



**Deliver your next project on time
and within budget.**

Integrated Projects

Through technology and services innovation, Emerson is transforming how the process industry executes projects.



It's time to **LOOK AT PROJECTS DIFFERENTLY**

With so much riding on your projects, you must reduce the risks to your project's success and ongoing performance.

Unfortunately, most capital projects do not come in within 25% of their approved budget or schedule. On top of that, many of these projects fall short of anticipated production or quality expectations, and the technologies implemented may leave no path forward for future improvement or expansion.

To compete globally, look for investments that will improve your operations and maximize profitability. At the same time, lower capital project and ongoing operation costs.

Move ahead successfully.

Meet Project Budget Projections

Reduce the potential for budget overruns by forecasting capital project costs more accurately, reducing project risks, and providing more predictable project results — even with multiple owners, engineering contractors, and suppliers.

Achieve Operational Excellence

To meet operational and financial performance expectations — while lowering your total cost of ownership (TCO) — your design must meet operational key performance indicators (KPIs), have lower-than-expected equipment failure rates, and have reasonably priced spare parts stocking with low maintenance costs. Collaborate with Emerson's knowledgeable experts to create a solution that meets cost projections and long-term operational objectives.

Reduce Project Schedule Risks

Underestimating task times due to insufficient, inaccurate, or late data causes late change orders, rework, and multiple schedule extensions. Other risk factors include insufficient or unqualified implementation resources, and no contingency plans. Early collaboration with experts can put mitigating measures in place to avert these pitfalls.

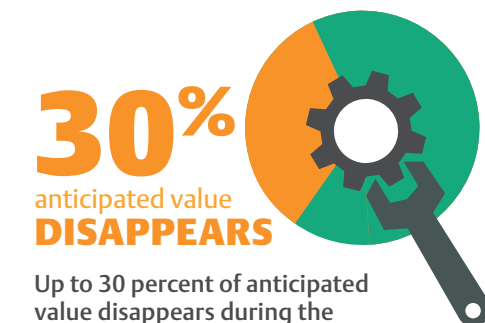
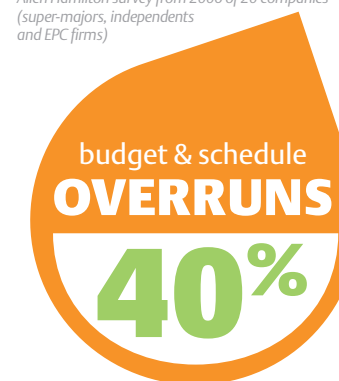
Expert Help for Every Project Phase

Attain a healthy return on investment by investing up front in comprehensive project planning. Emerson can help in every phase — planning and design, implementing and building, operating and maintaining, improving and modernizing, education and training.



40 percent of projects in the oil and gas industry are subject to budget and schedule overruns.

—Capital Project Execution in the Oil and Gas Industry. M. McKenna, H. Wilczynski, D. VanderSchee. 2006 Booz Allen Hamilton survey from 2006 of 20 companies (super-majors, independents and EPC firms)



Up to 30 percent of anticipated value disappears during the turnover/commissioning and ramp-up phases of new asset lifecycles.

—Deloitte. Effective Operational Readiness of Large Mining Capital Projects - Avoiding value leakage in the transition from project execution into operations. Article, 2012.

Meet Project Budget Projections

\$135
million
AT RISK

56%
INEFFECTIVE
communication

For every \$1 billion spend on a capital project, \$135 million is at risk. 56% of that (\$75 million) is at risk due to ineffective communication.

-2013 Pulse of the Profession, Project Management Institute

Emerson's project team delivers early risk detection and mitigation by using innovative services and technologies to reduce cost surprises throughout the project. With Emerson, you will have the decision integrity to run your operation at its full potential and meet your requirements for people in the field and in the boardroom.

Plan for Success

Front End Engineering Design (FEED) is the process of developing strategic information to assess risk and calculate resource commitment. The goal: define the scope of work to meet budget, time, quality, and safety expectations, while aligning key players early to mitigate the effects of late change orders. Investment in this front-end work produces benefits throughout the project:

- Lower costs
- Faster implementation
- Minimized project risk
- Design consistency with role clarification
- Increased user involvement and management support
- Improved project performance



Early Risk Detection

Teamwork combines with technologies so that inevitable late design changes do not bring risks or associated headaches. The Emerson project team's Responsibility Assignment Matrix (based on the RASCI method) enables people around the globe to work together toward a single goal. And technology such as DeltaV™ with CHARMs technology and virtualization provide flexibility to accommodate late design decisions without costly change orders.



Achieve Operational Excellence

By collaborating with Emerson's knowledgeable experts to determine the most cost-effective automation solutions, you can ensure a solution that meets cost projections and long-term operational objectives.

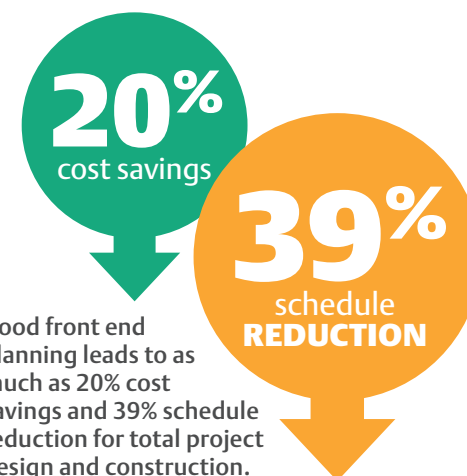
Reduce Implementation and Maintenance Costs

Although virtualization is becoming standard practice in industries worldwide, it can be complex and require expensive support. DeltaV Virtual Studio—an integrated application environment—offers easy implementation and management of virtual off- and on-line DeltaV production systems. You don't need experts to deploy a virtualized automation platform. Easily create and upgrade your control system while operating with little or no disruption for system upgrades, maintenance, and security.

Optimize Project Value by Leveraging Technology

Staying abreast of today's automation technologies and how to best apply them to your operations is a full time job. With Emerson, you can draw on a broad portfolio of technologies and services, and customize them to meet your automation project needs—all delivered with single source accountability to simplify your resource management and scheduling.

- **Leverage digital intelligence**—Emerson field intelligence offers a wealth of information, including diagnostics to predict/prevent problems that could affect the process.
- **Connect your plant**—Open communication standards link devices, systems, and applications in a plant-wide network. Process and equipment information is available wherever needed.
- **Control your process**—The DeltaV distributed control system helps you understand your process and equipment so production improvements and smooth operation are easy.
- **Optimize your assets**—New technologies and services tap the architecture's information flow to increase uptime, optimize performance, and reduce maintenance costs.



—Construction Industry Institute: Adding Value Through Front End Planning, CII Special Publication 268-3

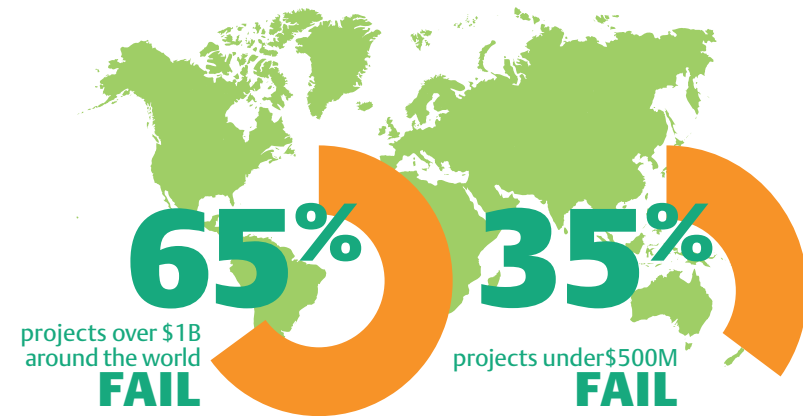
Realize your Project's Full Operational Value

Total cost of ownership extends far beyond your project's completion. Maintaining your operations over many decades is a large job. Emerson's broad range of knowledge, expertise, as well as our worldwide network of service personnel, makes for an ideal partnership over the life of your facility. Services include:

- **Project lifespan support services**—Automation system services ensure that appropriate resources and skills deliver valuable support services throughout your plant's life.
- **Project-to-operations transition support**—Local field service organizations collaborate to support installation, commissioning, and startup activities on your project.
- **Lifecycle services**—Maximize your operational value over the plant lifecycle through a portfolio of reliability, performance, and sustainability services.
- **Educational services**—Train operators, engineers, technicians, and maintenance personnel—a critical part of running a better, more profitable facility.



Reduce Project Schedule Risks



A project is considered to have failed if the schedule slips or the project overspends by more than 25%, the execution time is 50% longer, or there are severe and continuing operational problems into the second year of the project.

—Speed Kills, Klaver, Ali, 2012 Project Manager Magazine

Reduce Complexity with DeltaV's Electronic Marshalling

Electronic Marshalling delivers the flexibility to add I/O anywhere in the plant without affecting control room cabinets. The unprecedented flexibility comes from characterization modules CHARMs technology, which allows field wiring of any signal type to be terminated anywhere. You can decouple the process design from the I/O infrastructure design to easily incorporate late process changes into the automation system.

Reduce Device Commissioning Time

Starting a plant requires many man hours, so any place you can gain efficiency is an opportunity to get to production more quickly. With Emerson's AMS Suite, you can design device configuration templates for HART and Foundation fieldbus devices and configure devices in bulk. Configure all of your devices with templates at one time instead of configuring each device individually, streamlining device set up time and significantly reducing configuration errors common to a more manual process. Then run the validation report against the templates to identify any issues. Using device templates with bulk transfer has help users reduce commissioning time by more than 80%.

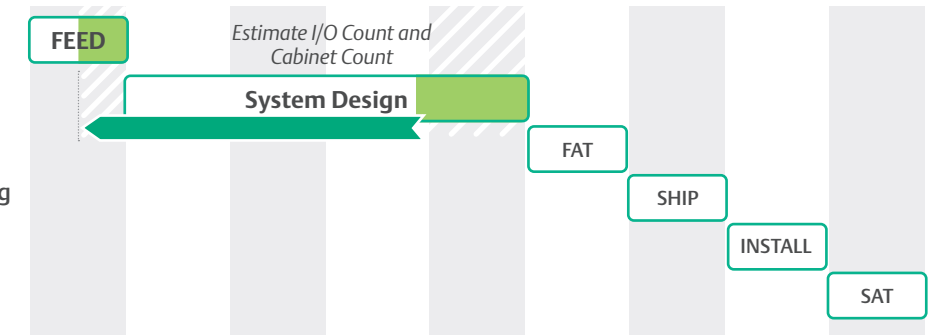
Decouple Hardware and Software Design for Project Savings

DeltaV Electronic Marshalling makes wiring mistakes obsolete and prevents late project changes from dangerously impacting system design. How? Device I/O does not directly relate to controllers. In fact, you save hours of work because devices can be wired to any CHARM in the system. And project teams can proceed with hardware commissioning without concern for the decisions made by the software team. Even better: The project team can complete the configuration and testing without even knowing where the I/O is wired.



Accommodate late PROJECT CHANGES

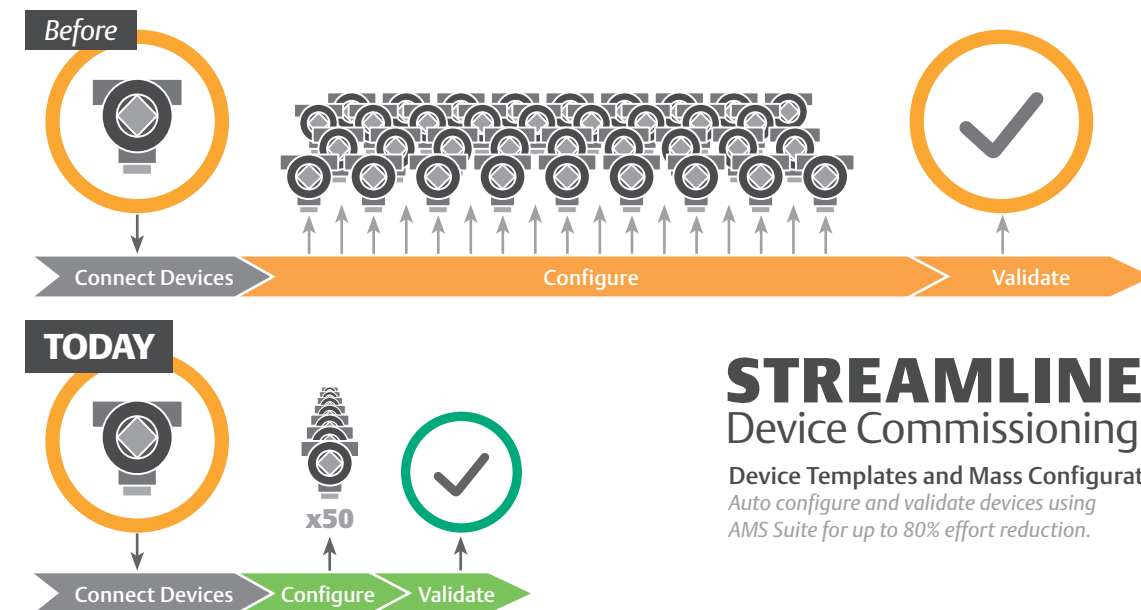
DeltaV Electronic Marshalling with CHARMs technology allows late binding of process changes providing unparalleled adaptability and can help avoid costly, last minute change orders.



Technology BREADTH

DeltaV Electronic Marshalling with CHARMs Technology covers more types of I/O to provide flexibility in late project changes.

	DI	DO	AI	AO	Other
Standard I/O	DI NAMUR	DO 24 VDC Isolated	AI 4-20 mA HART	AO 4-20 mA HART	
EMERSON I/O	DI NAMUR	DO 24 VDC Isolated	AI 4-20 mA HART	AO 4-20 mA HART	24 V DC Power
	DI 24 VDC	DO 24 VDC Nonincentive	AI 0-10V Isolated	IS AO 4-20 mA HART	RTD
	DI 24 VDC Isolated	DO 24 VDC High Side	IS AI 4-20 mA HART		TC/mV
	DI 24 VAC	DO 120 VAC Isolated			IS RTD
	DI 230 VAC	DI 230 VAC			
	IS DI NAMUR	IS DO			



STREAMLINE Device Commissioning

Device Templates and Mass Configuration
Auto configure and validate devices using AMS Suite for up to 80% effort reduction.



Expert Help for Every Project Phase

6 TO 7
YEARS

It takes an average of six to seven years to develop new employees into autonomous petrotechnical professionals who can make non-standard, original technical decisions.

—2010 SBC Oil & Gas HR Benchmark, Schlumberger Business Consulting Energy Institute, March 2011

Investing up-front in comprehensive project planning can greatly reduce the risks you throughout the project. Emerson can help at every phase—from planning and design, to implementing and building, to operating and maintaining, to education and training—to bring the most complex projects to successful completion.



Deliver Quality Project Results Anywhere

Because consistent design and operations are keys to building and operating capital investment projects—regardless of location—every Emerson project benefits from the Emerson Global Project Management Office (PMO). These project experts collaborate to develop and deploy global project processes, standards, and tools that align with the Project Management Institute (PMI), the world’s leading project management organization. The result: consistent, efficient, and robust process automation project solutions—globally.

Depth of Automation Expertise

Planning and implementing automation projects are not everyday parts of your job. Yet project success is determined in part by how well you maximize every opportunity and asset. Do not start from scratch and reinvent the wheel with each project. Leverage your relationship with Emerson to dramatically reduce planning and implementation time, reduce your capital costs, and achieve your business goals.

Strength and Stability

It’s important to know your project execution partner will be around for years to come; your project plan will be successfully executed; and you can build on the gains you make today. For over 100 years, Emerson has provided innovative process automation solutions with a commitment to total quality, plant safety, and meeting customer’s expectations. We bring together technology and engineering to produce a world of solutions, backed by people with experience to keep your operation running efficiently throughout its lifecycle.



50% expected to **RETIRE**

50% of experienced and managerial personnel in national and international oil and gas processing companies are expected to retire in the coming decade.

—Society of Petroleum Engineers, “The Great Crew Change: A Challenge for Oil Company Profitability”, April 16, 2011.

Underestimating task times due to insufficient, inaccurate or late data causes late change orders, rework, and multiple schedule extensions. Early collaboration with Emerson experts can put mitigating measures in place to avert these pitfalls later.

Engage Global Teams

To effectively engage resources regardless of location, Emerson offers the Remote Virtual Office (RVO)—a dedicated, secure engineering environment accessible by Emerson and its customers to collaborate on projects. Using virtualization technology, RVO eliminates physical hardware dependency and provides faster project initiation by allowing configuration and prototyping. This remote “one team” approach reduces overall project risk and minimizes negative impacts on project schedules.

Single Source Accountability

Keeping a solid schedule requires both broad and specialized knowledge of processes and tools. Rely on Emerson’s experience as a Main Automation Contractor (MAC), as an automation expert, and as a technology supplier for success. Supplying up to 90% of products and services directly and procuring the remainder, Emerson acts as your single contact point for management and engineering.



Whether your project is large or small, new or an upgrade of an older facility, Emerson can work with you from the earliest concept and design stages through solution implementation, and ongoing support and optimization. Emerson's depth of industry, technology, project management and service expertise is proven in successful projects delivered around the globe.

As a trusted advisor to some of the world's most successful companies, Emerson has collaborated in bringing the most complex projects to successful implementation. We look forward to collaborating with you, too.

Emerson

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