

## BE2020

### BIOENERGY 2020+ GmbH

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## „beReal“ – Quality becomes visible

The objective of the European “beReal” project was the development of new test protocols for firewood and pellet roomheaters focusing on real-life operation. The definition of the test protocols based on the findings of user surveys regarding typical heating operation, long term field measurements regarding the frequency of use and experimental analysis of the effect of specific operating conditions. The results of a Round-Robin-Test and field tests revealed a good reproducibility and real-life relevance of the “beReal” test procedures. Currently, the work of implementing the “beReal” test protocols as a quality label and standard is ongoing.



### Test protocols – The importance of real-life relevance

Testing of new products under specific conditions is essential in order to evaluate the minimum quality regarding performance and safety. In Europe, there are harmonized standards which represent the basis for testing of new wood stoves before they are introduced on the market.

Testing according to EN standards is done at “quasi-stationary operating conditions with the preheated stove. Thereby, the best operating conditions for the appliances is provided. However, typical real-life conditions, like user behaviour, ignition, load changes and cooling down are not respected in the testing procedure although these phases occur in each real-life heating operation. Consequently, the official type test results are never reached in real-life operation. Furthermore, the tightening of emission limit values and minimum requirements regarding thermal efficiency resulted not in a reduction of air pollution. The increasing awareness of politics and legal authorities about these

topic leads to a clear demand of new test protocols that reflects better real-life operating conditions and typical user habits in the testing procedure.



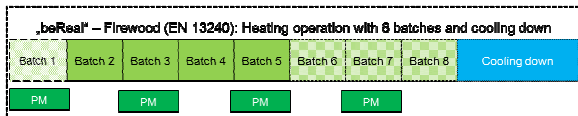
### “beReal” – The real-life relevant test protocols

In the “beReal” project (Link) new test protocols for firewood and pellet roomheaters with a clear real-life focus were developed. The test protocols were developed in collaboration with manufacturers, associations and well-known R&D institutes. The Reproducibility and real-life relevance was evaluated and demonstrated by comprehensive field tests and a Round-Robin-Test.

The new “beReal” test protocols for firewood (EN 13240) and pellet (EN 14785) roomheaters based on the findings of user surveys regarding typical heating operation, long term field measurements regarding the frequency of use and experimental analysis of the effect of specific operating conditions (e.g. flue gas draught,

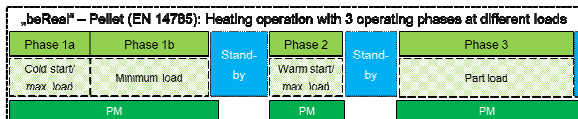
ignition technique, effect of different fuel properties). The basic principle is the testing of a complete heating operation cycle including all elements of typical real-life heating operation.

For firewood roomheaters the test cycle consist of eight batches at nominal (batch 1-5) and part load (batch 6-8) heating operation followed by a cooling down phase (Fig. 1). Particulate emissions (PM) are measured during the entire batch duration.



**Fig. 1: Scheme of “beReal test “ protocol for firewood roomheaters**

Pellet roomheaters are tested according to beReal at several load settings: Cold start (1a) and warm start (2), maximum (1a, 2) minimum (1b) and part load (3) (Fig. 2).



**Fig. 2: Scheme of “beReal” test protocol for pellet roomheaters**

Testing starts for both technology from cold conditions by lighting the first fuel batch (firewood stove) or pushing the “on” bottom of the pellet stove.

For firewood roomheaters the heating operation during testing is defined by a standardized quick-user-guide which has to be obligatorily provided by the manufacturer. Using the quick-user-guide the manufacturer shall define the best-practice-heating operation by text and pictures. These definitions are the basis for testing and should be also the basis for heating by the user in real-life.

For standardized data evaluation of beReal measurements a web based tool was developed which represents an important aspect of quality assurance for the test protocol.

### Impact and effects

The approach of “beReal” testing raised a broad awareness in politics and by legal authorities. Information was provided by articles in newspapers or on television.

The “beReal” test concept is applied in different follow-up R&D projects. Some manufacturers implemented the test protocols already in their internal development process in order to better respect specific aspects of user behaviour in their development processes. Furthermore, the concept of the quick-user-guide raised a broad interest of manufacturers. Some of them already offer their customers quick-user-guides. Consequently, the emission reductive effect of appliances specific “correct heating” is already transferred to real-life.

The “beReal” test protocols were presented on different international conferences and single aspects of the development process were published in scientific journals.

Current work focuses on the implementation of the “beReal” tests protocols in a new label scheme. However, in a long term perspective the “beReal” test protocols should become the status of harmonized standard in Europe.

The “beReal” project was a further step in the direction of low-emission technologies. For the end customer the quality of products becomes more transparent. Consequently, they can evaluate new stoves of high performance and low emissions better and can select their product accordingly.

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Austrian Kachelofen (Tile Stove) Association	Austria
HETAS Ltd	Great Britain
Scan	Sweden
und weitere... (siehe: <a href="http://www.bereal-project.eu/">http://www.bereal-project.eu/</a> )	-

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