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Project Title: Study and design of reference laboratory for development and evaluation of the drive with power of 250 kW

Department:	Technology Development Center of Electrical Motor	Employer:	Niroy Research Institute
Project/Program Manager:	Seyyede Mahnaz Ebrahimi	Executor:	Hassan Ebrahimi Raad
Project Financial Code:	127143	Project Quality Code:	PETPN07-5
Type of Project/Program:	Practical-Developmental	Assistant:	Technology

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Project Necessity: Since Variable Speed Drives (VSDs) have very extensive applications in different parts of industries in Iran, many local companies are producing or importing these equipment. According to the significant annual number of produced and imported VSDs and usage of these equipment in sensitive industries, it is necessary that they qualify respective international and national standards. In order to check these standards, establish a reference laboratory, which has the ability to execute respective tests in an integrated way and issuing a certificate for mentioned equipment, is very important. If a product doesn't qualify respective standards, it is possible that in addition to electricity consumption and inappropriate effects on the power grid, it cause irreparable financial damages or casualties.

Project Goals: The purpose of this project is performing necessary studies in order to establish a test laboratory for VSDs in Iran, in which reference tests for quality evaluation could be executed on these equipment. Also this laboratory has the authority to issue a certificate based on international standards for VSDs.

Abstract: VSDs have very extensive application in different industries and factories. Wherever an electric motor has been used, a VSD is required for driving it. VSDs, which are produced all over the world, need to qualify respective standards. If a VSD doesn't qualify related standards, it is possible that compromise life of the workers, the personnel which are standing near the system, the environment and the factory. Also in occurrence of unforeseen events like lightning or electrical discharges, it is possible to cause malfunctioning problems for the VSD itself. Another important point is that the radiated, conducted and harmonic limits of VSD, do not exceed. The goal of running this project is to avoid from such problems.

Steps and Methodologies: According to the aforementioned necessities and goals and since there is no reference laboratory in Iran which execute all of the test related to VSCs and issue a certificate for it, this project has been done. This project has four main parts. The first part comprises the survey of different standards related to the VSDs, and valid international laboratories which are active in this field. In the second part, the study of necessary

equipment required in the lab and introducing them has been done. The third part comprises a report about approximate number of imported VSDs from all around the world and produced VSDs in Iran. And the proposal of establishing the lab (dimensions, locating equipment and so on) and business plan of the lab has been provided in the fourth part.

Main Results (technical outputs, patents, papers, books, reports, etc.):

- A comprehensive report in PDF and Microsoft Word format
- A conference paper: Reza Khalilzadeh, Seyyedeh Mahnaz Ebrahimi, Hassan Ebrahimi Raad, “Standardization and executing VSDs quality control tests and its necessity” ,The first International Electric Motors and Generators ,February 2020 ,Sabzevar, Iran.