Terreplane's Open-Sided Linear Motor Stator Prototyped

- PCT Examiner Confirms Patentability

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A linear induction motor stator (LIM/S) as compact as a 4-inch diameter tube (with an open slot along the side) is the chassis, guidance, and propulsion for Terreplane vehicles. Figure 1 illustrates repeating sections of this motor above a vehicle where the length of several end-to-end Open-Sided LIM/S sections is the same as the vehicle length. A breakthrough of Terreplane is the manner in which this simple Open-Sided LIM/S enables a transportation system that is both 1/5th the cost and faster than alternatives modes of transit.

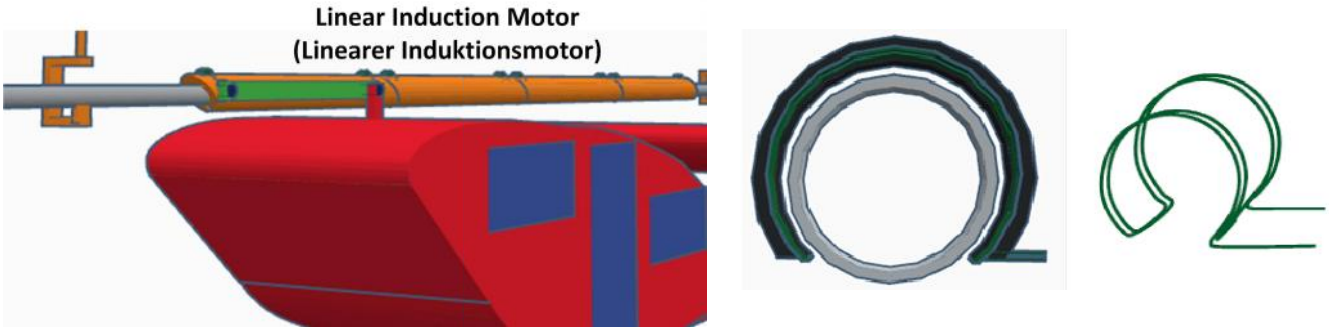

Figure 1. Illustration of open-sided linear induction motor stator (yellow) traveling along a zipline/cable/pipe (grey) attached to a vehicle (red) with a connection arm (green). Right image is of coil configuration in the Open-Sided LIM/S.

The Laboratories of Terreplane Technologies, LLC has initiated prototype production and testing of the LIM/S. Challenges of the complex geometries were overcome with a two-fold approach: a) an molding/casting method was developed where composite ferromagnetic cores are cast around the coils in molds and b) 3-D printing allowed generation of complex-geometry dies. Figure 2 compares three LIM/S models proto-typed in Terreplane's lab including a traditional flat LIM/S and an Open-Sided LIM/S in a cylindrical configuration.

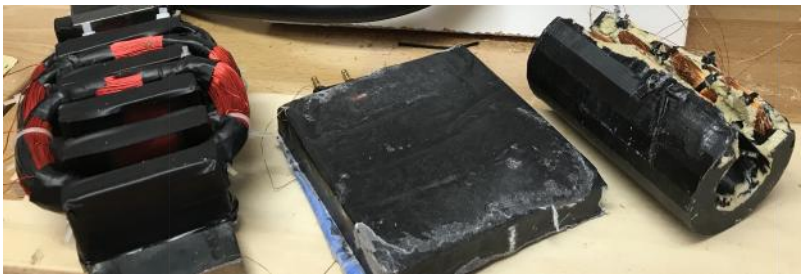

Figure 2. Three LIM stators fabricated in used in laboratory tests. Left is a traditional flat LIM stator, center is a cast version of the flat LIM stator (coils cast in ferromagnetic composite), and right is an Open-Sided LIM/S.

These prototyping capabilities bring forth multiple advances in the industry, including:

- A low-cost injection/cast method to produce complex stator sections for linear and rotary motors, alike;
- Lighter-weight stators--a 50%-75% reduction in weight; and
- Demonstration of the Open-Sided LIM/S.

Terreplane's second pending PCT application (PCT/US 17/61003)) on the Open-Sided LIM/S has undergone pre-examination, verifying that the Open-Sided coil configuration with its cylindrical core is novel, inventive, and industrially applicable. Broader claims on the coil configurations of the Open-Sided LIM/S are covered in Terreplane's now nationalized first PCT application (WO 2016/109490). A series of pre-PCT provisional applications cover the casting method used to produce the most-recent prototypes.

A next step in the Open-Sided LIM/S development is R&D on the optimal zipline/cable/pipe configurations that form the armature of the LIM.