

## Science and Engineering Research Program 2020 Project Proposal

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Internationales /  
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institute: Institute of Electrotechnology

project title: Pulsed Magnetic Field Application for  
Electromagnetic Stirring: Single-Phase  
vs Three-Phase

project description: The project will focus on the investiga-  
tion over the application of the pulsed  
magnetic field for electromagnetic stir-  
ring during the continuous casting.  
Pulsed magnetic field can significantly  
increase electromagnetic stirring in-  
side the molten metal along the con-  
tinuous casting lines, therefore its mo-  
tion, with a consequent heat and mass  
transport. Up to now, electromagnetic  
stirring can be realized through a sin-  
gle-phase electrical supply, either a  
polyphase one (higher than one  
phase): the project will focus on a joint  
simulative and experimental investiga-  
tion of the pulsed magnetic field appli-  
cation in the EM stirring, first for the  
single-phase then for the three-phase  
electrical power supply. First, simula-

tions will be carried out, starting with the realization of the time-dependent model. Simulations will be validated through practical experimental activities on the same setup and the efficiency of the two systems (single and three-phase) will be compared in terms of fluid's velocity.

required skills: Electrotechnics, FEM simulation

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Please return to Kristina Schmidt or Uta Knoche till 15th of November.