

Fraunhofer IBP | Postfach 80 04 69 | 70504 Stuttgart

LTplus c/o ArchitektenInitiative e. V.
EcoMag GmbH
c/o ARGE K33.AI
Südring 2
85457 WürthDirectors
Prof. Dr. Philip Leistner
Prof. Dr. Klaus Peter SedlbauerNobelstr. 12
70569 StuttgartProf. Dr. Philip Leistner
DirectorPhone +49 711 970-3346 | Fax -970-3433
philip.leistner@ibp.fraunhofer.de
www.ibp.fraunhofer.de

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Stuttgart, January 24, 2018

Letter of intent of the Fraunhofer Institute for Building Physics IBP for a cooperation with EcoMag GmbH within the project:**N.O.A.H.** (NewOecologicalAlternativeHeatstoringmaterial)

Sensible heat storages are the most widely used and also the most cost-effective type of heat storages. A high storage density can be reached with the highest possible specific heat capacity of the used heat storage material. Especially during the warm-up phase the heat storage elements can absorb a big amount of heat, for that reason the heat losses can be reduced significantly. Nowadays, the most common used heat storage material is chamotte (fireclay). However, the usage of chamotte (fireclay) and ceramic materials are linked with some disadvantages, for example its production process is a very energy-intensive process, because a heat-resistant fireclay brick needs to be produced with high process temperatures exceeding 1.250 °C. The high amount of energy required for the production process and the resulting high production costs as well as the negative environmental impact and the discharge of CO₂ through the production process are not negligible.

As part of a cooperation between EcoMag GmbH and Fraunhofer Institut for Building Physics IBP within a previous project the new heat storage material EcoMagHSM has been developed, optimized and successfully tested. The new material has been enhanced in order to get a general improvement, and so more energy- and cost-efficient heating and storage systems can be installed throughout Europe. The new heat storage

Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., München
VorstandProf. Dr.-Ing. habil. Prof. E. h. Dr.-Ing. E. h. mult. Dr. h. c. Dr. h. c. Reimund Neugebauer, Präsident
Prof. (Univ. Stellenbosch) Dr. rer. pol. Alfred Gossner
Prof. Dr. rer. publ. ass. iur. Alexander Kurz
Prof. Dr. rer. nat. Georg RosenfeldBankverbindung Deutsche Bank, München
Konto 752193300 BLZ 700 700 10
IBAN DE86 7007 0010 0752 1933 00
BIC (SWIFT-Code) DEUTDEMM
USt-IdNr. DE129515865
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material should meet the present ecological and social requirements which are at least 30 % more effective and 30 % lighter (less transport costs and suitable for redevelopments and renovations of old buildings) as well as at least 30 % more cost-effective to be produced than chamotte (fireclay).

Especially the Department of Combustion and Environmental Technology in the Fraunhofer Institute for Building Physics IBP which is dealing with the testing of fireplaces and chimneys as well as the application-oriented research in the field of combustion as well as the group thermal parameters and climate simulation in the laboratory and the building-product/construction-chemicals experts have the capability to determine nearly all relevant material parameters and are able to carry out further testings to improve the product. As a result of these aspects and of the many good experiences accumulated in the previous project, we are very well positioned for this project in the context of the further development of the new heat storage material.

Fraunhofer Institute for Building Physics IBP agrees to regulate the cooperation with the company EcoMag GmbH within the framework of a cooperation agreement. Furthermore, Fraunhofer Institute for Building Physics IBP agrees to support the company EcoMag GmbH in the advancement and marketing of the heat storage technology.

Yours sincerely,

Prof. Dr. Philip Leistner

Director




Dr.-Ing. Mohammad Aleysa