**Abstract**

 **Presentation title: Behavior of AISI SAE 1045 steel at low temperature subjected to rotational bending fatigue**

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**Presentation type:** Oral presentation

**Abstract (250-300 words):**

The document presents the research carried out to analyze the behavior of AISI 1045 steel at low temperatures, subjected to fatigue stress due to rotary bending, taking into account the ASTM A36 standard. A Wholer type fatigue testing equipment was used, adapted with a cooling system and thermal insulation to maintain a controlled environment with specimen temperatures close to zero degrees Celsius, in order to establish the fatigue resistance limit stress of the steel. This material, 1045, was used due to its widespread use in industry. Methodologically, it was a quantitative experimental study which allowed determining relationships on the behavior of the material. Theoretically, the fatigue resistance of the material increases as the temperature decreases below 0ºC, therefore, the tests were carried out at temperatures between 0º and -5º Celsius and different loads of 17kg, 19kg, 21kg, 23kg were applied. The results obtained were not those expected, but they allowed us to find a behavioral relationship between the fatigue resistance and the low temperature of the material.

**Biography (150-200 words):**

Carlos Gerardo Cárdenas Arias, Mechanical engineer, specialist in university teaching, master's degree in education, with master's studies in materials engineering and doctoral candidate in materials engineering and sustainable processes.

Associate Professor with a special contract Full Time for 11 months at the Technological Units of Santander, in the Electromechanical Engineering program, in the area of mechanics, accompanying courses such as Statics, Resistance of materials, Mechanical processes and Design of machine elements.

Studies have been developed on the effect of corrosion on the transport of electrical energy and the mechanical properties of steels.