

THE CIRCUIT

VOLUME 15, ISSUE 1
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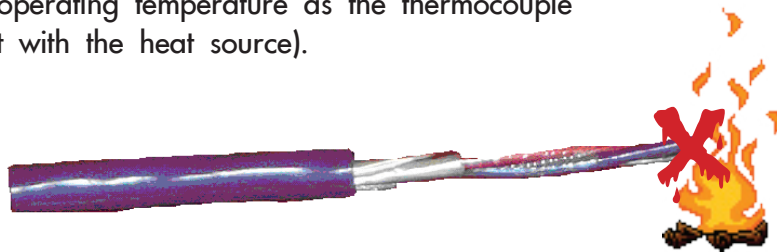


A WARM WELCOME TO JOSÉE LABELLE

Josée is our new inside sales representative in the Eastern Region Sales Office and is the new voice you hear on the phone. Next time you call Ken, say Hi to Josée!

TAKING THE MYSTERY OUT OF THERMOCOUPLE CABLES

Shrouded in "mystery", thermocouple cables can seem very alien. However, these cables are very similar in design to conventional instrumentation cables. Two dissimilar alloys allow them to function properly. These alloys come in two main types: 1) Thermocouple grade and 2) Extension grade. Grade conductors are used for the thermocouple itself, and are accurate over the entire range of temperatures that the thermocouple is designed to operate in. Extension grade conductors are used to connect the thermocouple conductors to the instrumentation that monitors the temperatures of the thermocouple. Extension wires are less expensive as they aren't exposed to the same extremes in operating temperature as the thermocouple (i.e. they aren't in contact with the heat source).



The alloys used in extension wires are typically accurate over a much more limited range of temperatures than the thermocouple that it connects to. Also, conventional insulations such as XLPE and PVC may be used in extension cables whereas thermocouple wires are typically insulated with much more expensive materials like Teflon, silicone and glass braids. (See page 2 for the final installment on Thermocouple cables.)

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THERMOCOUPLE 101

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To differentiate the cable an "X" suffix is used after the thermocouple letter designation to indicate that the cable is comprised of extension grade conductors (i.e. JX). Extension grade cables are available with stranded or solid conductor alloys. Solid alloys are the most common and easiest to obtain. Stranded alloys are not common and long minimums and longer lead times normally apply. A third less common type of extension conductor is available for connecting to thermocouples, and is comprised of different alloys altogether. The cables that employ these conductors, called "compensating cables" ("C" suffix) have similar electrothermic properties as the thermocouple, but over a much more limited operating range. These alloys are typically used with Types S, B and R thermocouples where the use of very expensive platinum alloys makes them economically attractive. Compensating cables are also available for use with Type K thermocouples and may be an attractive option to conventional extension cables (ask you ShawFlex Sales Manager for details!).



"There. Now it's halftime. What do you say we all go to the table and have a nice, quiet Thanksgiving dinner."

THERMOCOUPLE SELECTION

J (copper vs copper-nickel alloy)

- Versatile, robust and low cost
- Least accurate

K (nickel-chromium alloy vs nickel-aluminum alloy)

- Operates at relatively high temperatures
- Fit for nuclear environments (neutron irradiation)
- Not suitable for reducing atmospheres or in vacuum

T (Copper vs copper-nickel alloy)

- Low temperature operation
- Highly corrosion resistant

E (nickel-chromium alloy vs copper-nickel alloy)

- Excellent low temperature operation
- Highest Seebeck coefficient
- Not for reducing atmospheres or use in vacuum

N (nickel-chromium-silicon alloy vs nickel-silicon-magnesium alloy)

- High resistant to oxidation
- Satisfies most applications

S, R and B (platinum-rhodium alloy vs platinum)

- Very high temperature operation
- Expensive

THE BEST SAYING WE HAVE HEARD!



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NEWS FROM ACROSS THE COUNTRY

WESTERN DROPPINGS

Results released by Nickles show that in the past three months drilling is down in Canada and if it does not pick up in the last quarter the rates will not pass 2003's numbers as everyone originally thought. Wet weather in the west has certainly affected this number but Eastern Canada's onshore drilling has fallen 55% from last year at this time. A close eye will be kept on the last quarter to see if this picks up.

"Green Power" projects are raising their head all across Western Canada, mostly in the form of wind power projects. There is a wind power project operating or being built in each of the western provinces. Next time you are travelling keep you eye out for one.

EASTERN TIDBITS

There be projects on the horizon!!!

Two large projects are being developed. The first is the Rabaska LNG (liquefied natural gas) plant which has been talked about for some time by Gaz Metropolitan. The second project is a joint effort by TransCanada and Petro Canada for the development of the Cacouna LNG plant. Both projects are in the lower St-Lawrence region. Quebec consumes about 200 billion square metres of gas per year. The majority of the gas comes from Alberta, however, these projects will provide access to alternate producers from the Caribbean, Africa and others, including Russia.

MENSA BRAIN TEASER VOLUME 14

What was Woody Woodpecker's hometown?

Answer: Puddleburg

Correct answers were received from John Vescio, James Clark, Vince Antilope and Mike Singerman - Anixter, Toronto; Bryce Bell - Westburne, Edmonton; Greg Menzies - Noramco, Burnaby

NEW CHALLENGE



Which of the triangles A to F works with the series in the top row?