Newsletter 1-2011

StableWood

New solutions and technologies for heating of buildings with low heating demand: Stable heat release and distribution from batch combustion of wood

www.sintef.no/StableWood

This first StableWood newsletter gives a brief overview of the project. The newsletter aims at providing glimpses of recent research activities at SINTEF and NTNU within the bioenergy area.

The StableWood project

Several national strategies points out the importance of bioenergy in the future energy supply for Norway. Wood log combustion has long traditions in Norway and currently constitutes as much as 50% of the current use of biomass for energy purposes. The national target is a doubling of the use in 2020.

New houses as well as retrofit/upgrading of old houses have increasingly focused on improved insulation. This will set new demands on the heat source, which should be able to deliver a stable effect down to as low as 1 kW. Hence, low load wood stoves and fireplaces in new buildings demands new technologies and solutions with an increased focus on the combustion process and its control, the combustion quality and optimum design to ensure low emissions and high energy efficiency.

StableWood is a competence building project (KMB) co-funded by the Norwegian Research Council in the RENERGI-programme. The project focus on new solutions and technologies for heating of buildings with low heating demand and specifically batch combustion of wood and the increased need for stable heat release and distribution from wood log combustion in wood stoves and closed fireplaces. Through new solutions that will combine heat production, storage and distribution in an optimum way, it will be possible to achieve a substantially more stable heat release and distribution in wooden houses than the current solutions and technologies can offer, thus enabling Norway to reach its ambitious targets (Figure 1).

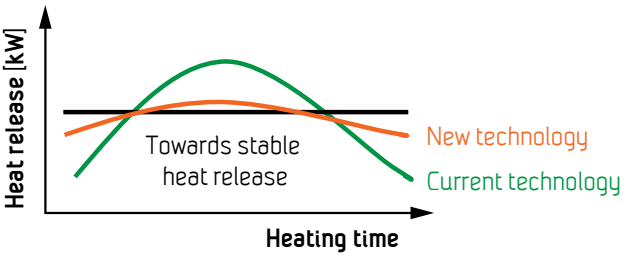

Figure 1: Towards stable heat release in wood stoves and fireplaces

The overall objective of this project is development of new strategies for improved heat production, storage and distribution from wood stoves and fireplaces through:

- Improved heat production concepts through improved combustion control by increased understanding of the batch combustion process
- New or improved heat storage concepts by optimum material location and choice, including phase transition and change options, and through room integration
- New or improved heat distribution concepts through optimum passive and active methods and through building integration
- Education of highly skilled candidates within this area and training of industry partners
- Monitoring of activities and state-of-the-art within this area and dissemination of knowledge to the industry partners, and other interested parties where applicable

These new solutions and technologies will open up for a groundbreaking shift in the wood log heating season in Norway and will give two major results, as illustrated in Figure 2:

- It will enable a substantially longer wood log heating season due to solutions that can operate at low effect early and late in the heating season
- It will give lower peak effect per combustion unit due to implementation into new and better insulated buildings with a lower heating demand, but higher overall peak effect due to a doubling of the total wood log use

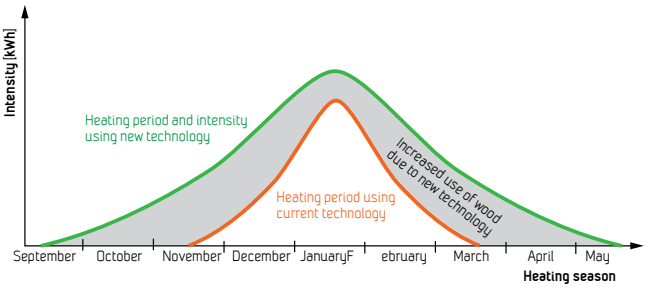

Figure 2:
Expected expansion of wood log heating season in Norway due to introduction of low load wood stoves and fireplaces with a long burning time

The assembled consortium consists of leading research groups within energy from biomass, NTNU and SINTEF Energi AS, and central European manufacturers of wood stoves; Dovre AS, Granit Kleber AS, Jøtulgruppen and Morsø Jernstøberi A/S. The industrial partners have strong focus on R&D and continuously product development, especially within low load combustion.

Other news

SINTEF involved in standardization work

Since the utilization of firewood is expected to increase substantially over the next decade, it is important to ensure that harmful emissions such as particles are minimised, and that national requirements and regulations are uphold and improved, not relaxed due to new EU directives not taking into account the special Norwegian conditions. Partial load performance is very important since firing at partial load will be the typical situation in Norway. Through active participation in the national and international standardization work for residential solid fuel burning appliances (CEN/TC 295) SINTEF is working on this topic, and standardization of testing methods is a key issue. The standards will ensure improved protection for the manufacturer and the consumer and prevent trade barriers.

Several draft European Standards have been drawn up by the Technical Committee CEN/TC 295 and submitted to CEN members for voting recently. In case of a positive result of the voting as required by CEN/CENELEC regulations, these drafts will be published as European Standards (EN). These draft European standards and the deadlines for response are:

- prEN 13229 Inset appliances including open fires fired by solid fuels Requirements and test methods – deadline 3 July 2011
- prEN 13240 Room heaters fired by solid fuel - Requirements and test methods – deadline 27 July 2011
- prEN 12809 Residential independent boilers fired by solid fuel - Nominal heat output up to 50 kW - Requirements and test methods – deadline 3 August 2011
- prEN 12815 Residential cookers fired by solid fuel Requirements and test methods – deadline 3 August 2011

www.standard.no

Nordic Bioenergy 2011

Nordic Bioenergy 2011 is arranged in Jyväskylä, Finland 5-9 September this year. SINTEF Energi will give 4 presentations in this conference, of which one is related to the StableWood project. The titles of the SINTEF presentations are: 1) Cost-effective small-scale CHP solutions for the Norwegian market, related to the KRAV project, 2) Stable operating conditions in bioenergy plants through utilization of torrefied biomass, related to the STOP project, 3) Achieving low emissions and stable heat release from wood stoves and fireplaces firing at low load, related to the StableWood project and 4) Biofuels in Aviation – an overview, related to the GasBio project.

www.nordicbioenergy.finbioenergy.fi

IEA task 32 activities

IEA Task 32 "Biomass combustion and cofiring" arranged their first meeting this year in Graz in January. In conjunction with the meeting they organised two workshops; "Development of torrefaction technologies and impacts on global bioenergy use and international bioenergy trade" and "Aerosols from small-scale biomass combustion".
The presentations are available on the Task 32 website.
Liang Wang, SINTEF, participated in both the meeting and the workshops. Next IEA meeting is planned 19-20 October this year in Ireland.

www.ieabioenergytask32.com

Biopower and biomass CHP seminars

A SINTEF seminar on biopower is planned 13 October in Oslo. The start-up of a Norwegian green certificate marked in 2012 and its influence on the profitability of biopower in Norway will be presented and discussed. The following day a biomass CHP seminar will be arranged within the KRAV project (www.sintef.no/KRAV). The major results of this project and recommendations for small-scale biomass CHP in Norway will be presented. Seminar programs will be published on the SINTEF and the KRAV website.

StableWood webside

The StableWood project website is established, and it will be continuously updated with information about activities and results. Unrestricted publications will be available for download or ordering.

www.sintef.no/StableWood

StableWood
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