About CEA

The French Alternative Energies and Atomic Energy Commission (CEA) is a key player in research, development and innovation in four main areas: energy transition, digital transition, technology for the medicine of the future and defense and security. Based on historical competences developed on powder metallurgy for the French electronuclear industry, CEA is involved in projects dealing with shape forming of different kind of materials by means of advanced processing techniques, like Additive Manufacturing (AM). CEA has the possibility to develop all the process steps of magnet production at a pilot line, from the alloy and powder manufacturing to the magnet characterization that will be utilized in MultiMag.

Visit CEA's website and learn everything about them: www.cea.fr

Dr. Olivier Tosoni, Research Engineer at CEA

Why is the MultiMag project important?

The project will allow to pursue the development of 3D-printed magnetic alloys in CEA, especially hard magnets for which there are major bottlenecks. In the long run, this project will increase the expertise and visibility of CEA on AM of magnetic materials and on complex shaped magnets for light-weighting and thermal management issues of electrical machines. CEA is strengthening its position on the value chain of electric machines: innovative design and concepts (digitally optimized), innovative and more eco-responsible materials, efficient and valuable manufacturing processes.

Dr. Olivier Tosoni is a Research Engineer at CEA, and an expert in Magnetic Materials and Components.

What will be the role of your organization in the project?

The contribution of CEA in the MULTIMAG project will be the synthesis of hard magnetic NdFeB alloys and powders and their implementation in a laser bed fusion additive manufacturing process. Dr. Olivier Tosoni will lead the WP3 of this project (Development of magnetic multi-material interfaces). After a PhD on transparent electrodes for thin film solar cells, Dr. Olivier Tosoni has been working for 10 years in the field of magnetic materials and components in CEA. Together with TU Darmstadt and VTT, he contributed to develop a manufacturing process for 3D-printable NdFeB powders that were successfully used in the KIC EIT Raw Materials 3DREMAG project to obtain high coercivity laser-fused magnets (10.1016/j.addma.2023.103426).

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MultiMag