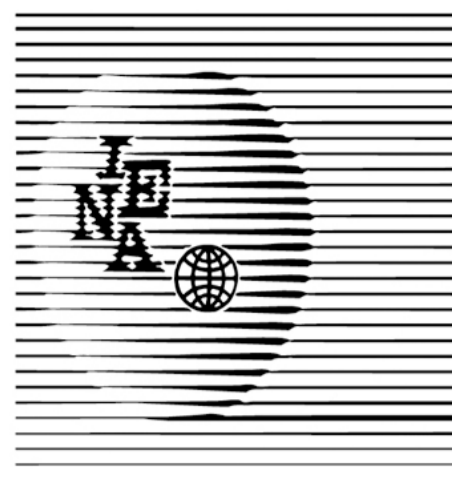




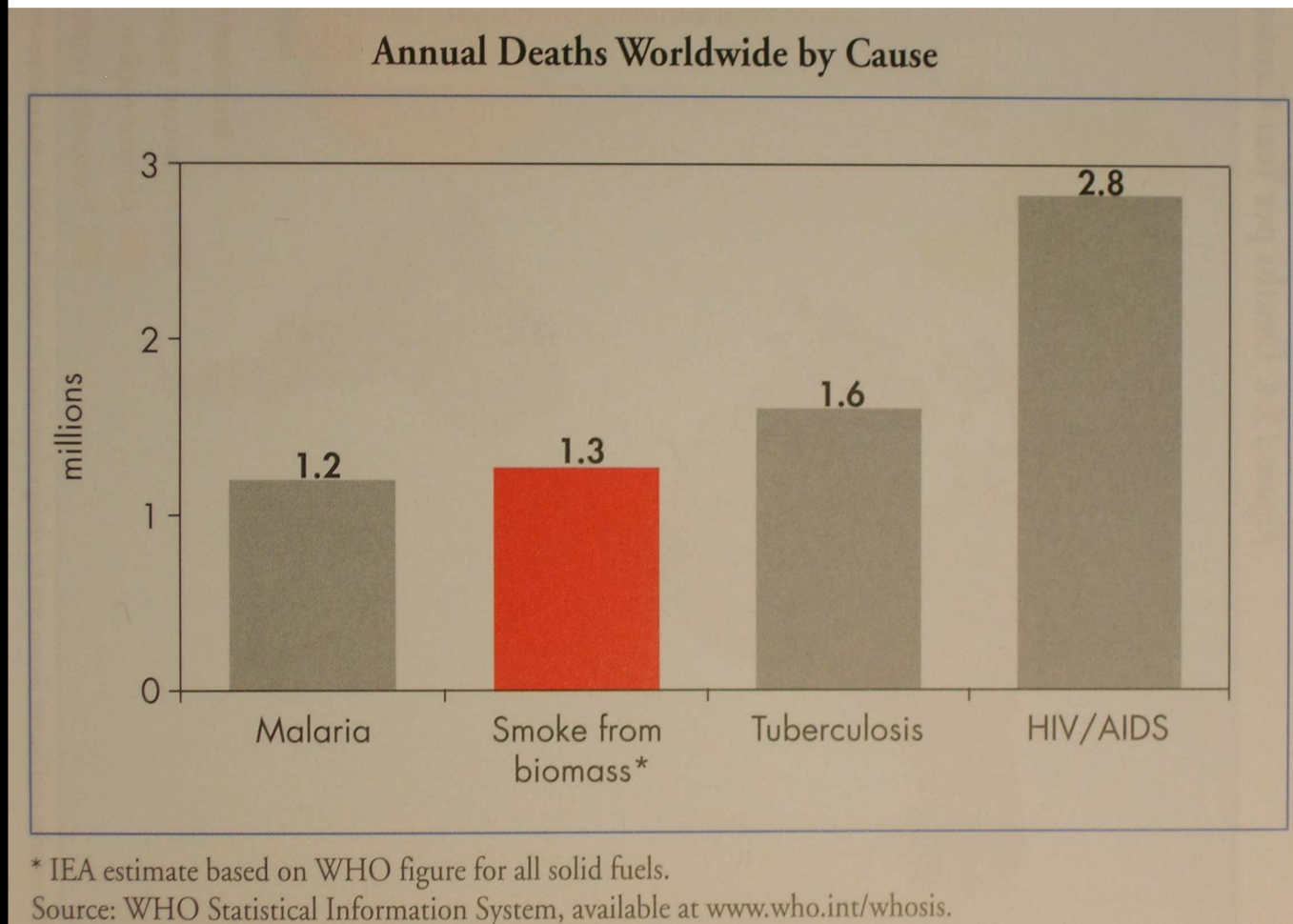
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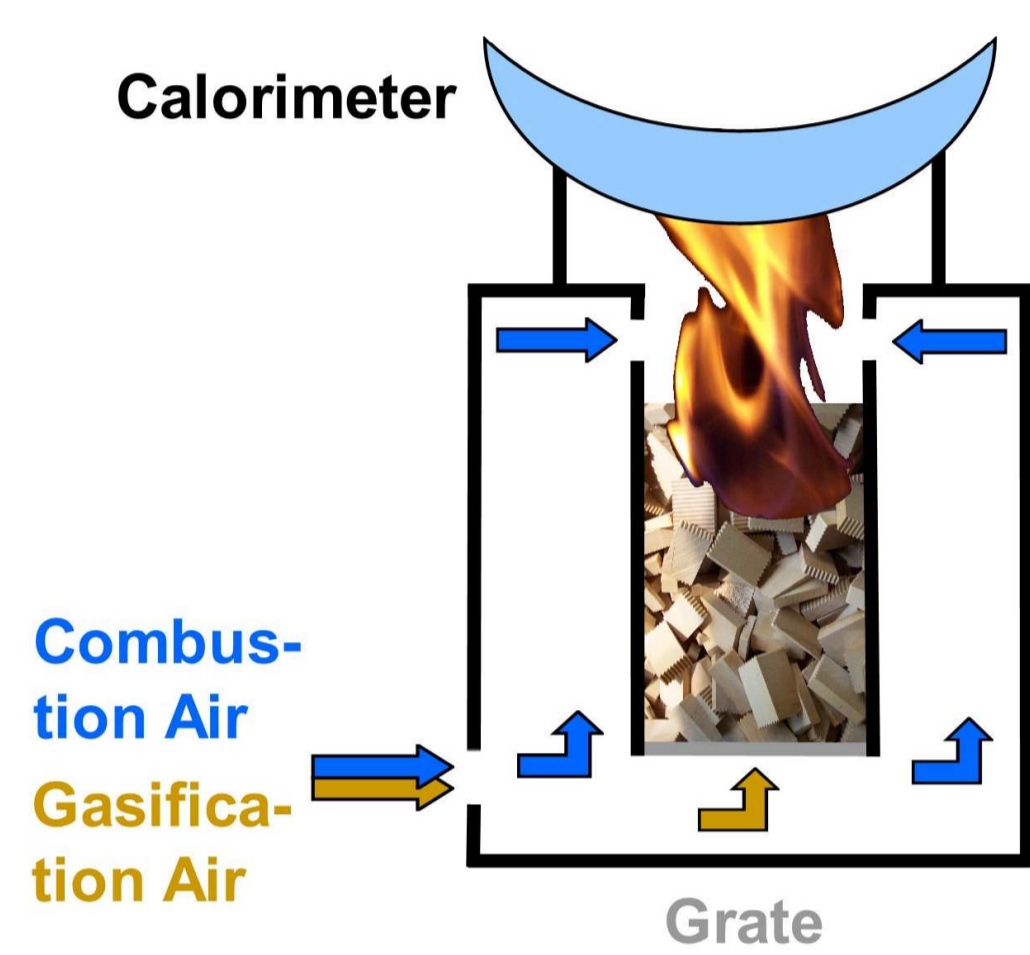
**IENA
2007**

Development and Construction of a Wood-Gas Stove for Use in Developing Countries

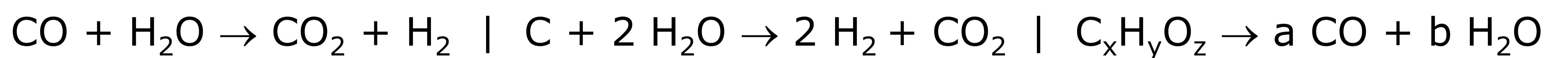
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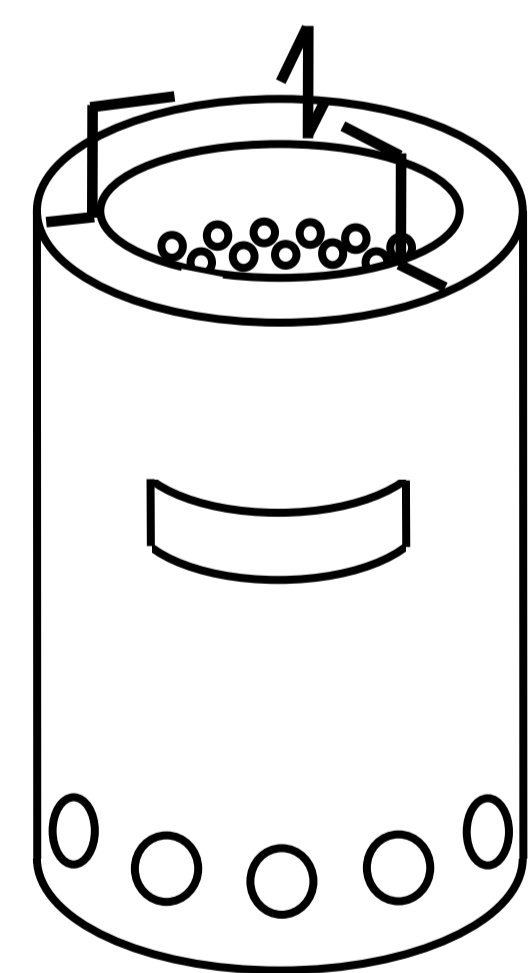
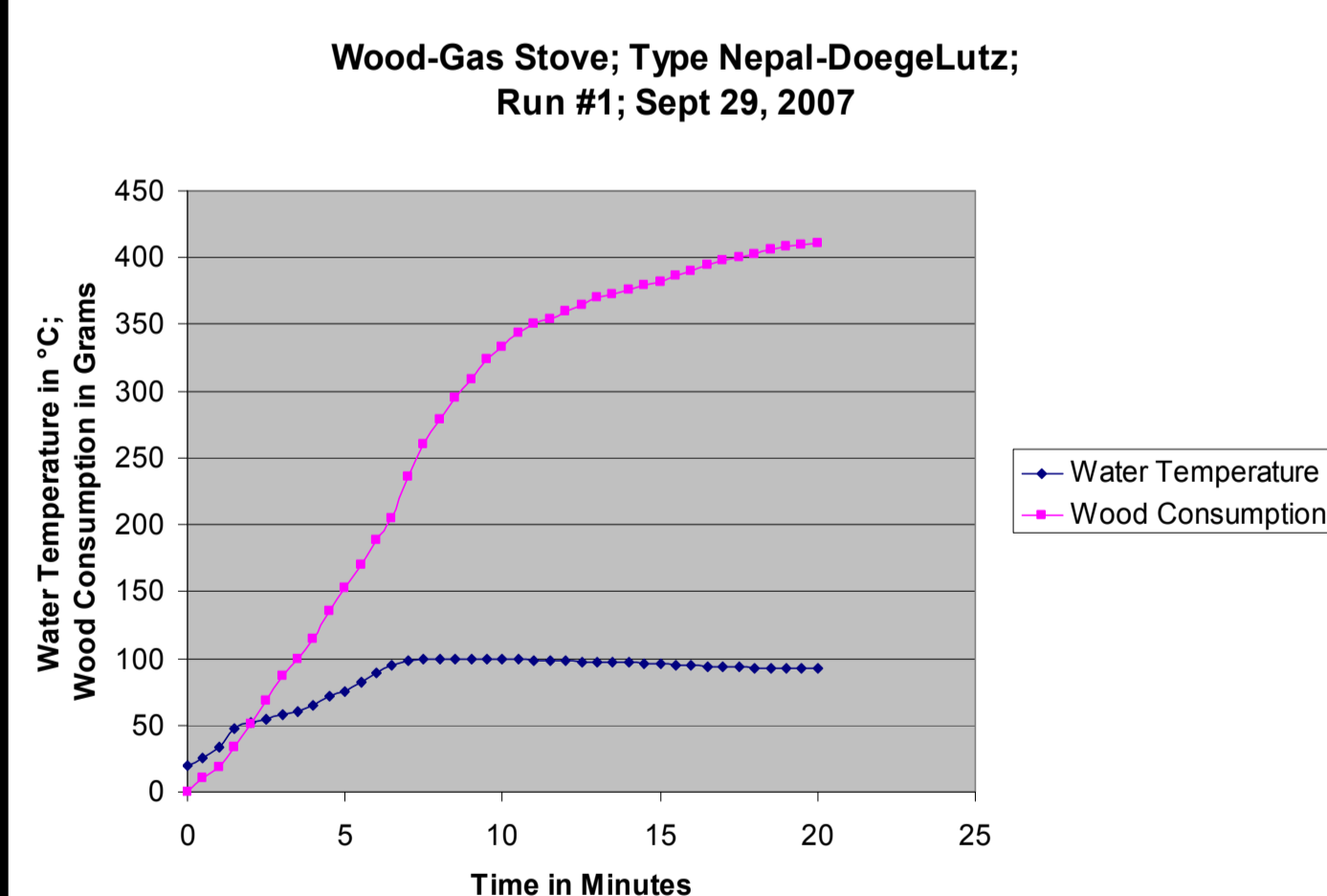
About two billion people worldwide are dependent on wood and other solid biomass as fuel today. This fuel is mainly used for the preparation of meals. Often, the combustion is incomplete, yielding poisonous flue gases and particulate matter which are inhaled by the people – mostly in developing countries – in their poorly ventilated houses. This leads to the frequent occurrence of eye and respiratory diseases that are often lethal.



The wood-gas stove functions according to the principle of wood gasification (pyrolysis). Through a lack of oxygen in the combustion process wood-gas is generated and burned at the combustion air inlet in a second step. Wood-gas contains on average: carbon monoxide 20-25%, hydrogen 15-20%, methane 2-3%, carbon dioxide 10-15% and nitrogen 45-50%. In the beginning of the 20th Century wood-gas was used as car engine fuel on a large scale.



At the beginning of the development there was a small model of the stove made out of two tin cans. Later, a large stove was built out of steel in co-operation with a metal shop. Because that one seemed too heavy, a stainless sheet steel version was developed. This stove demonstrates the working principle very well, but is too expensive for developing countries. Because of that, I am currently working on a low cost version that can be built in the target areas.



In order to evaluate the wood-gas stove's efficiency, the standardized "Aprovecho" stove test was done. Among others, wood fuel use, energy absorption of the calorimeter, and the burning time were recorded. In addition to that, an exhaust fumes test was done. The results show a significant improvement in comparison to conventional cooking methods.

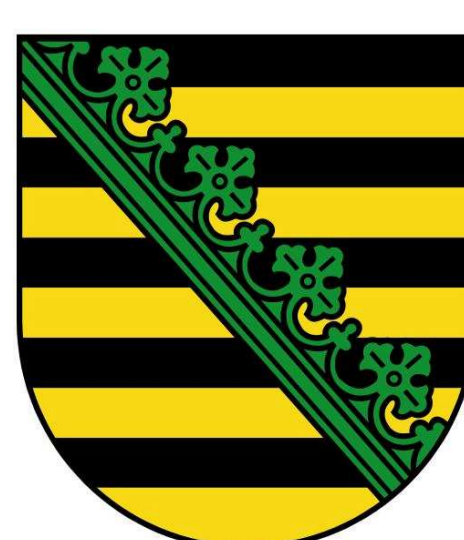


Because of the media attention during and after the "Jugend forscht 2007" competition levels several interested individuals and clubs asked for ways to implement the stove in developing countries. Right now, there are concrete plans for one project in each, Honduras (Central America) and Nepal (Asia), additional prospective projects in Nepal are in their making, and a trip to Honduras is to be gone on in March 2008.

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