

# **Application of Kernel-SVM and Multi Sensor Data to Soundness Evaluation of Wire Ropes**

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As soundness evaluation of the wire rope is performed damage identification by magnetic flux leakage testing method using a magnetic sensor. Since the wire rope is successively constitute the steel wire, the magnetic flux leakage if damage is small that occurs between the strands constituting the wire rope, the identification of damage's magnetic flux leakage has become difficult. Breakage as the main damage factor of the wire rope. The breakage there is the external breakage in wire rope surface and the internal breakage in core side. However, it is difficult to determine the difference between internal and external breakage in the current test method to be performed only by the magnetic sensor. In this study, instead of a magnetic sensor single performs damage discrimination external and internal wire breakage due multi sensing that combines optical sensor. Moreover, discovering regularities from a single species of time-series data used in the abnormality detection technique, it is difficult to perform the identification of discrimination and deterioration degree of the damage factor of the wire rope is a technique for performing fault detection and prediction. In this study focused on correlation of time series data obtained from the plurality of kinds of sensors, the continuous wavelet transform(CWT) and principal component analysis(PCA) from the detected values at the wire rope flaw detector according to experiments using a multi sensor the feature amount extracted, by performing classification by kernel support vector machine(K-SVM), and consider the possibility of an abnormally detection technology and soundness evaluation method of the wire rope.