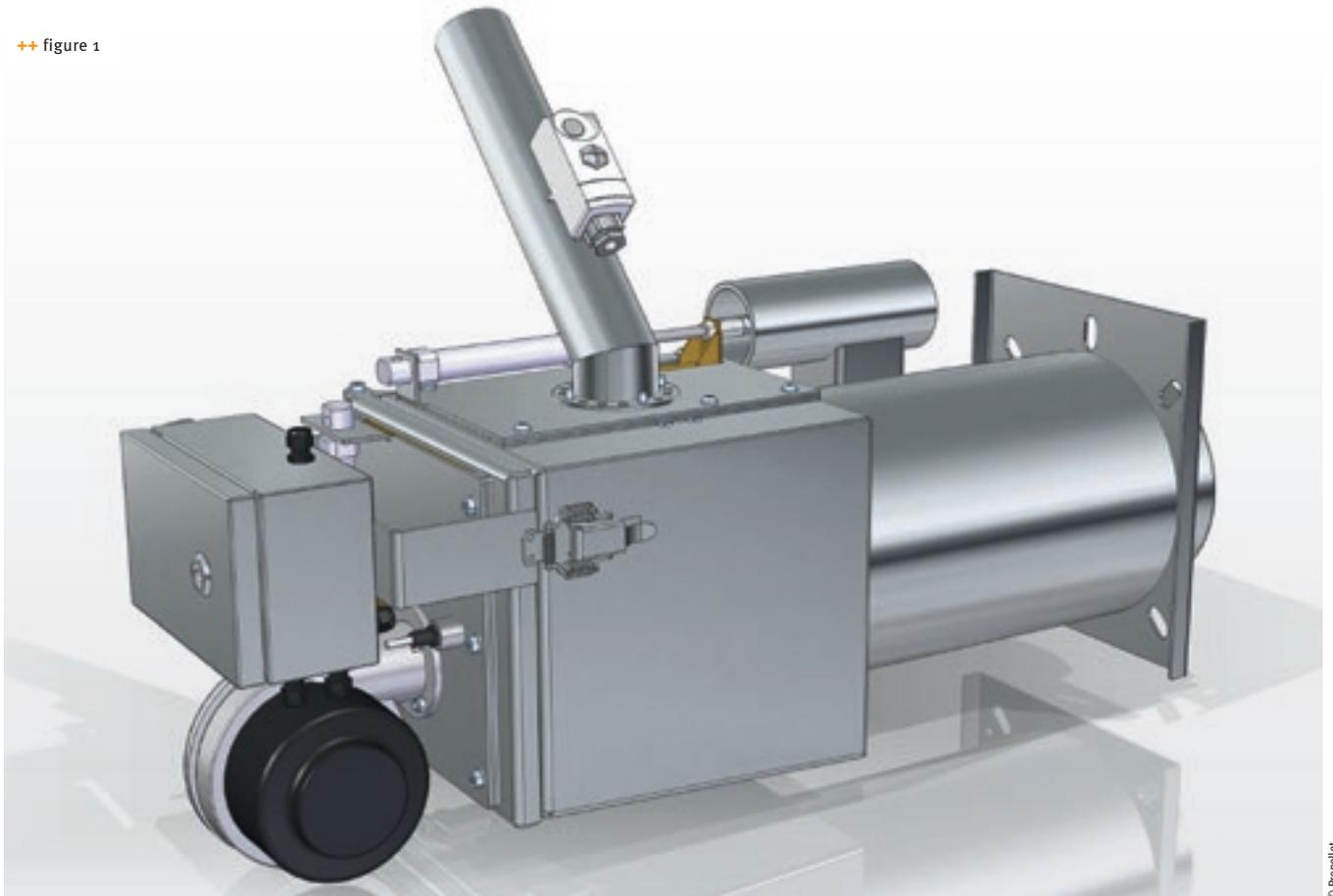


Fired with wood pellets

THE PROPELLET GMBH IN LENGERICH, GERMANY, RECENTLY PRESENTED A MODERN PELLET-FIRED VARIANT OF THE TRADITIONAL WOOD-FIRED BAKING OVEN

++ figure 1



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The wood-fired baking oven's newly developed burner

Since even frozen dough pieces baked off in a supermarket are advertising themselves as “from the stone oven”, a stone baking oven is no longer worth very much as a distinguishing criterion. The wood-fired baking oven could play this role for artisan businesses in future. The fact that traditional wood-heated ovens have almost died out in production operations is due not least to the laborious heating and the dust that was carried into the bakery in the past by clearing out the ash. That has changed through the use of wood pellets, which do not burn directly on the hearth slab.

The WITT Maschinenbau GmbH in Lengerich, Germany, is a classical toll fabricator working mainly for the automobile and electrical industries. A joint project with a heating systems constructor in 2009 resulted in the company building pellet burners up to a burner power of 150 kW, together with the suction conveying of the fuel. Company proprietor Uwe Pritzel founded a separate business for this in 2010, the propellet GmbH. The insolvency of a customer in the baking oven construction business was then the catalyst that started the construction of baking ovens under his own management. Pritzel says “Our experience from machine building helped us address some

things in a quite new way.” For example a patent application was filed for the fact that the flame remains in the burner tube, so the baking compartment does not locally overheat and blacken the bottoms of the loaves. Only when the wood has developed the required temperature are the glowing embers spun into the baking compartment, where they are fully burnt and removed again by a special vacuum cleaner or through a suction device on the loader before the breads are fed in. According to Pritzel, “This process also allows us to burn special woods or pinecones, for example, to generate quite individual flavors in the baking compartment, which are then transferred to the crusts of the baked products. This flavoring method gives a special touch to the baking process for products from a wood-fired oven, and complies with the German artisan bakers’ guiding principle that wood burns in the baking compartment.” The controller for the oven’s flame generator was also a new development by the company.

Another new invention for which wood-fired oven specialist and now Sales Manager Walter Schmidt has filed a patent application is the automated burner control method to ensure uniform heating in the individual baking compartments.

Schmidt says this evens out possible fluctuations in the quality of the pellets, and always yields constant rates of temperature increase in the baking compartments. In addition the residual temperature in each hearth is recorded before loading the breads and is also used as a burner control parameter. This allows the hearths either to be operated at different temperatures if required, or to be set at a uniform temperature level for automatic loading. The Karl Ahlborn Maschinenfabrik KG in Grossalmerode, Germany, now builds a matching loader.

According to Pritzel, the flue gas values are so low that the ovens are approved for use even in enclosed spaces. The burner's operation is also self-cleaning. Residual moisture and fat are blown away by compressed air after each burning process. For good measure the designers attached importance to maintenance friendliness, and some components are installed in duplicate, for example the igniter elements, which gives certainty that the burner will burn even if one igniter element fails. Removing the entire burner also takes only a few minutes.

The individual hearth compartments – there is a choice between hearth sizes of 1.2 or 1.8x2.0 m and up to 6 hearths one above the other – are lined with firebricks, including the hearth doors, which are opened and closed electrically. Steam is supplied by a heat exchanger that extracts heat from the flue gas.



++ figure 2 Loading propellet's newly completed wood-fired baking oven

All the details of the oven have been designed to burn wood pellets. For example it is fitted with a matching large heat exchanger that reduces the flue gas temperatures and produces steam for the steaming process. According to Pritzel, "By newly developing the flame generator we achieve a continuous temperature increase of approx. 2 °C, and the curve does not flatten out at high temperatures as occurs with oil or gas-fired ovens." He says that because the heating-up phases run so uniformly, a maximum conditioning phase of 20 min is sufficient, sometimes even shorter. The more often the oven works, the better. According to Schmidt, "The best results are obtained when the oven is used round the clock, and that's also what it is designed for." +++

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