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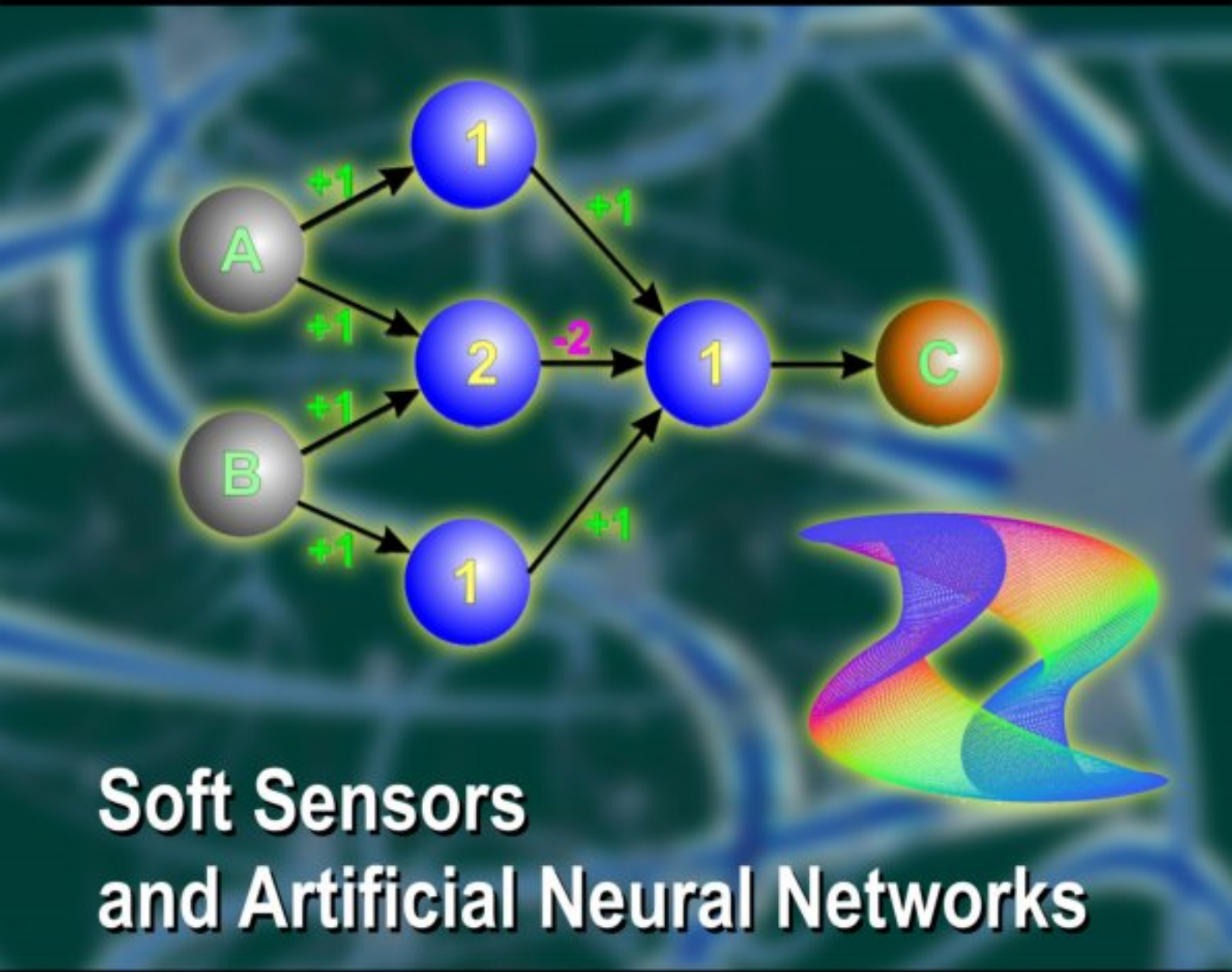

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General Editor: professor Nikolay V. Kirianaki, phone: +380 322 762971, e-mail: ifsa@sensorsportal.com
Ediror-in-Chief: professor Sergey Y. Yurish, phone: +34 696067716, e-mail: editor@sensorsportal.com

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Letter to Editor

Thermocouples vs. RTDs and Thermistors

Jerry Gaffney, Chief Engineer

GEC Instruments, 5530 N. W. 97th Street
Gainesville, FL 32653, USA
Tel.: 352-373-7955, e-mail: jerry@gecinstruments.com
http://www.gecinstruments.com

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I read an article in a link from Sensors Web Portal that thermocouples typically are less accurate and stable than RTDs and thermistors [1]. End-users who wish to achieve greater accuracy and stability in their temperature measurements can either switch to a different type of contact sensor, such as an RTD or thermistor, or can go to a different technology altogether such as infrared or fiber optic. The above is attributed to *The Market for Temperature Sensors in the Americas*, 2nd Edition, researched and published by Flow Research.

I agree that many thermocouples are less accurate and less stable than RTD's or thermistors. But I just wanted to let you know that here at GEC Instruments we have developed thermocouple instrumentation that can measure to an accuracy and repeatability of 0.04°C or better over moderate temperature ranges. See test data in Figure 1. And we have tests that show that measurements with our thermocouple instruments drifted at the ice point by only 0.02°C after two years of use between 0 and 50°C.

And thermocouples have other advantages, including the capability of very small sensor size, fast response and the capability for point measurements. We are currently building a 56-channel type T thermocouple instrument for an application where a major Aerospace company will be measuring refrigerant temperatures with very high accuracy at multiple locations inside a thin wall heat exchanger. Neither thermistors, RTD's nor non-contact sensors were suitable for this application.

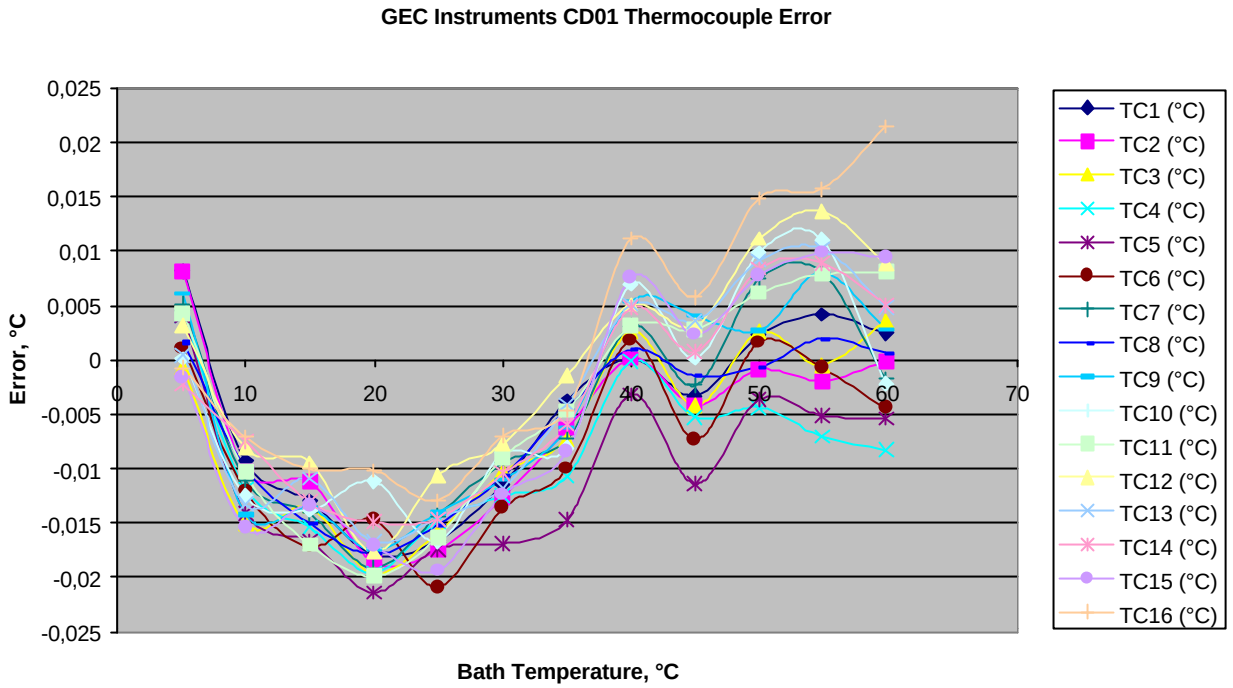

Fig. 1. Thermocouple error. Data from GEC Instruments Model S18TC12RH, Serial CD01, tested 6/20/05 TC1 - TC16 are 24 gage Type T SLE thermocouples with 2 point calibration at 5°C and 40°C.

References

[1]. Jesse Yoder, Flow Research Study Finds Shift to Non-Contact Temperature *Sensors, Sensors & Transducers Magazine (e-Digest)*, Vol. 71, Issue No.9, 2006 http://www.sensorsportal.com/HTML/DIGEST/september_06/Temperature_sensors.htm