OpenAFPM: An open source software tool for modelling and designing axial flux permanent magnet generators in wind electric systems

The OpenAFPM modeling tools can be used for designing Axial Flux Permanent Magnet (AFPM) generators for wind electric systems with the use of the open source finite element analysis software ‘Finite Element Method Magnetics’ ([FEMM](http://www.femm.info/)). This series of design tools have been developed by the Rural Electrification Research Group ([RurERG](https://rurerg.net/)), which is part of the [Smart RUE](http://www.smartrue.gr/) (Smart grids Research Unit of the Electrical and Computer Engineering School) of the National Technical University of Athens (NTUA), in order to assist designers and practitioners involved with small scale wind electric systems.

The OpenAFPM tools series consists of three design tools named MagnAFPM, UserAFPM and OptiAFPM. The tool MagnAFPM can be used for designing a generator for a specific set of rotor blades and a specific set of permanent magnet dimensions. The tool UserAFPM can be used to validate the performance of a specific generator geometry by performing a finite element analysis using FEMM. The tool OptiAFPM uses the particle swarm optimization (PSO) to optimize the dimensions of the permanent magnets used in the generator design for a specific set of rotor blades, while minimizing the generator’s efficiency, cost and/or mass.

The creation of the online user interface of the OpenAFPM modeling tools has been supported by [WISIONS](http://wisions.net/) as part of the project ‘[Online Design Tools for Locally Manufactured Small Wind Turbines](https://rurerg.net/projects/nepal/palpa-region-mityal/)’.

Follow the link to visit the home page of the [OpenAFPM](https://rurerg.net/open-source-platform/software/openafpm/) tools and try them out!