
MERGING IT AND OT: DRIVING OPERATIONAL EXCELLENCE AT THE HEARTLAND PETROCHEMICAL COMPLEX

An interview with Brendan Curley

Director, Heartland Chemical Project Operational Readiness, Inter Pipeline





Brendan, can you tell us about your professional background leading up to and including your current role as Director, Heartland Chemical Project Operational Readiness at Inter Pipeline?

I am an industrial engineer out of the University of Regina, so was trained with a lean background. I spent the large majority of my career with Shell at the Scotford complex in Fort Saskatchewan where Shell operates an upgrading complex, a refinery, and a chemicals facility.

When I started with Shell, I started in IT and from there I went into some pretty light process control work. My IT skills came in handy again when I became a process control network engineer and process control security expert. I was in this role at “the dawn” of process control security where people were thinking about the potential of connecting networks. Process control and automation were becoming more Windows-based versus Unix and Linux based, so system connections were then leading to worries about what could happen if people hacked in or we were hit with viruses.

From there, I took a sideways step and went into a more business role where I was deploying work processes on a broad scale as part of Work Process Management in Shell, part of their global framework that was being deployed.

Then a role came up which was the Manufacturing Excellence Manager for the Scotford Manufacturing Shell site. This was a site leadership team role where I would manage the people that were doing a lot of the work that I had been doing, so benchmarking, work process, causal learning, lean and continuous improvement methods that we were deploying at the time.

I did that role for a few years and then became the Maintenance Manager for the site, which was Refining and Chemicals sites. I then transitioned from that into an Asset Manager for the Chemicals Unit where I had the responsibility to run operations but also more broadly run a business in partnership with my commercial friends in Houston.

Those were great experiences and all site-based. In 2019 I then took a role as the advisor to the Executive Vice President of downstream where I was traveling a lot. It was a great role with a lot of learning.

Robin Mooldijk is the Executive Vice President with Shell and he is an extremely intelligent leader and someone that I was fortunate enough to learn from. Although for a short time, it was an awesome experience to see all the other sites that a Company like Shell has to offer and the various challenges, so opportunities that they have.

Inter Pipeline came along with a job offer, that for me that was hard to refuse. It had a

connection with me at my core. It's really about building Alberta and building Canada.

Now, I am the Director of Operational Readiness at Inter Pipeline working on the HPC facility being constructed in Strathcona County, Alberta. It will be the first Integrated PDH/PP facility in North America, also the first PDH facility in all of Canada. It's a unique opportunity to help diversify Canada's economy and energy industry.

Can you tell us more about the Heartland Chemicals Project?

The Heartland Petrochemical Complex (HPC), is a facility that is being built just north of Fort Saskatchewan. The facility takes propane and turns it into polymer grade propylene can then be made into polypropylene pellets. This is the first project of its kind in Canada. It's a large facility, designed to produce 525,000 kilotonnes per year ~ of polypropylene pellets being produced per day.

It's being built in a manner to minimize its energy footprint and monetize a product that is otherwise in Alberta is stranded.

Polypropylene plastic is unique in that it's got a very high melting point, so it doesn't leach easily and it is recyclable. It's a multiuse plastic; it's used in cars, it's used in the medical industry as well as in many other applications.

When you see the recycle symbol with the number five in it, that's a polypropylene plastic. We will make that raw grade plastic in pellets; we send it off to producers who turn it into these end products. The customers exist in North America as well as abroad.

At this year's Operational Excellence in Energy Chemicals and Resources Summit you are going to discuss the merging of IT and OT technologies as you prepare the plant for operations. Can you elaborate on this?

We are amid a significant IT build-up in terms of having the right systems and the right data. How do we have data in the right place at

the right time for our people to use it and be as efficient as we can be?

It's been eye-opening because when you are working in an existing facility: it's always been organic growth. The systems exist and you are always slowly changing them and understanding how to connect them and working through those needs and requirements.

Now that we are building a new facility, this 'fresh start' really makes you think about what is possible. When you're building the systems from scratch you can go to a "data lake" thought and think how you can connect an asset tag to your historian, to an operator log, to a MOC system, to a maintenance system, and have that information all be available immediately, it's, frankly, mind-blowing what the potential of that is.

It's about enabling the plant for operation and then enabling your workers to be the best they can be at any given time and giving all the information that you can for any given circumstance or system that may be required to run the facilities.

So it made me rethink my history in terms of what's important. In my history, when you talk about digitalisation and trying to automate, and make information more available, a lot of it's about connecting existing systems.

We talk about connecting API interfaces and connecting these data sets and building the cross-platform connections, if you talk about the database back ends, that a lot of these exist in, and trying to quasi-build this "data lake".

The eye-opening thing for me here, is that actually, I think there is a big question for companies that should arise, do I abandon the existing software systems and data?

How much do I want to use Microsoft Power Apps and flatten out my database system or the reference indicators? And the way to draw our systems together might be a lot more flat and with a lot more ability to connect data quickly.

The low-code, no-code application sets are starting, where the people that run the business can start to build programmes that help them deliver what they need. And when you combine that with connectivity of data, the possibilities are endless.

And so it's this continual rapid expansion of technology and it's super-exciting and it is just a bit of a mind-bender to try and get your head around.

I think that you do it by working with the right people and connecting these business people that potentially can build these applications, even for themselves or with some small help from IT, and move forward.

Beyond that, you have companies out there that are providing these services. So if you don't have it in-house, there are companies that exist out there that are building these low-code, no-code type software suites that exist on these generic platforms.

In my presentation at the upcoming Calgary Operational Excellence Summit what I'm looking to build in is some of the visuals of some of what these software suites look like that are available out there that you can just Google and find and see.

It is about the operator being out there with an iPad, being able to have it tie on his iPad, understand what the operation is doing in the field on start-up and shut-down and have the world at his finger tips – for example.

What are you doing to build a strong foundation of work processes, the discipline and assurance on which to expand your digital capability?

For Inter Pipeline first and foremost, building a management system that meets the needs of a petrochemical complex is something new for the Company.

So that has been item number one, to lay out a framework that is appropriate for

what we are doing. We have been building the work processes behind that, because those work processes and that business definition of what the needs are, actually is what drive your digitalisation capability and your structures to be what you need them to be to deliver for that business.

How are you approaching the massive amount of data that comes with a project like this and how do you know which data is worth analysing?

When we looked at the data requirements for the project, we had a member of our team really looking at a strategy around what data we need, how we bring it in and how it needs to connect.

It's about having that strategy in place and understanding how you implement that strategy. We have also brought in external consultants for their view to help us understand what others have done, because you are going to have blind spots with things like this, especially in the digital world where things move so fast, so finding some folks that have seen how others have done it is helpful.

What have you learned along the way and what would you change if you had to do it again?

It's a big change for the Company and so I think the preparedness and readiness is really important and you'd always want to be more prepared. I think that's a little bit the nature of all big projects, I think most big projects you look at, they always feel like they're not quite as far



along the readiness path as they want to be.

That's part of the fun of it too, the pressure of trying to get there and be in the best position you can be in. I think for me it's just a really exciting project for Alberta and Canada.

What are the next steps for you as you ready the plant for operation?

We're still hiring our operators and bringing them on board, getting them to work on the procedures, preparing for commissioning.

On the digital front we're still getting IT systems set up. By the end of this year we will be commissioning parts of the facility, so we are

preparing for that.

In late 2021 we'll be preparing to start up the facility as a whole, so HPC will be finished, our utilities section will be finished, and we'll be producing polypropylene pellets at the back end of the facility.

On the construction side, I'm proud to say that our safety record is world class right now, a big credit to our project and construction leadership and workers. It is one of the most successful construction projects that I've seen in terms of safety, which is a good indicator of how good the culture is at Inter Pipeline and has been on this project.

