

# Time to take control

## Philip Thwaites sheds light on importance of automation in process control

By Alex Lopez Pacheco

Philip Thwaites began his career as an engineer in mineral technology after graduating from Imperial College London's Royal School of Mines in 1980. He has since worked at the Kidd Creek metallurgical site and the Nikkelverk Norwegian Ni Refinery and is currently manager of the process control group at the Xstrata Process Support Centre, where he also leads a process Engineer in Training program for Xstrata Canada. In his presentation, "Manual control, process automation – or operational performance excellence? What is the difference?" he focuses on the important role automated process controls play in improving efficiencies.



Nowadays industrial power costs are more than double, so any strategy to control power and to shift production to lower-rate periods can be extremely beneficial. Unfortunately, this is rarely taken into consideration in a new plant design.

### **CIM: How widely in place is effective use of automation in process controls at mining operations?**

**Thwaites:** Seventy-five per cent of all industry assets are under process control, yet more than 60 per cent of process control loops are underperforming because either they were not set up properly or are not being properly maintained.

Control engineers go in and identify problems with control loops. We see many examples of improperly set up control loops, which I talk about in my presentation. I use one example of a flotation level controller in which retuning – and use of the correct integral value – illustrates the benefit of tighter control and bias elimination. A bias means the operator has to memorize that the target set point is not offset on this controller.

When this is done, we can move to more advanced control – where we push to the limits of the process, or minimize consumables, power, chemicals, steel, and so on, thus affecting the business parameters to become more profitable.

### **CIM: Why is automation in process controls such an important issue for the industry?**

**Thwaites:** Every owner wants to be as efficient as possible so that they get the best bottom line, the highest grade or recoveries and the maximum returns. In essence, this is what can be achieved through effective use of automation and process controls. If you don't have the highest minerals recovery possible, those are losses every day. If you make your final concentrates consuming too much energy, those are energy losses; if you use too many chemicals, those are chemical losses that affect the bottom line.

### **CIM: Can you explain how automation and process controls can help improve efficiencies?**

**Thwaites:** As a controls engineer, I don't see a pump as just a pump. I see where it is operating on its operating curve and how it is operating as part of the whole system. Taking all of these things into consideration can tell me if the pump is operating efficiently.

Through better process control we can tighten up temperatures, flows, pressures, chemical additions, power usage and so on. If processes are tight and automated, they are more efficient and easier to operate.

### **CIM: What is the return on investment?**

**Thwaites:** The cost is minimal, but the return on investment is massive. At the former Kidd Creek metallurgical site, we took advantage of Ontario Hydro's time-of-day and seasonal rates by programming them into the computer to automate the power control for the whole metallurgical site. In five years, with no loss of production, we saved \$17.6 million. We chose to control the entire site's power load on a minute-by-minute basis and to shift as much production as we could to cheaper, off-peak hours.

### **CIM: What do you think it will take for the industry to truly embrace best practices in this area?**

**Thwaites:** The industry does very well in terms of sharing experiences. CIM's events are a prime example and are incredibly important. The research groups and universities are very much on the sidelines, but they are important because they have to understand what industry requires. We need educated control engineers. The suppliers of the control system and the operations team are also crucial.

Teamwork is essential both at a plant and at an industry level. Within the plant, we need management to support the project. For the industry, it's going to take teamwork involving universities, suppliers of the control systems and instrumentation, as well as those out in the field. 

**TO BOOK A DISTINGUISHED LECTURER** visit [www.cim.org](http://www.cim.org), call (514) 939-2710, or email [dist\\_lecturer@cim.org](mailto:dist_lecturer@cim.org).

**POUR DEMANDER UN CONFÉRENCIER**, visitez [www.cim.org](http://www.cim.org), téléphonez au (514) 939-2710, ou envoyez un courriel à [dist\\_lecturer@cim.org](mailto:dist_lecturer@cim.org).