

## **Project Title: Compilation of technical knowledge for mechanical design, execution and testing of helical piles in 63 kV lattice towers**

<b>Department:</b>	Group of Electrical structures	<b>Employer:</b>	Niroo Research Institute
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### **Project Summary:**

In recent years, the use of helical piles to supply the foundation of various types of structures is increasing due to their unique features. In addition to compressive strength, helical piles have relatively significant tensile strength, which allows them to be used as a support for tensile members in transmission towers and other electrical structures. These piles have unique advantages over other types of deep foundations. Installation of these piles in problematic soils and below the water surface is easily applicable. The installation equipment of these piles has more maneuverability and ease of operation than other pile types. Today, the analysis of the bearing capacity of helical piles is still a complex issue and is under investigation. In this project, according to the mentioned advantages for using helical piles, indigenous knowledge of design, implementation and testing of these piles was created for one of the most common electrical transmission towers in Iran's electricity industry, i.e. 63 kV tower, by performing more technical analyzes and referring to relevant regulations, books and articles and executive experiences. In addition, by performing analytical studies, the design and implementation method and practical test of helical piles were presented. Moreover, analytical results were verified referring to experimental works.

### **Project Results:**

- **A complete literature review on the related technical documents.**
- **A unified analytical approaches to study the mechanical behavior of helical piles.**
- **A guideline for 3D numerical modeling of the helical piles.**
- **Design charts.**
- **A guideline for execution and testing the helical piles.**

### **Project Documentation:**

- **7 Technical Reports.**