Microwaves as a Humidity Measurement Device for Casted Moulds

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Thesis is interested in accurately detect moisture inside of plaster moulds, that will be measured by microwaves apparatus. Part of the thesis is also construction and assembly of the stable apparatus, so that it is possible to monitor the effects of microwaves on a plaster sample, then evaluate the moisture content of the sample and compare it with the weight test. The actual moisture measurement will be performed in several ways, such as by measuring the reflection or attenuation of electromagnetic waves. The result of this thesis will be a graphical representation of moisture to measurable variables relationships, gained from the microwave apparatus.
Plaster moulds are quite known, but casting technology requires from plaster moulds not only dimensional accuracy after drying, but as well surface smoothness, resistance to cracking upon drying and sufficient strength and breathability, or minimal gas evolution during casting. The presence of water during the casting process is not very welcome phenomenon. It is therefore very important to set correctly dry form, otherwise it may happen that the moulds can be during casting destroyed, or cast alloy can create a casting bubble by the influence of moisture in the form. That means discarding of the products.

Keywords: microwaves, plaster mold, dielectric properties

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