

Speech made at Louis Michaud's Retirement

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When I joined Imperial Oil in August of 1988 Louis was named as my mentor. So, I met him on my first day at work, and it is hard for me to imagine Imperial Oil without Louis.

Louis has had a long and successful career in two disciplines: Instrumentation and Electrical Engineering and Process Control Applications. I would like to speak particularly to the process control applications since that is his work that I know best.

Louis is a remarkable applications engineer. He had a quote of Albert Einstein's on his whiteboard that he works by: "A solution should be as simple as possible, but no simpler". That clarity of vision has informed his entire work as an applications engineer.

Louis has also never felt bound by the constraints that many of us put on our own thinking. If ever there was someone who could "think outside the box" (besides Ernie Vilcsak) it is Louis Michaud. That ability often produced control solutions that no one else could have designed.

Louis always strived to understand the underlying process as deeply as he could, build process control applications that work with the process, and create an operator interface that make the applications easy to understand and to use.

His fundamental strength in thermodynamics has formed the basis of a deep understanding of the GCIS (ethylene plant) with its web of interconnections through the propane and ethylene refrigeration machines. However, Louis' first big applications project was the F-606 gas cracker furnace project where he did both the instrumentation and electrical work and the process control applications. So he also had an understanding of the hot end of the unit.

After the 1988 turn around, with the newly debottlenecked unit everyone was so intent on pushing rates, that the demethanizer and splitter towers were each flooded in their turn -- not a desirable situation. It was in response to this that Louis wrote the first major unit throughput control program. It controlled the LER (Light End Recovery) feed rate by manipulating furnace firing, subject to constraints on the eight compressors. This application showed Louis' hallmark of building in the required complexity, while keeping the solution as simple as possible, making an application that worked with the process, and provided displays that allowed the operators to work easily with the program.

Louis has had other notable successes in implementing simple clear controls. His HOIS (Higher Olefins) feed control program combines a simple level controller with an analytical solution for the simultaneous nonlinear equations that describe the concentrations. The application provides stable and responsive control.

My personal favourite of Louis' successes is his invention of the periodic reset controller. He developed it first to stabilize the overhead concentration control of the ethylene splitter tower, a process with very slow integrating dynamics. It has since seen application on many other processes with long slow dynamics, especially level control loops. It is still not well understood or accepted in the rest of the world, but is used in Sarnia whenever the process demands it. Periodic reset is an original, simple and elegant solution to an otherwise difficult problem!

Louis' experience controlling the GCIS throughput, its furnaces, and its light ends towers, left him perfectly placed to implement the GCIS LER DMC (Dynamics Matrix multi-variable model based control) program. The DMC which he implemented at the GCIS is the highest service factor application of its kind in the ExxonMobil Chemical Olefins world. The operator and engineering interface that Louis has created to clarify the relationships within the large complex controller, and to show with clarity the active constraints is seen as an example for the rest of the ExxonMobil world.

Seen as a whole, Louis' career in process control applications at Imperial Oil has been consistently ground breaking. Louis has solved a huge number of very important control problems using the simplest possible solutions.

I have enjoyed working with Louis and have truly valued having him as a colleague. I will miss seeing him at work. I think that everyone who works with Louis appreciates both his originality and the sense of joy and adventure that permeates his approach to every problem.

I would like to wish Louis success in his new endeavours beyond Imperial Oil, and wish Louis and Suzanne well as they enter the next phase of their lives together.