

Integrated Main Automation Contractor

Honeywell



**An Integrated Approach to Reaching
First Production and Optimizing the
Automation Lifecycle**

Prepare for operational and business excellence.

Today's global marketplace puts ever-increasing demands on industrial manufacturers. With fewer resources and growing competitive pressures, you need a comprehensive approach to solving your automation lifecycle needs.



Honeywell's integrated approach to main automation contracting project execution helps you quickly reach first and full production with the lowest possible risk. This holistic approach addresses plant-wide integration and optimization at all levels of your enterprise and prepares your company for operational and business excellence. Honeywell is committed to protecting your investment through the entire lifecycle of your facility.



Honeywell provides the knowledge to integrate project management, operations, automation, information management, security and maintenance—all in a safe and secure environment. With enabling innovative technology and services, our strategy goes beyond reducing your project risk and compressing your schedule; it extends into optimizing your entire operation, business performance and automation lifecycle.





Reduce risk with an integrated MAC approach.

Honeywell's integrated main automation contractor (I-MAC) approach leverages the foundational benefits of traditional MAC with seamless integration into the broader automation landscape to securely meet operational and business objectives. The result is an integrated strategy from the field to the boardroom that delivers value during the entire life of your asset. By helping you reduce overall project risk, accelerate production schedules and improve operational efficiency, Honeywell delivers the industry's best total lifecycle value.

Reducing risk in completing complex greenfield projects demands cooperation and aligned objectives between prime contractors, subcontractors, engineering procurement contractors (EPCs) and other suppliers. This team approach, implemented early in front-end engineering development (FEED), is essential for resolving interface and scope issues to maximize results and minimize integration risks.

Reach First and Full Production Quickly

In a competitive market, reaching first production quickly can make the difference in the success or failure of a new installation.

Training operators earlier, modeling the process in parallel with construction and testing advanced process control designs in simulation mode all contribute to improving your time to market and reducing your project risk. For a typical refinery producing 250,000 barrels/day, compressing the schedule by one day can save \$1M per day.

Honeywell's careful planning in the FEED stage helps:

- Ensure an efficient commissioning stage
- Optimize configuration from the field to level four
- Reduce re-work
- Reduce capital expenditure

Honeywell's I-MAC capabilities integrate industry-leading technology, such as UniSim[®] simulation, operator training and advanced control modeling solutions to enable faster startups and validated processes while optimizing the entire plant lifecycle. These advanced applications help visualize future process behavior, and improve decision-making and performance. Users can develop advanced control, conduct tests and verify their strategies within the simulation environment to reduce risk and accelerate payback by an average of six months. Using these tools in the design phase also seamlessly transfers essential knowledge into the operations phase.

Total asset optimization.

"For the initial project, Grain LNG required support from a world-class vendor to help us meet a very demanding schedule. We also needed an automation partner that we could rely on for the next 30 years. Honeywell has proved it can deliver high quality, reliable solutions, as well as consistent after-sales service to meet our stringent standards for safety and performance."

—Paul Johnson, Projects Manager, Grain LNG

Vertically-focused solutions meet the needs of specific industries. For example, hydrocarbon processing customers benefit from integrated UOP solutions, providing a single-source capability to drive down investment cost and project timing. In addition, pharmaceutical customers benefit from easier and faster compliance with regulations.

To further streamline implementation, Honeywell's strategic approach to applying wireless-enabled applications helps reduce time and cost to install field devices and operator tools. Honeywell's OneWireless™ applications deliver more value than just avoiding wiring costs, improving safety, reliability and productivity while ensuring regulatory compliance.

Operational and Business Readiness

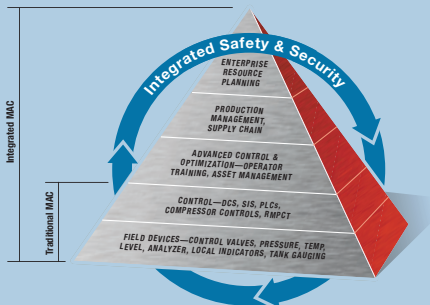
At the heart of Honeywell's approach is an integration strategy that prepares your new project for total asset optimization. This delivers common interfaces across your production and business enterprise, reducing engineering and design work and enabling a higher level of collaboration. Moving into plant operations, manufacturers then experience higher plant availability, lower operating expenditures and overall higher operating performance.

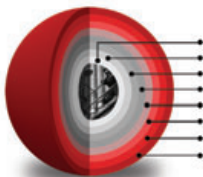
For example, using Honeywell's advanced control modeling in the early project phases enables you to apply these optimization strategies as soon as you go online. They address all of your critical optimization requirements, from improving regulatory loop control to globally optimizing your entire process integrated with either Honeywell or third-party systems.

In addition, our simulation solutions carry design knowledge into operations, helping operators visualize future plant behavior to improve decision making and plant safety.

To quickly reap the benefits of an integrated business network and supply chain, Honeywell's network professionals can tightly integrate your automation and business networks, allowing real-time knowledge collaboration across the supply chain for increased productivity and total business optimization. Our enterprise-wide MES applications enhance advanced planning and scheduling, and blending and movement automation, as well as operations, performance and production management.

- Honeywell delivers bottom-line results for our customers and allows the owner-operator to accelerate the design process and ensure a seamless integration. Industry experts look for opportunities to create value in every project phase, such as:
- \$1.2M in construction redesign savings
 - Reduce total installed cost by 25%
 - Improved ROI of 10%
 - Minimize change orders to less than 1% of total project value
 - Shorten project schedule by three months





Honeywell's Layered Approach to Plant Safety

- Secure Process Control
- Asset Management
- Abnormal Situation Management
- Effective Operating Environment
- Boundary Management
- Emergency Shutdown Systems
- Physical Protection
- Emergency Response

Layered Safety and Security

Honeywell recommends approaching safety from a plant-wide perspective, incorporating layers of safety, such as a secure process design, abnormal situation management® and physical protection.

Honeywell's robust safety technology, with integrated fire and gas detection, lowers the cost of safety and reduces the risk of incidents. Our safety system is operationally integrated with our control system to align a plant's goals for safety and reliability with a proven solution that combines process safety data, system diagnostics and critical control strategies.

Incorporating recommendations from the Abnormal Situation Management (ASM) Consortium, Honeywell products and consulting services help ensure that alarm systems perform effectively, that procedures are executed correctly and consistently, and that the operating environment is optimized for safety.

Honeywell's capabilities in both building and process control automation provide your organization with reliable access to asset management security, safety mustering and real-time location. Our building control system and process control system share the same architecture and tightly integrate physical and cyber security into a single platform. Combine that with our award-winning cyber security services, and we are able to provide you with multiple layers of protection against security threats.

Integrated Construction and Lifecycle Support

Honeywell helps you receive a better return on your new construction investment over its entire lifecycle, efficiently transferring and protecting knowledge to help you maintain or periodically upgrade your system to newer technology. Honeywell's record of delivering innovative products and services that add value to existing installations reinforces our commitment to protecting your investment.

With a focus on transitional excellence, our approach to commissioning and project support helps new facilities seamlessly transition from construction to operations. Our collaborative approach to lifecycle support includes providing customers with measurable benefits from on-site and remote support services, enabling them to meet the challenges of total plant optimization.

Consistent with this lifecycle support philosophy, our first TDC 2000® controller, shipped in 1974, is connected to our platform process control system, Experion, maintaining the controller investment while providing an innovative operator display environment. Experion is an open, seamless platform providing the foundation for integrating all process control and safety systems, including non-Honeywell systems, and automation software under a single architecture.



Honeywell I-MAC Capabilities Deliver Results

- Global capabilities with consistent local support and implementation
- Consistent global engineering tools and processes for each project phase
- 28 engineering centers
- Over 150 MAC projects executed on time and on budget
- Partnerships with best-in-class product and service suppliers
- Over 2,700 certified global project managers, engineers and designers
- Over 8 million hours of engineering and support delivered per year

Project Phase	Benefit of Standardization
Procurement	5-10% of project cost
Engineering/Design	10-20% of project cost
Project Management	5-10% of project cost
Capital Contingency	2-14% reduction
After Plant Startup	Benefit of Standardization
Realization of Benefits (DN)	15-30% faster completion
Incident Avoidance	3-8% annual production
Post-implementation Savings	10-15% of lifecycle cost

Source: Independent Project Analysis benchmark study

Execution Excellence

Honeywell maintains strong relationships with global EPCs, prime contractors, subcontractors and other strategic business partners. Our proven ability to integrate and interface with project team members provides the right resources to meet both project execution and lifecycle requirements.

Honeywell's integrated approach results in more robust designs and reduces risk to higher value segments of a project. Our contracting services reduce bidding, selection, negotiation and associated cost/schedule impact while building operational excellence into your facility design. Honeywell works flexibly with EPCs and owner-operators to provide the ideal execution strategy. For example, Honeywell can serve as a high-level or mid-level contractor and has partnered with multiple EPCs on a single project.

Our global methodology and knowledge management combine the best tools from proven sources and experience. For example, we utilize innovative tools and processes, such as the InTools database management system, to maintain consistency and standardization during all stages of execution.

Honeywell establishes partnerships to deliver value at all levels of the automation scope. Our PKS Advantage™ program engages other best-in-class automation suppliers to deliver open, integrated process knowledge solutions using the field equipment, software and associated services customers deem most appropriate for their operations. And, partnerships with companies like IBM and Microsoft provide our customers with resources and value for operational and business readiness.

"Single-source accountability reduced costs in hardware and software, integration, commissioning, maintenance, spare parts, engineering support and training."

*—Bjorn Knutsen, Specialist Engineer,
Control and Safety Systems,
Kvaerner Engineering*



Value for All Automation Stakeholders

With Honeywell's broad experience working with EPC firms, our contracting services and innovative technology helps mitigate project risk and decrease the likelihood of system failure at key points of interface. Best of all, we help reduce capital equipment, installation and lifecycle costs while maximizing lifecycle value.

Honeywell helps you achieve benefits not only during project startups, but also during ongoing operations. Benefits reach beyond reducing your project risk and compressing your schedule and extend into optimizing your entire plant operations, business performance and automation lifecycle.

Experion, UniSim, Abnormal Situation Management and TDC 2000 are registered trademarks of Honeywell International Inc. OneWireless and PKS Advantage are trademarks of Honeywell International Inc.

For More Information

To learn more about how Honeywell's I-MAC methodology can improve your automation lifecycle value, visit www.honeywell.com/ps or contact your Honeywell account manager.

Automation & Control Solutions

Process Solutions
Honeywell
2500 West Union Hills Dr.
Phoenix, AZ 85027
Tel: 877.466.3993 or 602.313.6665
www.honeywell.com

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