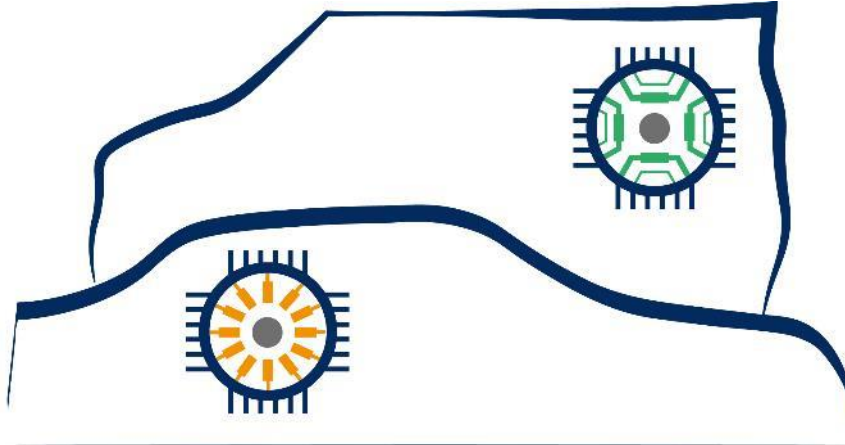




Rare Earth Free e-Drives Featuring Low Cost Manufacturing



ReFreeDrive

Collaborative Project

Grant Agreement Number 770143

Start date of the project: 1st October 2017, Duration: 36 months

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Work Package no.: 6
Title of the WP: Prototypes Manufacturing
Deliverable no.: 6.2
Title of the deliverable: Induction Machine with Fabricated Copper Rotor for 75kW of operation

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Lead contractor for this deliverable: TECNOMATIC
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Abbreviations

WP Work Package of the “Re Free Drive Project” Grant Agreement Number 770143

WP3 Work Package 3 for the design of the Induction Motor of the Re Free Drive Project

IM Induction Motor

1 Executive Summary

The present deliverable D6.1 provides an overview on the manufacturing activities of the Induction Machine (IM) for 75 kW power including a rotor made of fabricated bars and end-rings for the ReFreeDrive Project, based on the design accomplished within the Work Package 3 (WP3). The prototype of said Induction Machine is shown in Figure 1. Due to the decision taken in WP3, this Machine is identical to the Induction Machine for 200 kW power with fabricated bars and end-rings. Therefore, the corresponding deliverable, D6.6, is substantially equal to the present one.

Rotor and stator winding assemblies, manufactured and qualified according to the machine design specifications (reported in WP3 deliverable D3.4), are shown in sections 2 and 3. The last section concerns the machine assembly and functional testing steps.

The manufacturing goals were fulfilled with a large deviation in time that is in major part attributable to the stops of the productions activities, due to the Covid-19 pandemic. The time delay causes the postponement of the dynamic testing activities, related to WP7 deliverable D7.1.



Figure 1 ReFreeDrive Induction Machine complete assembly.

The main objective of WP6, task 6.2, is to manufacture an Induction Machine with continuous power target 75 kW, applying assembling and welding of rotor bars and end-rings for the rotor cage manufacturing. In particular, the main goals of deliverable D6.2 consisted in:

- Stator and rotor cores manufacturing by laser-cut
- Rotor cage manufacturing by assembling and welding copper bars and end-rings
- Stator winding manufacturing with hairpin winding
- Manufacturing of stator and rotor cooling system
- Manufacturing of a junction box from the hairpin winding leads to the inverter bus-bars
- Final assembly