To efficiently, reliably and safely operate Steam-Assisted Gravity Drainage (SAGD) reservoirs in Western Canada, a solution that integrates both technology and expertise is essential. As such Honeywell understands the unique requirements for SAGD production and has incorporated them into an integrated, scalable and robust SAGD technology from the well pair to the head office. Our integrated SAGD solution better supports the unit returns, improved recovery, and exploration & production (E&P) activity costs, characteristic of SAGD. This ultimately means a lower total cost of ownership to you, the owner and end user.

From Well Pads to Collaborative Well Performance
Honeywell has developed an end-to-end solution specifically for SAGD producers in Oil Sands - from Well Pads to Collaborative Well Performance; and from first production to market optimization. We deliver an integrated enterprise-wide technology platform that can help you to:

- Lower operations & production capital and operating expenditure with our scalable and rapidly deploy solutions to assist with meeting planning full field development targets to commercialize SAGD production
- Assist in monetizing SAGD by proving -up the commercial viability of SAGD plays with accurate real-time data to exploration & appraisal, operations, commercial and management teams, for confident resource decisions, and ongoing surveillance and production management
- Report on ERCB MARP meters and environmental compliance
- Enhance safety and personal and property security to minimize exposure to risk
- Lower maintenance costs of remote SAGD operations
- Reduce travel, labor and downtime for maintenance work over & intervention routes
- Optimize production planning and scheduling
- Improve the effectiveness of your workforce in managing the large number of hard to get at wells typical of SAGD by promoting cross-functional collaboration and workflows

End-to-End Technology for the Lifecycle of SAGD
Ramp-Up and Business Readiness:
Honeywell has the experience and portfolio of automation solutions to enable your business to not only control and monitor your SAGD reservoir and treatment facilities, but also control your SAGD business operations.

To operate SAGD efficiently, it is important that well delivery is supported by an automation & collaboration infrastructure that enables operation teams to harness the value of the ‘big data’ being generated by potentially hundreds of well pairs and processing units, and thousands of performance metrics. By automating business processes and focusing only on situations that demand attention, operators are able to maintain those assets remotely but also maximize the productivity of the
workforce. In supporting this, operators must maintain compliance with rigorous safety, commercial and environmental constraints across the value chain.

**The Process Knowledge System**

Services, technology and business knowledge deliver the most value when they’re integrated and synchronized.

The Experion® Process Knowledge System (PKS) from Honeywell unifies people with process, business and asset management, providing synergies that lead to more efficient, reliable and safe operations.

At the center of Experion PKS is a leading SCADA and ICSS system. Experion’s Distributed System Architecture (DSA) technology suits the large number of assets required and allows systems physically scattered over SAGD reservoir to operate as one integrated system.

Importantly, in our Experion R430 assets are managed as a template build specific for Upstream and therefore equipment can be created automatically. Experion Equipment Libraries contain predefined equipment templates with all the necessary points, parameters, alarms, graphics, trends etc to fully represent the equipment such as Well Pairs. Refer to Vertical Scaling section for more details of this valuable characteristic.

**Safety Management:** Keeping your personnel, environment and assets safe is critical. Honeywell’s suite of solutions provides multiple layers of protection – from emergency shutdown systems to fire and gas systems and detectors. Honeywell’s integrated safety solutions also let you monitor equipment for shutdown analysis, monitor leakage and use simulators to handle process verification, engineering verification and operator training.

Our ICSS includes built-in SIL3 safety controllers, built-in Compressor Controls and many other features to satisfy comprehensive business needs in a compact and easy to maintain package.

**Remote Operations and Maintenance**

SAGD fields have a large number of geographically distributed assets, which can create high operational and maintenance costs. Honeywell addresses these issues by providing the technology and systems to reduce the number of remote maintenance visits while providing high asset visibility and availability, support for collaborative decision making and automated workflows.

This is made possible by technology designed specifically for remote distributed assets like:

- Advanced equipment health analysis and preventative maintenance technologies
- Automated field operator rounds
- Mobile operator workstations
- Self diagnosing and alerting instrumentation
- Remote, distributed architecture – providing robust communications and control
- Remote video to verify alerts – eliminating some visits
- Utilizing collaborative and operational process-aware technologies to improve timely decision making, and importantly action.

**Remote wellhead monitoring and control:** From the pilot phase to production - the monitoring and control of SAGD wells is a critical part of scaling up to commercial production.

Honeywell’s remote wellhead monitoring and control solution provides:

- Wellhead instrumentation
- Remote control and data acquisition
- Wireless communication back to centralized SCADA
- Maintenance information to the central control room
- Expandable from pilot to production – reuse
- Mobile asset – able to be relocated as required
Environmental Management: Honeywell environmental management applications integrate your automation and information systems to ensure regulatory compliance while reducing risk. Disparate data is validated and then presented in reports, spreadsheets and internal web pages. This provides a continuous improvement environment to ensure that your facilities meet the real-time monitoring, record-keeping and reporting requirements of water handling and air emission standards and permits.

Facilities and Security Management: Our solutions work together to safeguard your facilities, people and the environment. From access control to CCTV to personnel tracking – all are available in a consistent user window.

Well Performance Monitoring: Having 100s or wells pairs it might be uphill to detect, analyze and prioritize well performance issues such as temperature falloff during circulation, predicting slugging conditions, and steam chamber collapses. Honeywell’s Well Performance Monitor (WPM) for SAGD provides performance analysis and collaboration tools to monitor, visualize, analyze, and catalyze actions on well performance in real-time from a web browser, anywhere, anytime.

Running on the Intuition® Executive technology platform, WPM focuses in the imperatives of human-based factors to enable optimal collaboration with colleagues across multiple sites and engineering centers. It uses federated data from multiple sources such as production, asset, process, GIS and simulation databases, directly within the Microsoft ecosystem of tools such as SharePoint (for content management, workflow and collaborative meeting workspaces), Windows Communication Framework for integrated audio visual (e.g. MS Lync), Microsoft Outlook and other MS Office tools for offline desktop analysis, content collection and reporting.

Supply Chain & Production Management

Planning and Scheduling: Based on the scaling and large number of widely distributed assets required for SAGD production, our solutions can optimize planning, scheduling and monitoring of SAGD & CPF activities by leveraging smarter technology. Honeywell’s planning and scheduling applications transform your plans into optimized production targets. You can integrate optimized schedules with O&G commercialization solutions for nominations and trading systems to help manage planned over & under production, and integrate with maintenance plans, to maintain well and field production profiles to ensure that the market demand and contractual obligations are met.

Production Management: Our suite of solutions offers your business greater operational efficiency and visibility than standalone applications.
We can support the full hydrocarbon and water accounting function from validated inventory and reconciliation, movements, blends, through to allocations and proration.

**Enterprise Collaborative Solutions**

With Honeywell’s Intuition Executive collaborative work platform, data from disparate sources can be blended to render composite KPIs, dashboards, reports and so on, surfaced into a single collaborative environment. The way that Intuition Executive truly supports federated data architecture means we provide a perspective into master data sources with less maintenance and data synchronization. This means that we still support the “single version of the truth” and knowledge sharing across your company, but lowers effort in systems and data maintenance.

This complete picture of your operation enables you to make real-time knowledgeable decisions about issues such as well and asset performance.

Importantly, Intuition Executive enables the development of composite solutions central to well management to better understand the relationship of assets, people, work, and product, in relation to location and property information. When considering the geographic distribution and vast number of assets, it is key to manage who is entitled to work or operate on what well or asset, when, safely, with the right training, and with no restrictions or concerns relating to access to the land or property where asset is located.

This is fundamentally important in SAGD where well pad production invariably overlaps with sensitive environmental, cultural, private land or property concerns.

**Vertical Scaling**

Given the very high rates of E&P activity necessary to make SAGD commercial, we take the need for template-based (or a ‘manufactured unitized’) solution deployment, a step further. In our support for more rapid deployment of E&P assets, and also for the management of change throughout a Well Pair’s production lifecycle from initial steam injection for steam chamber development, to full production and processing, we enable vertical scaling from the RTU through to the Remote Collaboration environment at Head Office; when new wells come online, and as Well Pair and RTUs are commissioned and configured at the control system.

As such Honeywell’s SAGD technology is designed for scalability; streamlining configuration from Well Pair to the head office. Therefore the efficiency in control and information management solutions relating to assets (e.g. wells) can be significantly improved. This means less maintenance, less concerns about synchronization of data throughout systems, and importantly a **Lower Total Cost of Ownership**, as our technology moves with the pace of your business. As such, our Experion PKS system and our Enterprise Collaboration, Production and Operations Excellence solutions propose to be an enabler for doing business, not an impediment.
What Makes Honeywell Better?

At Honeywell, we specialize in providing total end-to-end solutions for the Oil & Gas industry. As a trusted name in process control for more than half a century, Honeywell is now setting a new standard in safety, reliability and efficiency for Steam-Assisted Gravity Drainage exploration and production; with innovative products and trusted solutions from well pairs to the well surveillance and from pilots to full production.

For More Information

Learn more about how Honeywell’s solutions for Steam-Assisted Gravity Drainage exploration and production can improve efficiency, reliability and safety, visit our website [www.honeywellprocess.com](http://www.honeywellprocess.com) or contact your Honeywell account manager.

Honeywell Process Solutions

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