

Title: Development of new methodology by models and systems to micro- and nanoscale supported in high-precise functional replication of the clone instrumentation of MEMS and NEMS

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Abstract

This work shows a technology of artificial cloning for industrial sensors by means of the use of neural networks and genetic mapping. The neural networks allow develop to the intelligent structure of the micro- nanosensors, for it, the method of activation of random values is used to train the sensors and to carry out the learning starting from real devices, the genetic mapping allows the generation of codes for the cloning procedure, for it the mutation processes, crossing, reproduction and investment are used also, an example of a cloned sensor that determines the index of viscosity of lubricant oils with fenol for a monitoring system is briefly explained. The method include the application and interpretation of the genetic mapping that it contains; the codes of the functional structure of the sensor, the mapping is a group of bars of codes that describe the functional operative units of the micro- nanosensors, each operative unit is formed by unitary elements that represent a part of the operation of the sensors such as desviation of the angle of incidence, variation of the intensity of the sheaf of light, etc. A code is a series of digits that represent a part of the operation of the micro- nanosensors where each digit represents a position inside the functional structure the cloned by functional replication the utilities are criteria likeness that apply measured a dimensional and they include parametrical characteristics of the real devices to clone that allow a micro- nanosensors to reach a cloned version.

Biography

Doctorate from the University of Mines of St. Petersburg. Doctor in Control and Industrial Automation. Electronic Control and Industrial Automation Control and Automation of the Process and Instrumentation of Continuous Industrial Flows University of Steel and Alloys of Moscow. Metallurgical Engineer-Automation. He has published more than 37 papers in reputed journals and has been serving as an editorial board member of repute.

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