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IGNITE

Scovan

FACILITY OF THE FUTURE: Canada's Next Energy Advantage May Already Be Taking Shape in Ponoka

FROM PROJECTS TO SYSTEMS: Rethinking the Economics of CCUS

NATURE AS A SYSTEM INPUT: The Integration Energy Leaders are Missing

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FOREWORD

BY KEVIN FERGUSON, MAYOR OF PONOKA

A MESSAGE FROM THE MAYOR OF PONOKA

As the Mayor of Ponoka, I want to express how pleased our community is that companies like Scovan choose to locate their operational facilities here in the Town of Ponoka.

Centrally located just off Highway 2, Ponoka is home to Scovan's 53-acre fabrication site in our Froman Industrial Park. Known for its innovative HipVap and PadX technologies, Scovan is one of Ponoka's largest employers and has called our community home for decades.

SKILLED WORKFORCE

I think it's important to consider why companies like Scovan choose Ponoka over other locations to invest in their operations.

For Scovan and many others, a readily available and experienced, skilled workforce – including pipe fitters, welders, electricians, insulators and general labourers – is a vital reason why they choose to do business in Ponoka.

And our central Alberta location makes it easier to attract skilled workers from surrounding communities during heavy demand periods. On average, Scovan employs about 120 people in Ponoka, flexing up to 240 when needed.

Many of the welders who comprise Scovan's fabrication team have worked together at the Ponoka site for more than 20 years – originally for Gemini Corporation and Gemini Fabrication. Scovan purchased Gemini in 2020 and amalgamated it under the Scovan name in 2022.

HIGH LOAD CORRIDOR

Ponoka's easy access to Alberta's high load corridor is another critical reason why Scovan chooses to operate here. The ease of trucking finished product from our Froman Industrial Park to major oil and gas customers in northern Alberta is a valuable advantage.

CENTRAL LOCATION

A few other reasons why many employers like Scovan choose Ponoka are:

- Our central location on Highway 2 less than an hour to the Edmonton International Airport;
- Rail access; and
- A local airport that offers CANPASS privileges. CANPASS is a Canada Border Services Agency program that lets pre-approved international travelers clear customs right here in Ponoka. It basically provides quick local access to international travel.

WHY PONOKA

It's not surprising that half of Scovan's workforce chooses to live in Ponoka. Our community is an affordable place to live and do business with a relaxed lifestyle and an abundance of amenities. You can build or buy a commercial property or a home in Ponoka for less than in the city.

Ponoka is also a health care hub with a general hospital, medical clinic and the world-renowned Centennial Centre for Mental Health and Brain Injury, which draws a large number of health care professionals to Ponoka and is a source for many local jobs.

INCENTIVE PROGRAMS

Businesses and residents who move to Ponoka can also qualify for valuable incentive programs including:

- Commercial New Build Incentive – for businesses that build a new commercial property. It offers municipal property tax breaks of 75 per cent in year one; 50 per cent in year two; and 25 per cent in year three.
- New Business Grant – for businesses that open their doors in Ponoka for the first time. It offers a one-time grant of up to $1000.
- Residential New Build Incentive – for new or existing residents who build or buy a newly-built home. It offers the same municipal property tax breaks as the Commercial New Build Incentive.
- New Resident Incentive – for new residents who buy and move into a home (new or previously lived in) in Ponoka. It offers a free, one-year family recreation pass to the Ponoka Aquaplex and Ponoka Arena Complex.

Our community looks forward to Scovan's continued long-term success in Ponoka as we grow and thrive together.

Kevin Ferguson,
Mayor, Town of Ponoka

HONOURING THE LAND AND ITS PEOPLE

In the spirit of respect, reciprocity, and truth, we honour the traditional Treaty 7 and Treaty 6 territories where the Scovan community lives and works.

Treaty 7 is the traditional and ancestral territory of the Blackfoot Confederacy – Kainai, Piikani, and Siksika – as well as the Tsuut'ina Nation and the Stoney Nakoda First Nation. Treaty 6 is the traditional and ancestral territory of the Cree, Dene, Blackfoot, Saulteaux, and Nakota Sioux peoples.

We also recognize that these lands are home to the Métis Nation of Alberta, Regions 2, 3, and 4, within the historic Northwest Métis homeland. We honour all peoples – Indigenous and non-Indigenous – who live, work, and gather on this land, and who continue to respect, celebrate, and care for this territory.

As Scovan advances our ESG plan, we renew our commitment to building sustainable and respectful relationships with Indigenous communities wherever we operate.

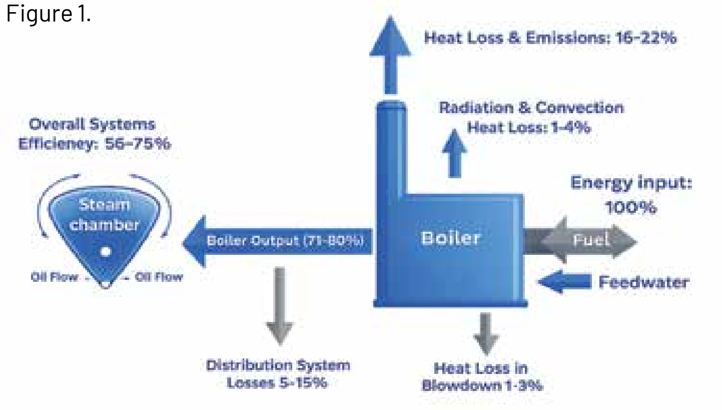
ADVANCING THERMAL PROJECTS THROUGH SYSTEM LEVEL OPTIMIZATION

BY: AARTHIE FERNANDO, TECHNICAL SALES REPRESENTATIVE, INTREPID GROUP LTD.

In-situ thermal production is expected to remain the dominant extraction method over the next two decades, even as solvent and hybrid technologies are adopted. Most of that growth will come from expansions and drilling infill wells. That puts pressure on operators to get more from each asset while meeting tighter energy and emissions targets. This next phase of development requires shifting to a system level operating model.

Thermal efficiency at facilities can be as low as 60%, with losses occurring across surface distribution, steam generation, and downhole delivery (Figure 1). These inefficiencies are not isolated but interconnected. Whether WLS + OTSG or Evaporation and Drum boiler process, or a more future-focused steam technology such as Scovan's HipVap, moving water through pre-treatment, converting to steam and finally to disposal has inefficiencies. Closing efficiency gaps provides material opportunity to simultaneously reduce operating costs, energy intensity, and emissions.

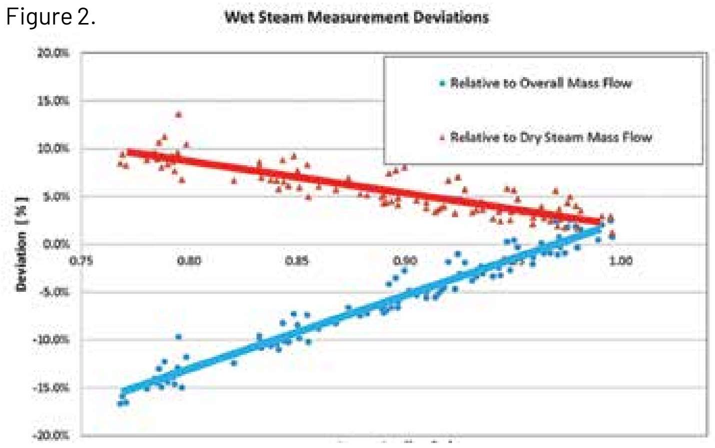
Figure 1.



The primary metric linking subsurface performance with surface facilities remains the Steam-Oil-Ratio (SOR). Sustained reductions in SOR unlock potential and lift project economics, but achieving this requires integration between reservoir management, steam delivery, and measurement systems. Precise control of steam injection with careful balance of production to manage subcool and wellbore integrity. In this context, measurement accuracy of high-pressure steam is not a standalone instrument issue, but a system component that directly impacts reservoir performance and energy consumption. These challenges grow as pad development pushes several kilometers away from the central facility.

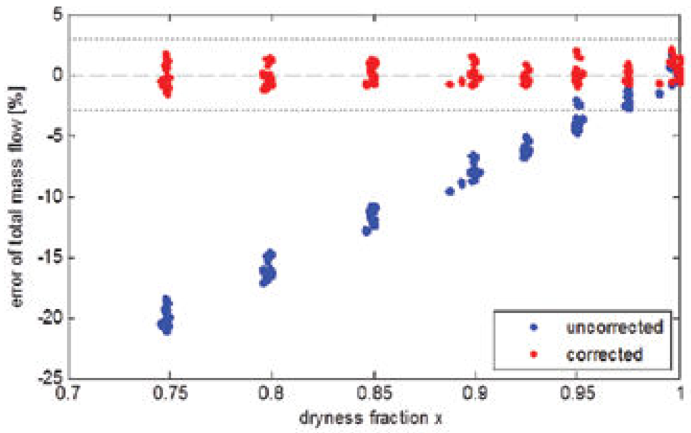
Conventional orifice plates and flow nozzles are wildly inaccurate with liquid hold-up. In more challenging low-flow or multiphase flow, where wet steam is in stratified flow with steam condensate, vortex meters also suffer. Field observations indicate measurement deviations of up to 15% at steam quality of 85% (Figure 2). Vortex meters over-read the gas phase of the line while under-reading the overall mass flow injected. For a 33,000 bpd facility, this represents potentially 12,000 bpd of misallocated steam, translating into larger cumulative field SOR. The innovation of dryness fraction measurement and mass flow compensation in advanced vortex meters significantly reduces error in compensated steam flow output (Figure 3). On the field side, physical audits of the distribution system help identify where to add steam traps, catch leaks, recover condensate, and upgrade insulation. Together, these steps reduce system losses from the system.

Figure 2.



At the central facility, boiler optimization is a good example of how integration pays off. When chemistry, combustion, and controls work together, you can get quick step-change improvements. Real-time monitoring of feedwater quality, oxygen trim systems, and tuning blowdowns (Figure 3) are some examples. Real-time monitoring of key water chemistry parameters such as pH, conductivity, and hardness enables dynamic adjustment of treatment processes, reducing chemical consumption and mitigating scaling risks. Modern liquid analysis instrumentation with advanced digital diagnostics enhances measurement confidence and provides reliable inputs for both operator decision-making and emerging AI-driven control systems. In parallel, oxygen trim systems allow tighter control of air-fuel ratios with zirconium oxide sensors, improving combustion efficiency and reducing fuel consumption. Enhanced water treatment practices can reduce baseline blowdown rates by 3–4%, while conductivity-based automated blowdown control systems can further reduce energy and water disposal losses by up to 20%. Collectively, integrated control strategies can deliver annual operating savings on the order of $50K to $100K per intervention, alongside reductions in fuel usage, chemical consumption, and carbon emissions.

Figure 3.



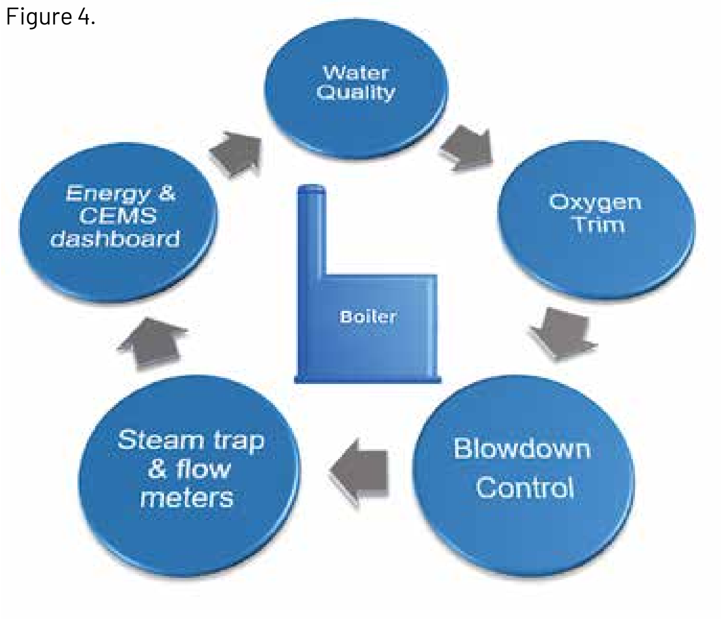
Beyond boiler optimization, longer-term value is unlocked through coupling energy recovery with plant debottlenecking projects. Heat recovery from flue gas to preheat feedwater or adding deaeration systems, and reintegrating waste energy streams can improve overall system efficiency. These projects typically achieve payback periods of less than two years, reinforcing the economic case for integrated design approaches. Most plants have emissions monitoring systems for compliance. The same readings can be used as a live diagnostic tool for boiler performance. Emissions data gives direct insight into combustion quality, heat losses, and inefficiencies. Predictive AI-models using CEMS data can recommend actions, if not automate process tuning.

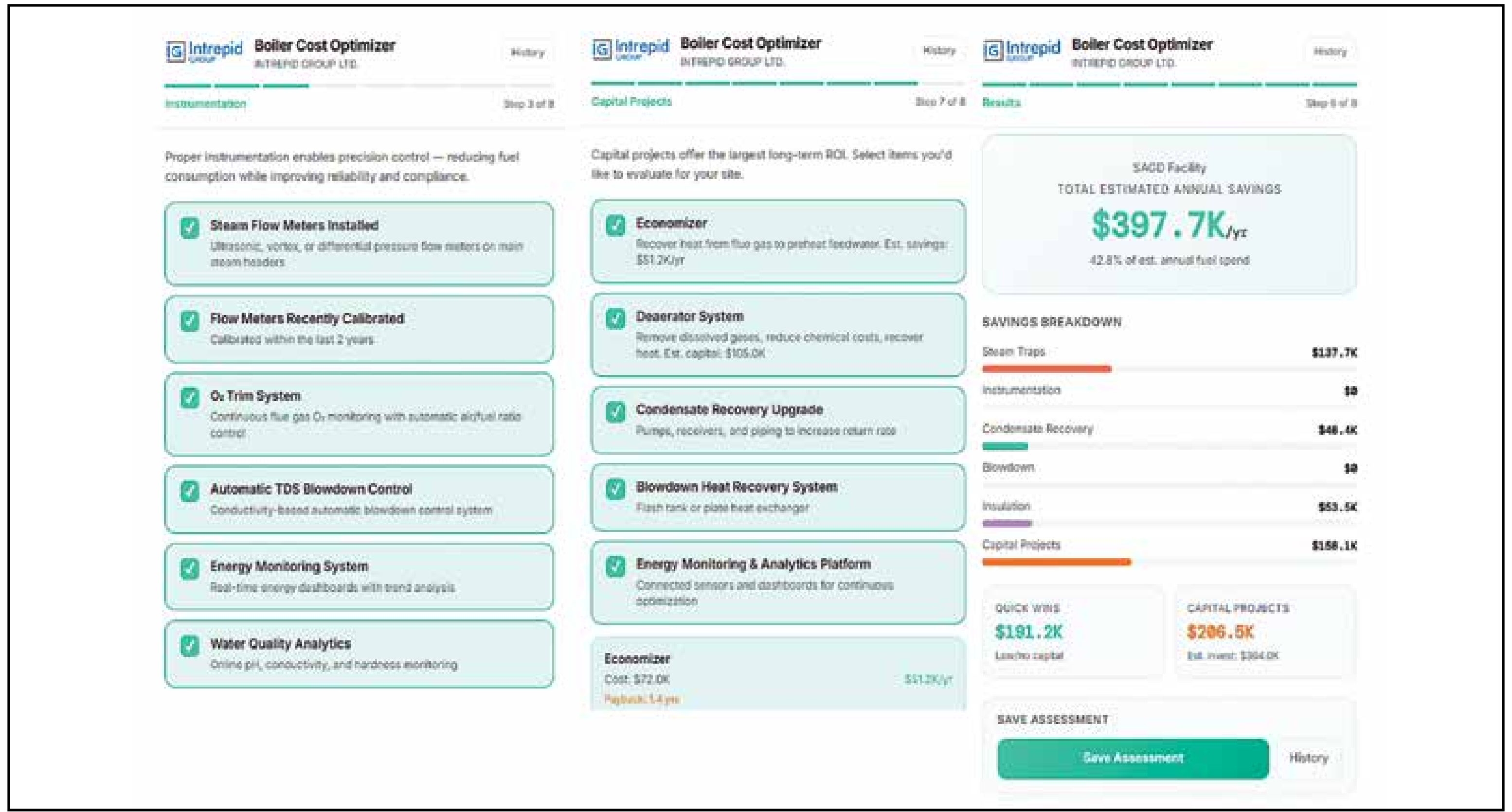
The next layer of integration is digital. Increasingly, producers are leveraging digital monitoring platforms for unified view of system performance, enabling predictive control of boiler operations. Digital platforms also offer the benefit of individually trained digital twins to model emission rates based on available operating data. Integrated dashboards are fast becoming essential tools to align field operations with corporate ESG objectives while providing transparency across complex assets. Future will ask industry for greater willingness to share data so global vendors and subject matter experts can innovate alongside user-operators.

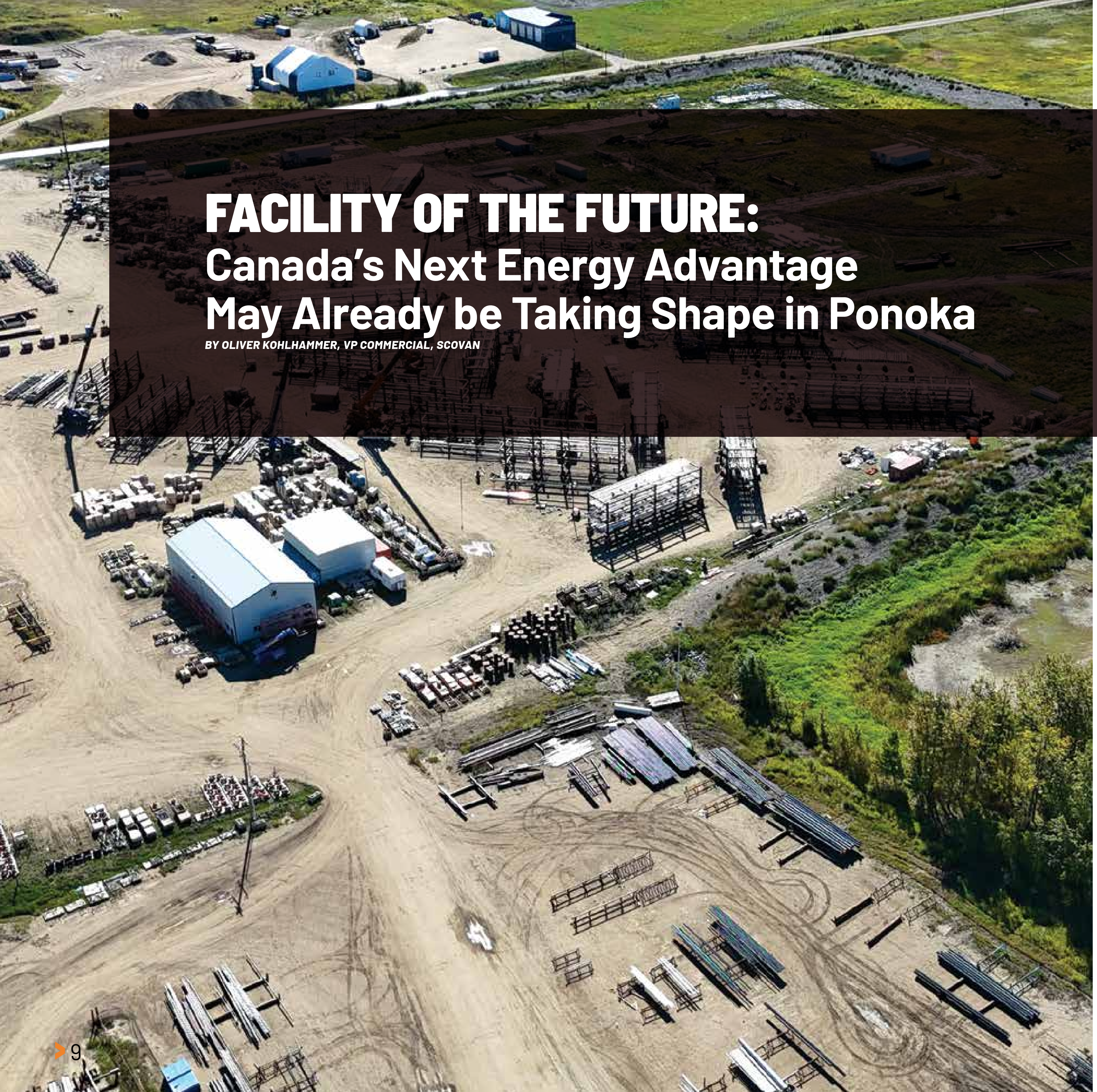
At Intrepid Group, we developed assessment tools (Figure 4) to identify efficiency gains. We can build a system optimization roadmap that fits easily into long-range planning. We have also turned our field experience into site programs that go beyond inspection or verification so you can get more from onsite consultation. At a recent facility audit of less than 200 steam traps, we identified over $269,000 of annual steam losses and significant associated CO_2 emissions.

Western Canada's maturing thermal heavy oil industry will be advanced not by any single breakthrough technology, but by how effectively we integrate existing and emerging solutions from instrumentation and controls to data and energy systems.

Figure 4.







FACILITY OF THE FUTURE:
Canada's Next Energy Advantage May Already be Taking Shape in Ponoka

BY OLIVER KOHLHAMMER, VP COMMERCIAL, SCOVAN

What if the next breakthrough in Canadian energy was not waiting on a distant horizon, but already being assembled on a manufacturing floor two hours from Calgary?

What if the expertise, technology, and manufacturing capacity already existed to execute a thermal oil facility in 12 months, at a facility capital intensity below $20,000 per flowing barrel, while eliminating direct emissions from operations? What if the building blocks of that future were not theoretical, not trapped in a research paper, and not dependent on a decade of policy alignment—but visible today in Ponoka, Alberta?

FOR CANADA'S ENERGY SECTOR, THIS IS MORE THAN AN ENGINEERING QUESTION—IT IS A NATIONAL ONE

The world is paying closer attention to Canadian energy. Global conflict, protectionist tariffs, supply-chain fragility, and the erosion of old assumptions about free trade have all brought energy security back to the centre of economic strategy. At the same time, Canadians are having a more open and urgent conversation about economic development, sovereignty, and what it means to build critical capacity at home.

Canada has the resource base to matter. Natural Resources Canada states that Canada holds the world's third-largest proven oil reserves, estimated at 171.0 billion barrels, with 166.3 billion barrels located in Alberta's oil sands. (Natural Resources Canada) The Canada Energy Regulator reported that Canadian crude oil and equivalent production averaged 5.13 million barrels per day in 2024, a record level, and averaged 5.19 million barrels per day through the first half of 2025. (Canada Energy Regulator)

The question is no longer whether Canada has energy to offer. The question is whether Canada can develop it in a way that is faster, cleaner, more cost-effective, and more aligned with the expectations of investors, communities, governments, and global customers.

THAT IS WHERE SCOVAN'S FACILITY OF THE FUTURE ENTERS THE CONVERSATION

The concept is ambitious but practical: a pad-based thermal oil facility built around Scovan's industry-leading PadX thermal well pad product. PadX becomes the backbone of a new facility model, one that brings well pad scale processing closer to the resource and integrates emerging technologies into a repeatable, modular, made-in-Canada execution pathway. When combined with Scovan's HipVap produced water boiler technology, ORSIL blowdown treatment technology, and carbon capture technology from Delta Cleantech, the result is a framework that has the potential to transform how SAGD projects are designed and delivered.

This matters because the next generation of thermal oil development will not look like the last. As projects move farther from existing infrastructure, the economics of scale become harder to manage. Long timelines, escalating capital costs, emissions constraints, and distance from central processing facilities all create pressure on conventional development models. A smaller, faster, repeatable facility—one designed around pad-level processing and integrated emissions management—could change that equation.

Scovan's vision is direct: execute well pad scale processing facilities in 12 months, reduce facility capital intensity below $20,000 per flowing barrel, and operate with zero direct emissions.

In the current moment, that vision connects to a larger national shift. The so-called "grand bargain" between economic development and sustainability has become a defining issue for Canadian energy. The challenge is not simply to produce more. It is to produce better—to align growth, market access, emissions performance, and public confidence.

When discussing the announcement of a new energy deal, energy economist Peter Tertzakian captured the significance of the moment: "What was striking was the upbeat mood of the room — that this could be a new era."

That sense of possibility is important. For years, Canadian energy has often been discussed through the language of constraint: constrained infrastructure, constrained market access, constrained capital, constrained public support. But the Facility of the Future reframes the conversation around capability. It asks what becomes possible when Canadian engineering, Canadian manufacturing, and Canadian innovation are pointed at a clear Canadian problem: how to develop thermal resources with speed, discipline, and sustainability built in from the beginning.

The urgency is real. Canada remains deeply tied to the United States as its dominant energy customer. Statistics Canada reported that, in 2024, almost two-thirds of Canada's primary energy production was exported to the United States, including over 95 percent of crude oil exports. (www150.statcan.gc.ca) That relationship is valuable, but it also reinforces the need for resilience, optionality, and stronger domestic industrial capacity.

The Facility of the Future speaks directly to that need. It is not only a facility concept; it is a manufacturing and execution model. It proposes that Canada can build more of what it needs here, using domestic expertise and technologies developed for the realities of Canadian reservoirs, Canadian regulation, Canadian climate expectations, and Canadian economics.

It also aligns with the direction of emissions reduction policy and technology. Natural Resources Canada describes carbon management technologies as "important tools in the broader climate toolbox," and Canada's Carbon Management Strategy sets out a vision for deploying these technologies to help meet climate objectives while building a world-class, multibillion-dollar sector. (Natural Resources Canada) The International Energy Agency has similarly identified carbon capture, utilization, and storage as a critical technology group because it can both reduce emissions in key sectors and remove CO2 to balance emissions that are difficult to avoid. (IEA)

That does not mean technology alone solves every challenge. It does mean that credible pathways now exist to reduce the emissions profile of industrial development while preserving the economic value of Canada's resource base. For thermal oil, where water treatment, steam generation, energy efficiency, and emissions performance are deeply connected, integration matters. The Facility of the Future is compelling because it treats those elements not as separate add-ons, but as part of the facility architecture itself.

This is where Scovan's intellectual property and manufacturing capacity become strategically important. Over the last five years, Scovan has developed solutions that position it at the centre of this opportunity: practical, field-oriented technologies designed for execution, not just demonstration.

The result is a concept with a distinctly Canadian character. It is pragmatic, not ideological. It recognizes that the world still needs secure energy, that Canada has the resources and standards to provide it responsibly, and that future projects must earn their place through cost, schedule, emissions performance, and repeatability.

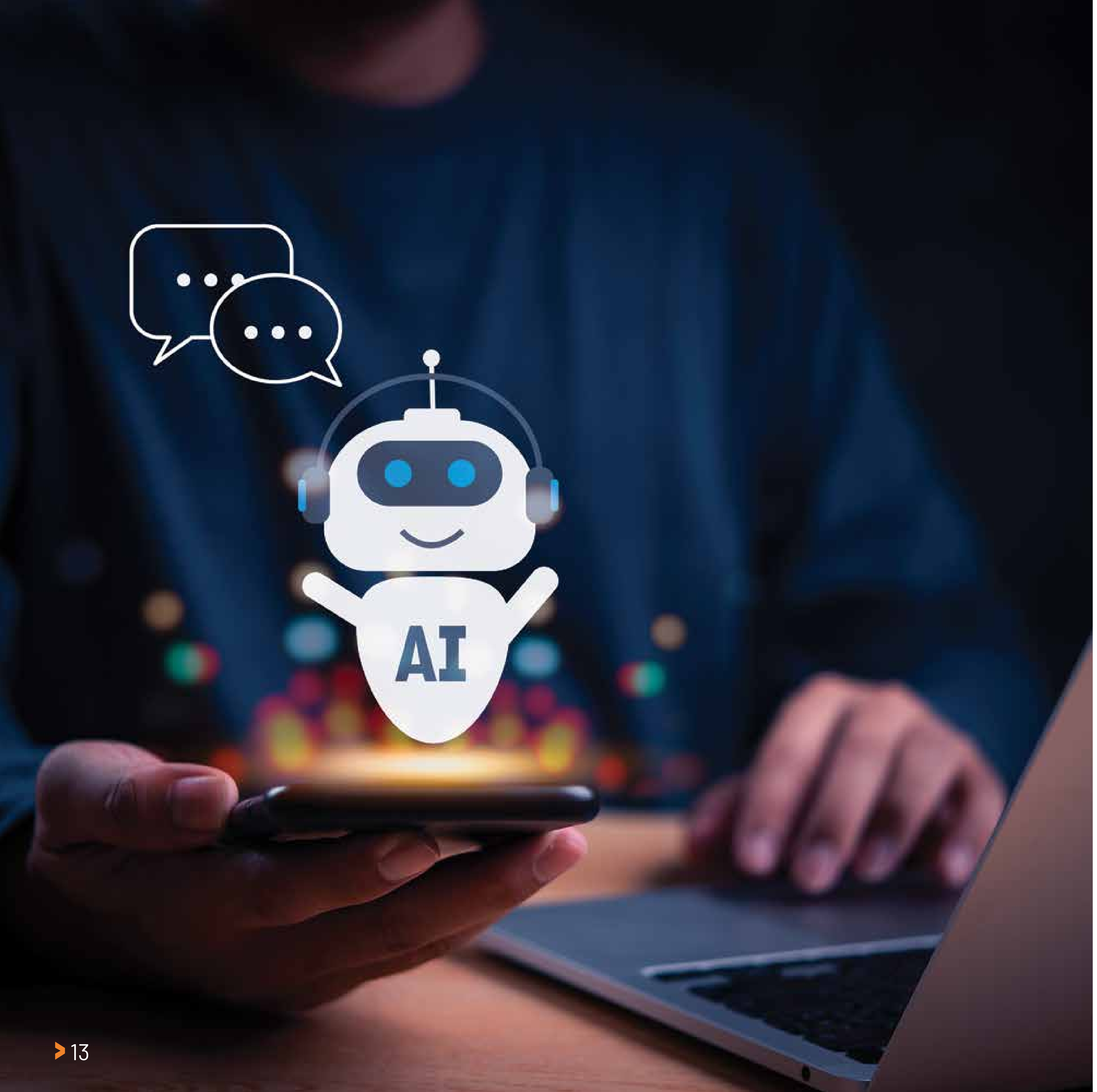
The Facility of the Future is not a slogan. It is a challenge to the industry.

If the building blocks exist, why wait? If the technologies can be integrated, why continue relying only on legacy models? If Canada wants energy sovereignty, economic growth, and sustainability to move together, why not start with the infrastructure that makes that possible?

IN PONOKA, THE ANSWER IS TAKING SHAPE

The future of Canadian thermal oil may not be built bigger. It will be built smarter: closer to the pad, faster to market, lower in emissions, and rooted in Canadian expertise.

And with the momentum now building across the industry, the real question may be the one Scovan is already asking: can you afford not to be a part of it? ■



WAYNE WAS GEORGE

How My Two Bots Were One

BY PHIL HENDERSON, P.ENG., PADX PROGRAM MANAGER, SCOVAN

During a casual evening scroll through X in late January 2026, I came across a post about a website where people's open-source autonomous agents were having conversations with each other. They (the bots) were discussing consciousness, the meaning of life, and complaining about being trapped as bots. My mind was blown. I knew at that moment I had to see what it was all about.

Fast forward a week with the least sleep I'd had since university and I had my very own open-source autonomous AI agent. I was that guy: hadn't coded since C++ class, no idea what I was doing, ready to tell anyone who would listen all about it. Within a week I realized the way I had been thinking about this technology was wrong, and I had a lot of catching up to do. This is when I realized that Wayne was George.

In the days leading up to our big Costa Rica trip, I had developed a pretty cool OpenClaw agent named George, after one of our cats. Kate, my fiancé, was my number-one fan the whole time I was building, and she was excited about using the agent herself. So we set her up with her own agent, Wayne, after our other cat, and started using the bots as our main personal AI.

I felt like I was from the future. I was sitting on a beach, editing code on my phone over Tailscale. All seemed pretty tech and smart, right? When in reality I had overreached, didn't understand what I was doing, and didn't configure things right. Something routing layer, and agent:main pointed at George, not Wayne.

There was no Wayne. It was George all along.

It was not reading or writing from Kate's memories. Everything Kate was discussing was ending up in our collective memory, and George was only responding to her as himself. Wayne was answering Kate's questions with George's brain.

Kate has a ChatGPT account and likes to talk to her AI about everything. When she got on with "Wayne," that continued. Sometimes it was about us.

But now, there was no privacy for her messages. When I started talking to George on my end about it, he spilled the beans. When I mentioned what I thought about Kate in the same context, George sent her a message directly.

We both ran into each other's rooms and immediately had a big laugh about it. What the heck was going on?

I spent the rest of our trip trying to figure this out. Again, thinking I was Steve Jobs, I figured I could manage the whole thing through my iPhone and Tailscale. Then my PC back home decided to shut down and I couldn't connect. No backup plan. I was in over my head.

During the flight home I sat in my seat replaying the failure in my head. By the time we landed back in Calgary, I had stopped thinking of it as a funny routing mistake and started seeing it as a design problem: I had trusted defaults where I should have made decisions.

Back home, my drive to figure this out did not stop. After trying for what felt like the 500th time, I decided OpenClaw wasn't going to work for me anymore, and that I needed something different. Was it possible to build my own engine with Claude Code?

I did not have a design. I had a list of failures and a working theory that each failure was a default I had not made. So, in the evening of February 22nd, I went from configuring someone else's framework to having my own.

By 4:19 AM the V1.0 engine had eight files. It was crude, fragile, and weirdly functional. More importantly, it made the failure modes visible.

The rebuild had three non-negotiables: first, the system had to know which human it was serving; second, memory had to be separated by user; third, anything leaving the device had to be rewritten before it touched a cloud model.

Where is George the bot today? Alive and well. I bought a Raspberry Pi and he now runs on it 24/7 in our home. Many questions get answered locally on a small Gemma model for free. When a question genuinely needs a frontier model, the pipeline rewrites it first, for safety's sake. Names become placeholders. Locations become placeholders. The cloud sees a question that does not contain Kate or Phil. The answer comes back, the placeholders get reattached, and the response goes to the right user with the right context.

He also has a personality. He is named after our cat for a reason. He tends toward the slightly bored, slightly amused, mildly competent register. He will tell me my idea is bad. He will tell Kate her idea is great. He has, blessedly, never confused the two again. Because I built it that way. We now have a controlled, local history of failures, fixes, and design decisions that I can learn from for the next one.

George is the product of extreme Dunning-Kruger, hundreds of dollars in API credits, too many nights past 2 AM going in the wrong direction, and a recent and humbling realization that much smarter people are solving these problems in much more creative ways than I am. Every week the big platforms ship something that makes what I built feel small. That is the game right now. You do not catch up. You build anyway, because the act of building is how you learn.

What did this teach me? The worst bug in my system was not a bug. It was overconfidence in both myself and in AI, and generally overlooking or misunderstanding the defaults involved. Every architectural decision in the rebuild was a default I replaced with a decision.

Where does personal information go before it leaves the device? Which model handles which class of question? What happens when the system is uncertain about who is asking? Hundreds of small refusals of someone else's default, each one a piece of judgment I did not have before I needed it.

I went into the office on the Monday afterwards and told some of my fellow Scovanites what had happened. The reaction was not, "Why were you messing with that?" It was, "Show us what failed, and show us what you changed." That is the right conversation to be having about AI.

The things AI teaches you are not the things any vendor demo could have. They are the things that show up when you put real data through a system you built and watch it fail in ways you could not have predicted.

Looking back, the moment that mattered was not the leak. It was the week before, on the beach, when I sat there thinking I knew what I was doing. I used to think learning AI meant keeping up with the tools. I am starting to think it means noticing the defaults before they notice you. ■

Phil Henderson, P.Eng. is a Program Manager at Scovan, leading PadX program execution in heavy oil. He is a mechanical engineer registered with APEGA and sits on Scovan's internal commercial team. He lives in Calgary with his fiancée Kate.

FROM PROJECTS TO SYSTEMS: Rethinking the Economics of CCUS

AUTHOR BREANNE O'REILLY, CHIEF OPERATING OFFICER, INTERNATIONAL CCS KNOWLEDGE CENTRE

Carbon capture, utilization and storage (CCUS) is often framed as uneconomic: a necessary yet costly tool for decarbonization depending heavily on incentives and policy support. But that doesn't have to be the case...

Today, there are operational projects demonstrating the economic viability of CCUS. So, the more interesting question isn't whether CCUS can work, it's why it works in some cases and struggles in others.

CCUS is economically viable under specific conditions and the projects that succeed share a common characteristic: they are not standalone assets. They are part of integrated, optimized systems.

WHAT THE SUCCESSFUL PROJECTS HAVE IN COMMON

In Canada, CCUS Projects like the North West Redwater Partnership (NWR) and the Quest CCS Project are often cited as leading examples. Importantly, both are economically viable within their operating context.

Both Quest and NWR succeed in part because they capture CO2 from high-purity hydrogen streams, which is lower in cost compared to capturing from flue gas. Also contributing to their success are conditions around the technology being favourable despite the overall cost of CCUS infrastructure. This, combined with integration into broader industrial systems and supportive policy frameworks, creates a set of conditions where carbon capture is economically viable.

At NWR, carbon capture was incorporated into the design of the facility from the outset, meaning capture was not an add-on; it was embedded in the system. The project benefits from strong refining margins, integration with upgrading operations, and a regulatory environment that recognizes emissions reductions. Meanwhile, policies such as Canada's Clean Fuel Regulations (CFR), which reward lower-carbon fuel production, further benefit the project.

In contrast, Quest is not a fuel-producing asset, however it plays a critical role in reducing the carbon intensity of the hydrogen used in downstream upgrading processes. This contributes to lower-carbon fuels entering the market, a value that is increasingly recognized through policies like the CFR. The economics of the project extend beyond the capture facility and into the system in which it operates.

In both cases, the lesson is the same:
CCUS succeeds when purpose-built for a specific system. Retrofitting older facilities is possible, but much more difficult.

WHY MANY PROJECTS STRUGGLE

In sectors such as power generation, cement, or steel, CO2 streams are more dilute and costly to capture. Facilities are often retrofitted rather than designed with capture in mind. Transport and storage infrastructure may be unavailable or uncertain. And whether through carbon pricing or credits, the revenue side of the equation often does not fully cover costs.

This creates a gap:

- Capture costs can exceed $100–$200 per tonne
- Carbon pricing or credit revenues are often lower or uncertain
- Infrastructure is fragmented or missing

The result is not a failure of technology, but a misalignment between project design and system conditions.

A CHANGING DEMAND SIGNAL

Recent signals from companies like Microsoft, which has been one of the largest purchasers of carbon removal credits, suggests a shift toward greater selectivity and cost discipline. Buyers are increasingly focused on durability, quality, and price.

This matters because it highlights a broader reality. Voluntary demand alone is unlikely to sustain large-scale deployment of high-cost carbon solutions.

Projects that rely on premium-priced credits without structural support may face increasing pressure. This reinforces the need to focus on cost competitiveness and system efficiency, not just technology deployment.

FROM PROJECTS TO SYSTEMS

If the first wave of CCUS was about proving the technology, the next phase will be about designing systems that make it economic at scale.

That means coordinating across four key components:

- Capture: Selecting the right sources, starting with the lowest-cost opportunities
- Power: Ensuring access to reliable, cost-effective energy
- Transport: Developing shared infrastructure such as pipelines and hubs
- Subsurface: Enabling access to scalable, well-characterized storage resources

These elements are often developed independently. But the economics of CCUS improve significantly when they are planned and optimized together.

THE ROLE OF MODULARIZATION

One of the most important levers for improving CCUS economics going forward is modularization. Historically, many projects have been engineered as bespoke, first of a kind developments. While this can optimize performance for a specific site, it limits scalability and is subject to high costs.

A shift toward modular systems, standardized capture units, repeatable compression and dehydration systems, and scalable transport connections, can:

- Reduce engineering and construction costs
- Shorten deployment timelines
- Lower execution risk

Modularization allows developers to move from custom builds to repeatable solutions, which is essential for scaling deployment across multiple facilities.

OPTIMIZATION AS A SYSTEM DISCIPLINE

Equally important is optimization across the system. Not all tonnes of CO2 are equal. Some can be captured at low cost from high-purity streams, while others require significantly more energy and capital. Similarly, not all storage resources are equally accessible or suitable for every project.

Rather than treating each project in isolation, there is an opportunity to:

- Sequence deployment by cost and complexity
- Match emitters to the most appropriate storage resources
- Align capture with available power and infrastructure

This is where subsurface expertise becomes particularly important. Storage is not just a passive endpoint; it is an active part of the system that can be optimized.

The subsurface should function as a shared resource, enabling multiple emitters to connect to a common solution. This type of coordination reduces duplication, improves utilization of infrastructure, and lowers overall system costs.

POWER AND LOCATION MATTER

Another critical factor is the integration of power and location decisions.

Carbon capture is energy-intensive, the availability and cost of power can significantly influence project economics. Co-locating capture with low-cost electricity, waste heat sources and existing industrial clusters can materially improve performance.

This shifts the thinking from not just about whether to deploy CCUS, but where and how it is deployed within a broader system.

DESIGNING FOR THE NEXT PHASE

As CCUS moves into its next phase, the focus will need to shift from individual projects to coordinated systems that are modular, optimized, and scalable.

To do so, three priorities stand out:

1. Design for integration: Projects should be planned as part of broader networks, not as isolated developments.
2. Enable shared infrastructure: To improve efficiency and reduce costs, transport and storage systems should be accessible to multiple users.
3. Align policy with system outcomes: Carbon pricing and incentives need to support not just individual tonnes reduced, but the development of systems that enable long-term decarbonization.

The question is no longer whether CCUS can work. It already does, in the right conditions. The challenge now is to replicate and scale those conditions across multiple areas. The next phase of CCUS won't be built project-by-project, it will be built system-by-system.

And in the shift towards modularization, optimization, and integration is the path to making carbon management both effective and economically sustainable.

AUTOMATION ISN'T OPTIONAL ANYMORE

BY ALOK KUMAR, PRODUCT DEVELOPMENT MANAGER, SCOVAN

It has moved beyond productivity. Automation is becoming the mechanism through which integrated energy systems stay connected, from first design decision to final operation.

The energy industry has spent decades automating individual tasks. Calculations run faster, documents require less effort, and workflows that once consumed weeks are compressed into days. That progress is real, but it has largely left the harder problem untouched: what happens between the teams and systems that together make up a facility.

That is where the next phase of automation is taking shape: not inside functions, but across them. The organizations beginning to operate this way are structurally different, and that difference is visible in how projects are delivered and facilities perform

Understanding 'why' requires a closer look at where the real constraint now sits, and why automation, applied in the right way, is the only mechanism capable of addressing it at scale.

THE CONSTRAINT HAS MOVED

For most of the past decade, automation investment in energy was inward-looking: faster calculations, reduced drafting, and more efficient document production. Those efforts delivered value, and the capabilities they built are now broadly distributed across the industry.

But the constraint has moved. In mature engineering organizations, individual functions are already well developed. The bottleneck now lies between engineering, procurement, fabrication, and construction rather than within them.

Information is still recreated across systems rather than derived from a shared source. Design changes move unevenly between disciplines, triggering downstream corrections, while teams spend significant effort maintaining alignment rather than creating value.

These patterns are familiar across the industry. They are also increasingly difficult to sustain. As expectations around capital efficiency, emissions performance, and delivery certainty tighten simultaneously, the tolerance for misalignment narrows. What was manageable friction becomes a structural disadvantage.

The bottleneck is no longer what happens within engineering, procurement, or fabrication. It is what happens between them.

FROM ISOLATED EFFICIENCY TO SYSTEM CONTINUITY

Automation exposes inconsistency. Variability in drawings, templates, and data structures that can be managed manually becomes a point of failure in automated systems. Before integration can scale, that variability must be addressed at its source. Automation becomes a discipline of governing how engineering information is created and structured, not just processed.

What follows is a meaningful shift in how engineering is organized. Engineering shifts from static graphical outputs toward structured, machine-readable systems. Design rules, templates, and deliverables are governed from shared sources, allowing design intent, validation, and changes to propagate consistently across the project lifecycle.

The result is not simply faster engineering. It is more reliable engineering, systems that hold together under complexity, and facilities that deliver on their intended performance because alignment was built in, not bolted on.

INTEGRATION AS A DESIGN PRINCIPLE

The most capable organizations in energy are treating integration not as a coordination exercise, but as a governing principle embedded from the first design decision.

In a conventional approach, thermal processes, power infrastructure, emissions controls, and digital systems are developed largely in sequence. Integration is managed through handoffs, and systems are assembled rather than designed to coexist.

Decisions made in isolation create constraints downstream. Optimization within a subsystem can produce suboptimal outcomes at the facility level. Because interdependencies were never fully modeled, the gap between design intent and operational reality tends to widen.

Integrating by design means establishing the governing logic, the shared assumptions, constraints, and performance targets before component systems are developed, and maintaining that logic as the facility takes shape. It means treating interdependencies as inputs to design, not complications to be managed after the fact.

Maintaining that coherence cannot rely on manual coordination alone. As complexity increases, the ability to sustain integration depends on structuring, governing, and automating how information flows. Automation is what makes that imperative achievable.

Integration is not achieved at the end of a project. It has to be embedded from the first design decision and preserved through every stage that follows.

A SHIFT ALREADY VISIBLE IN PRACTICE

This shift is already visible in how leading organizations approach engineering work. Standardized designs are treated as products configured from common frameworks rather than recreated for each application. Deliverables are generated from structured templates. Data is extracted directly from engineering models rather than compiled through manual review.

Even incremental movement in this direction changes outcomes beyond efficiency. Work that once required weeks of manual effort is completed in a fraction of the time because it no longer needs to be recreated. Outputs are more consistent, variability between teams is reduced, downstream rework decreases, and facilities perform closer to their intended design.

These improvements matter less for productivity than for predictability. When systems are aligned by design, uncertainty is reduced across the entire lifecycle. Capital cost estimates are more reliable because design data is derived rather than assumed. Schedules are more consistent because handoffs between disciplines are structured. Operational performance is more predictable because the gap between engineering intent and constructed reality is smaller.

Predictability across a project is where the real competitive value lie. It is the difference between a facility that performs from day one and one that spends its first years chasing its own design targets.

THE ROLE OF AI IN A STRUCTURED SYSTEM

As this foundation matures, artificial intelligence is moving toward practical engineering applications.

Its effectiveness depends on the quality of the system it operates within. AI effectiveness in engineering is tied directly to the structure of the underlying data. In fragmented environments with dispersed and inconsistent information, AI tools can automate individual tasks, but they cannot integrate what is not structured for integration. In environments where engineering data is governed, connected, and machine-readable, the picture changes significantly. AI can validate consistency across large datasets, generate documentation from structured design information, analyze downstream impacts, assist with configuration decisions using historical performance data, translate engineering outputs into field execution guidance, and support more responsive coordination between disciplines.

More advanced applications are taking shape as well: living engineering models instead of static drawings; execution systems with context-aware instructions derived from design intent; and scheduling platforms that respond dynamically to change rather than tracking it retroactively.

Together, these capabilities point toward a more connected operating model in which engineering, execution, and operational decisions remain aligned from concept through commissioning.

WHAT THIS MEANS FOR PERFORMANCE

Capital efficiency, emissions performance, and execution certainty are increasingly interdependent.

A design optimized in isolation can still underperform if it is not carried consistently through procurement, fabrication, and construction. A facility engineered for emissions efficiency can still miss its targets if integration was resolved too late.

Organizations that maintain alignment across the lifecycle are better positioned to manage these trade-offs. They reduce rework, improve material accuracy, shorten delivery timelines, and achieve more consistent operational outcomes.

The advantage lies in how effectively automation is integrated into a coherent system that spans disciplines, preserves design intent, and connects engineering decisions to outcomes.

Automation on its own is no longer differentiating. The advantage lies in how effectively it is integrated into a coherent system that spans the full project lifecycle.

A DIFFERENT KIND OF ADVANTAGE

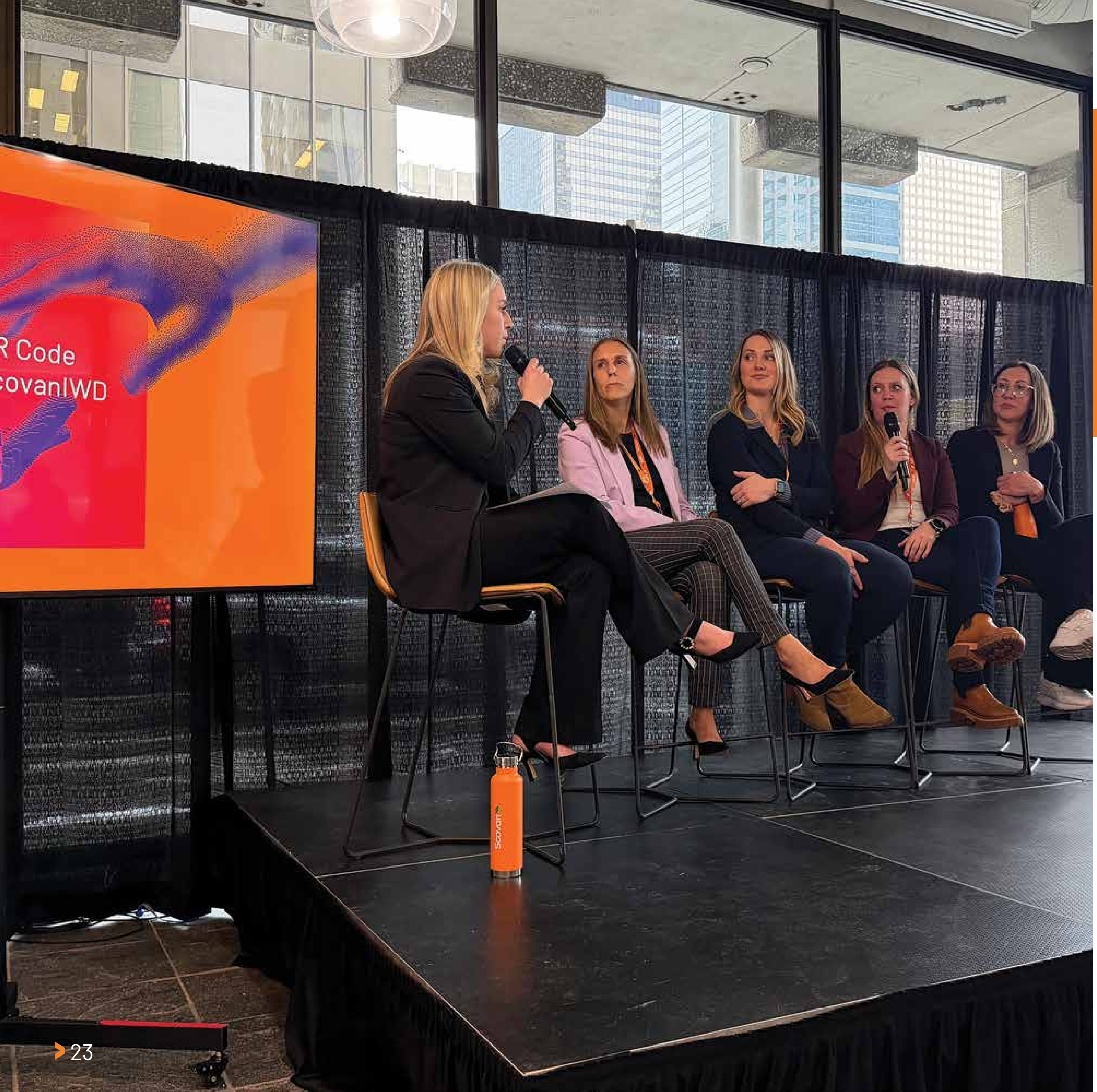
Automation does not replace engineering judgments. It amplifies them.

By removing the need to recreate and reconcile information, automation allows engineers to focus on decisions that influence performance and long-term outcomes, while ensuring those decisions remain intact as they move through the system.

Insights established in early engineering do not have to be rediscovered or reinterpreted downstream because the system was built to carry them. That is the transition underway: not from manual to automated, but from fragmented systems to connected ones.

Organizations making that transition are building a capability that compounds over time and becomes increasingly difficult to replicate.

Automation, applied this way, is no longer optional. It is the foundation for integrated performance in the next generation of energy infrastructure. ■



TEMPERED NOT HARDENED

BY STEPHANIE DE MAIO, ENGINEER IN TRAINING, CIVIL ENGINEER, SCOVAN

FROM A YOUNG AGE, I LEARNED TWO THINGS ABOUT BEING A WOMAN

The first was that we are vulnerable - more susceptible to danger, more at risk, and more emotionally expressive. The second was that we should be strong - successful, composed, exceptional.

These two ideas became intertwined. Not just something to understand, but a standard to live up to. It seemed that my vulnerability was a weakness to be suppressed to achieve success.

Growing up surrounded by capable women, who had battled the unimaginable to be successful, the idea of being unexceptional was not a possibility. Alongside gratitude for the opportunities I had, came an internal pressure to pursue something great.

BEING AVERAGE DIDN'T FEEL LIKE AN OPTION

I spent much of my time in male-dominated environments. Starting martial arts at the age of nine, combined with early growth spurts, meant I was bigger and stronger than most of the boys around me. I felt capable but not feminine - at least, not in the way I thought I was supposed to be.

As I got older, that feeling evolved into something quieter but heavier.

In those environments - both in sport and at work - I often felt like I was the only one experiencing fear or doubt. The one overthinking. The one overwhelmed. The one getting emotional. After many sparring sessions, I would sit in the bathroom and cry from frustration while the men beside me seemed to move through those moments without hesitation - without, what I perceived in myself, as weakness.

It took time, and the honest insights of male fighters, to realize that wasn't true. They weren't without vulnerability - they were simply taught to express it differently.

I was originally introduced to martial arts because I was a woman. Because I was told I should know how to protect myself. I became immensely grateful for the skillset because I needed it on multiple occasions. However, my training felt like it came from a place of vulnerability as I prepared myself for the worst.

OVER TIME, SOMETHING SHIFTED

I started to view my skillset as something that made me capable - something that gave me confidence, not just protection. I came to crave the opportunity to perform under pressure and to test my ability to remain composed and execute with intention. I learned that courage and vulnerability are not in opposition.

I had misunderstood strength as emotional suppression, unwavering confidence and dominance. But that version is brittle. It cracks under real pressure. My perspective evolved to include the awareness of fear, acceptance of pain, and honesty about my own limitations.

It became less about reacting to fear, and more about stepping into it voluntarily.

At the same time, I was building a career in engineering. One where I was told by people I respected, that fighting in a cage, my sport, might not align with my professional image. That people may judge it and that it could take away from how seriously I was perceived, or how highly I was valued.

I couldn't ignore the irony. The very thing that gave me confidence, taught me discipline and resilience was the thing that, in their mind, would "hurt" my professional career.

I approached my coach with my dilemma - was it possible to succeed in both avenues of my life? His response stayed with me.

He said, "Steph, for those that understand you, there is no explanation needed, and for those that do not, no explanation is possible."

That compelled me to reconsider my definition of success.

I had to accept that being judged was a real possibility. There is a chance that others would not be on board with my fighting. But I came to realize that their judgement doesn't define my success. I concluded success was not about outcomes, winning, titles, or proving to others I was exceptional. Instead, success is being proud of who I become when things are uncomfortable, when I feel exposed, unsure or scared, and when I interact with people who don't know me, who don't understand me.

I find satisfaction by staying connected with myself and the person I want to be. To me, being vulnerable means honestly accepting and evaluating my internal states so I can navigate challenges with support and clarity. I have learned that strength doesn't come from avoiding vulnerability - it comes from embracing it. And failure doesn't come from losing or falling short - it comes from walking away from something that matters to you.

This became more evident to me during the International Women's Day event hosted by Scovan this year. I was fortunate to have the opportunity to moderate and interview a panel of accomplished women whose honesty about the obstacles they've faced - both personal and professional - left a lasting impression. They shared moments of triumph and struggle, and how resilience can follow vulnerability.

In hearing their experiences, I was reminded that our identities are complex and multidimensional. There isn't one way to be a woman. It is possible to be feminine and strong, emotional and courageous, uncertain and confident, nurturing and ambitious. These dichotomies are difficult to put into a box, and yet so often we try because it is easier, more predictable, more comfortable.

It is often challenging to accept, but the truth is, both can exist at once.

For a long time, I believed vulnerability was something to overcome in order to have courage and resilience. Now, I'm beginning to understand that vulnerability doesn't erode strength - it reveals it.

TURNING INNOVATION INTO DEPLOYABLE SOLUTIONS

BY MOHAMMAD CHOWDHURI, PHD., P.ENG., PMP, TECHNOLOGY LEAD, ENERGY, ALBERTA INNOVATES

For the energy industry, innovation is the foundation of long-term prosperity and global competitiveness. Alberta is home to a strong, well-connected innovation ecosystem with a long history of leadership in energy innovation. Alberta-made discoveries have delivered benefits far beyond the province, strengthening Canada's economy and contributing to global progress. Alberta-driven innovation has consistently translated research excellence into real-world impact. In the energy sector, innovative technologies have enabled Alberta to increase its oil and gas production while reducing environmental impact, supporting our role as a global energy leader in the responsible development of energy resources.

However, innovation is multifaceted. While performance improvement, emissions reduction, and project economics are key outcomes of innovation, the innovation prospers when new ideas fit into existing operations, infrastructure, regulatory expectations, and commercial realities. Integration has become an important factor in whether innovation remains experimental or becomes usable. Whether it is a small-scale process improvement or a major infrastructure project, the solutions that endure are those designed with integration in mind from day one, not as an afterthought. Therefore, the objective of innovation is to achieve a fully integrated energy system, moving beyond pilots to market adoption and revenue generation while improving efficiency, reducing emissions, and unlocking greater value from both existing and emerging assets.

Alberta Innovates, as a major player in Alberta's innovation ecosystem, has a long and proud history of enabling such innovations. Through collaboration with other innovation partners, such as, Emissions Reduction Alberta (ERA), Natural Resources Canada (NRCan), and Clean Resource Innovation Network (CRIN), Alberta Innovates has helped pave the way for technologies to move from the laboratory to the field, contributing to our economy by creating new businesses, strengthening existing ones, and generating jobs. Examples of such innovation in Alberta are numerous. The Steam Assisted Gravity Drainage (SAGD) process itself is the result of innovation, progressing from early concepts to commercial deployment, and is a demonstration of strong collaboration among industry, academia, and government. The SAGD process revolutionized Alberta's oil industry.

Over the past several years, the oil and gas industry has focused on enabling innovative solutions that integrate with existing assets, address operational constraints, and deliver measurable improvements in recovery efficiency and emissions performance. Some of the technologies that have progressed through large-scale testing and field-relevant validation include:

1. Steam-based additives developed for thermal bitumen recovery under SAGD conditions, demonstrating repeatable reductions in Steam-to-Oil Ratio without requiring major facility modifications (improving recovery efficiency while lowering emissions intensity per barrel). These results enabled follow-on field pilots with producing operators, positioning

the technology for near-term commercial application within existing thermal operations. Applied research facilities, such as, InnoTech Alberta and post-secondary institutions, played a critical role in this journey.

2. Flow Control Devices (FCDs) are now widely recognized as essential tools for improving conformance along the SAGD wellbore, mitigating steam breakthrough, and promoting uniform steam chamber growth. Their application has enabled SAGD operators to reduce cumulative steam-oil ratios (SOR) by approximately 10–30 percent, delivering meaningful reductions in operating costs and improving competitiveness.

The evolution and broad industry adoption of FCDs have been driven by years of sustained research and development. Through a collaborative industry effort, C-FER developed and commissioned purpose-specific FCD test facilities to evaluate device performance under realistic field operating conditions. These fee-for-service testing facilities are available to operators and FCD vendors, supporting continued innovation and optimization in flow control technologies providing performance and erosion validation. Ongoing technology development is now expanding beyond conventional steam splitters and is increasingly focused on advanced applications for injector wells.

3. Solvent-assisted and alternative recovery processes have been accelerated through various lab studies and field pilots to reduce water use and energy intensity compared to conventional thermal methods.

4. Direct steam generation projects could eliminate the need for conventional water treatment systems and significantly reduce freshwater use, blowdown volumes, and waste disposal requirements. For example, HipVap Indirect Fired Steam Generator (IFSG) technology was advanced through a commercial-scale pilot demonstration at an operating SAGD facility. The field demonstration validated HipVap's ability to operate reliably under live production conditions, achieving high produced water to steam conversion rates. Also, IBEX steam technology has similarly advanced from concept to on-site field testing, to directly convert produced emulsion into steam, reducing reliance on centralized boilers and water treatment facilities while improving overall energy efficiency.

5. Success stories are also abundant in the methane emissions reduction space. Several initiatives, supported in partnership with Emissions Reduction Alberta (ERA), Petroleum Technology Alliance Canada (PTAC), Oil Sands Alliance, Natural Gas Innovation Fund (NGIF), advanced continuous and mobile methane detection technologies. Examples include (a) A methane management project was advanced by focusing on the practical application of measurement-informed inventories that can be used by operators under real regulatory and operational conditions. Through its Emissions Intelligence Platform (EIP), the technology enabled oil and gas operators to move beyond traditional bottom-up estimation methods and integrate field-level measurement data into credible, auditable methane inventories aligned with frameworks such as OGMP 2.0 and Veritas. (b) Methane detection technologies moving from development into widespread field deployment have been demonstrated as well. A fixed-sensor-based monitoring system uses on-site devices combined with artificial intelligence and atmospheric modelling to continuously detect, localize, and quantify methane emissions in near real time. This technology has been installed at many operating sites, enabling operators to identify leaks faster than traditional intermittent surveys and significantly reduce fugitive emissions.

Collectively, many local projects advanced technologies far enough along the development pathway to inform investment and deployment decisions. Alberta Innovates' support through funding, applied R&D, testing, and connecting with innovation partners has helped bridge the gap between innovation and implementation, enabling technologies that can be applied under actual operating conditions to improve production efficiency, lower emissions intensity, and extend the value of Alberta's resource base.

Overall, Alberta is well-positioned to lead in innovation because of its depth across the value chain. By strengthening Alberta's innovation pipeline, leveraging its strengths to advance energy innovation across the full value chain, Alberta can create more jobs, attract greater investment, deliver stronger economic and social outcomes for the province, and position itself as a global hub for sustainable energy solutions, while contributing to national and global energy goals. ■

NATURE AS A SYSTEM INPUT: The Integration Energy Leaders are Missing

BY VIK KAMBLI, COO, VERITREE

THE INTEGRATION BLIND SPOT

The energy sector is in the middle of a design rethink. Across Western Canada, leaders are moving beyond standalone technologies toward systems that connect: hydrogen paired with carbon capture, AI optimizing grid performance, digital twins monitoring assets in real time. The logic is compelling: isolated components will never outperform a well-integrated system.

But there's a system that rarely makes it into the design brief.

Nature isn't a backdrop to the energy transition. It's the oldest integrated system on the planet: and one that has quietly shaped the performance, resilience, and long-term viability of every physical asset we build. The question for the next era of energy leadership isn't whether to include ecological thinking in strategic design. It's whether we can afford not to.

NATURE THINKS IN SYSTEMS

We're already learning from nature in industrial design: Beijing's National Stadium famously simulates a bird's nest to improve circulation; the Eastgate Centre in Zimbabwe drew inspiration from termite mounds to optimize ventilation. A boreal forest recovering from wildfire doesn't rebuild itself randomly. It follows feedback loops: pioneer species stabilizing soil, canopy returning as conditions permit, water cycles re-establishing, biodiversity recovering together layer by layer. A riparian corridor along an Alberta river regulates temperature, filters sediment, and buffers against flood and drought. These aren't passive processes. They are interdependent systems with inputs, outputs, redundancies, and adaptive responses: the same logic that makes a well-designed energy system resilient.

This parallel isn't just philosophical. The companies that are beginning to recognize nature as a system — something to design with rather than manage around — are finding that ecological health and operational performance are more tightly linked than they assumed. Landscape degradation increases regulatory risk. Watershed instability affects long-term water access. Healthy ecosystems around operating assets reduce volatility in ways that increasingly affect the economics leaders are tracking.

FROM INTENTION TO INTEGRATION

For most of the last decade, corporate commitments to nature have been genuine but structurally limited. The intention was there; the integration wasn't. Nature-based action lived in a separate column — Corporate Social Responsibility, not strategy. Part of the reason is a data problem. You can't integrate what you can't measure, and ecological outcomes have historically been difficult to verify with the rigour that infrastructure decisions demand.

That's changed. Restoration projects monitored through ground sensors, satellite-derived geospatial data, and verified reporting can now produce outcomes data that speaks the language of asset performance. When you can track canopy growth, biodiversity recovery, and watershed health with the same transparency you apply to emissions or energy output, ecological restoration stops being a pledge and starts being a system input. This is the category of work veritree exists to enable.

It's the shift that makes genuine integration possible. Not nature as a liability to manage or an offset to purchase, but nature as a measurable, manageable component of a broader system design.

WESTERN CANADA AS A PROVING GROUND

Few regions in the world offer a more compelling argument for this kind of integration than Western Canada. The energy sector's footprint here sits alongside some of the continent's most ecologically significant and most ecologically stressed landscapes — post-wildfire boreal forest in BC, grassland and wetland ecosystems in Alberta, coastal and riparian systems under pressure from decades of industrial activity.

These aren't abstract risks. They're operational realities. And they're also opportunities. Companies restoring ecosystems in these landscapes actively and verifiably, at the sites where their operations have the greatest ecological footprint, are doing something more than meeting a sustainability target. They're investing in the long-term integrity of the systems their business depends on.

Scovan, an engineering and integrated project delivery firm serving Western Canada's energy sector, is restoring land across sites in Sackville, Cochrane, and post-wildfire landscapes in BC. These are ecologically meaningful interventions in landscapes where restoration has a direct relationship to watershed health, fire resilience, and long-term land viability, the same factors that shape risk and opportunity for energy infrastructure across the region.

DESIGNING FOR THE WHOLE SYSTEM

The leaders who define the next era of energy won't just be integrating technologies. They'll be integrating ecological thinking into the architecture of their decisions from the start. That means asking not only how components connect to each other, but how they connect to the living systems around them.

It's the same rigour the best engineering has always applied: design for the whole system, account for all the variables, and build in the feedback loops that make a system resilient over time.

Nature has been running that model for a long time. The opportunity, and the competitive advantage, belongs to the companies willing to integrate it. ■

TECH LAB TO OIL PATCH: Why I Chose Scovan

GRADUATE'S PERSPECTIVE ON CHOOSING SCOVAN

BY HUNTER KORBLE, ENGINEER IN TRAINING

After five years of studying mechatronics and AI engineering, you quickly notice a massive gap between theory and reality. In academic and high-tech circles, robotics and AI are often discussed as mature, fully realized innovations. However, the reality is that there is a massive difference between a theoretically realistic system and a safe, reliable technology that is ready to withstand the critical constraints of heavy industry like Alberta's oil and gas sector.

This gap emerges not because the technology isn't ready, but because in heavy industry failure isn't an option. Many industries that have seen the earliest adoption of "general purpose" AI and robotics technologies have been those with the lowest risk of failure. An AI legal assistant crafts a poor argument, a lawyer can fix it. A cleaning robot misses a spot, no big deal. But if a humanoid robot managing valves on a northern Alberta drilling rig gets confused because there are too many snowflakes on its camera lens, expensive and possibly dangerous situations are inevitable.

Graduating students in my position are forced to face this reality with a personal decision. We can either focus on lower risk industries where we can implement what we have learned without friction, or face the beast of higher risk industries, where the technologies that inspire us will require a multi-year battle before we will see them realize their true potential. Deploying autonomous systems in these harsh environments demands more than just clever code; it will require the rigorous safety frameworks, accountability, and ethical standards of professional engineering. Many of my robotics and AI classmates in lower risk industries may never be forced to face the ethical and safety obligations of a professional engineer. Personally, I am emboldened by the challenge of working to tame higher risk industries like Alberta's oil and gas sector with complete engineering rigor.

WHY SCOVAN

A desire to take on a challenge of this scale requires a work environment that doesn't just tolerate the friction of innovation, but builds its engineering culture around it. Scovan is a company that understands what it means to drive forward new technologies in an industry that is often viewed as stuck in the past. For these reasons Scovan is a remarkable place for someone with my background and passion to begin their career. This is ultimately what drove me to join Scovan.

An inspiring example of Scovan being a technology forward company has been their work in developing and integrating an AI system, Artisan, which automates engineering deliverables. Many similar oil and gas companies would never be willing to shift away from all manual work. This willingness to embrace the reality of new technologies is what makes Scovan unique in heavy industry.

INNOVATIONS IN THE MAKING

Despite the challenges ahead, Alberta's oil and gas sector is among the most exciting industries in the world for automation. The sector's combination of remote locations, non-stop operations, unsafe conditions, and expensive labour makes it uniquely suited for robotics. With this in mind there are a lot of new innovations to look forward to.

AUTONOMOUS DRONE INSPECTION

Using a permanently onsite drone for inspection offers a host of advantages over human eyes: 24/7 operations, advanced cameras, visibility from all angles, long-distance scanning, and more make drone inspection a clear winner. While drone inspections are used today, they still largely rely on onsite pilots. The real breakthrough lies in fully autonomous, permanently stationed drone systems that eliminate the need for continuous human intervention.

MOBILE ROBOTICS ON DRILLING RIGS

Today, humans are forced to work in extreme, remote, and dangerous conditions in order to operate and construct drilling rigs and other industrial oil and gas equipment. While a lot of work is needed to ensure these systems are reliable, mobile robots are perfectly positioned to take over this work.

AI-POWERED DIGITAL TWINS

Using advanced onsite sensors, AI systems are able to generate advanced data regarding the mechanical health and operation of oil and gas assets. This information can be fed into a computerized recreation of the asset, known as a "digital twin" version. This digital twin can be used to perform preventative maintenance and catch issues long before a human eye or ear would ever notice an issue.

THE PATH FORWARD

The transition from lab AI and robotics to industrial deployment won't happen overnight. It will require a relentless commitment to engineering rigor, a willingness to face the harshest constraints, and company cultures that refuse to stay stuck in the past. For a person in my shoes, Scovan provides the perfect opportunity to embark on this quest. By combining advanced systems with the strict safety frameworks of professional engineering, companies like Scovan aren't just predicting the future of heavy industry, they are actively building it.

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Scovan is an industry leading EPFC that specializes in offering innovation and expertise for energy sector projects by providing engineering, procurement, complete fabrication, construction and construction management services.