



SIEMENS

Ingenuity for life



An aerial night view of a large industrial refinery or chemical plant. The scene is dominated by tall, cylindrical distillation columns and a complex network of pipes, walkways, and scaffolding. Numerous lights are illuminated throughout the facility, creating a warm, golden glow against the dark sky. The overall impression is one of a busy, large-scale industrial operation.

Analytical Products & Solutions

Providing analytical project
execution expertise

Main Analyzer Integration Contractor
(MAIC) Services

usa.siemens.com/analyticalproducts

Main Analyzer Integration Contractor (MAIC) Services

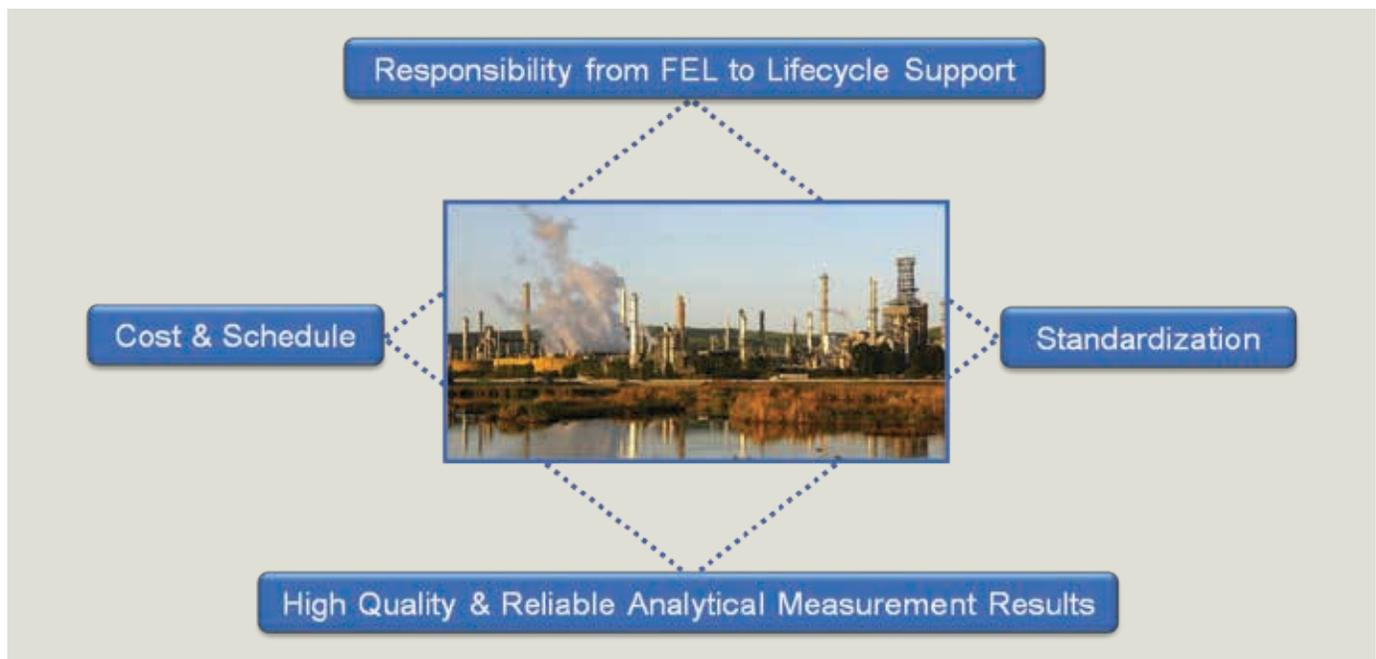
The business restructuring activities that occurred in the 1990's have left many owner-operators with a shortage of the in-house expertise required to adequately support their current automation needs. These resource shortages are impacting capital expansion, greenfield activity, as well as operational support and maintenance of brownfield sites. Most of today's automation vendors have faced similar challenges during this time period and have also been left with a void in their own experienced automation professionals.

To assist owner-operators with the resources necessary to meet the challenges of large-scale projects, teaming up with a Main Analyzer Integration Contractor (MAIC) can provide the resources needed for successful implementation of process analytical systems.

A MAIC offers clients the following benefits not typically provided with an automation contractor aligned with one particular automation platform:

- Alignment with client's long-term analytical vision
- Decisions based on combined business and technical expertise
- Discovery of innovative ideas and cost saving opportunities
- Solutions that are easily understood and articulated to management and operations
- Project schedule and budget that is integrated and verified
- Core project team to drive standardization across entire program and multiple sites

In today's business environment, a successful MAIC combines teamwork and efficient collaboration that can span multiple contract packages that are often geographically distributed.



Siemens Process Analytics as your MAIC Solution

Siemens Process Analytics is uniquely qualified to fill the role of the MAIC solution for a number of industries and markets. Siemens' decades of experience with a wide range of analytical (process & environmental) and communication platforms provides the essential skills to assist clients in selecting the best solution that both fits their unique business requirements while offering cost-effective solutions.

Siemens assembles the expertise required to ensure the seamless integration of diverse, complex process analysis solutions. Consistency of personnel beginning with the front-end study and front-end engineering design activities and continuing through plant commissioning is key to the overall success of any project.

- Begins with a strong project management organization consisting of highly experienced analytical professionals
- Mobilizes analytical technical expertise across the wide spectrum of analytical measurement solutions
- Validates the solution utilizing state-of-the-art integrated factory acceptance test procedures
- Delivers unparalleled start-up and commissioning services, and ensures continued operation through ongoing maintenance and support

A MAIC provides the greatest impact on a project's success through early engagement shortly after project inception. However, clients can still utilize the MAIC approach throughout a project's lifecycle. Not all projects are alike, which means that not all projects should be executed in the same manner. The MAIC approach is best suited for analytical projects that contain one or more of the following characteristics:

- Programmatic approach to multiple projects over multiple years
- Manage and coordinate execution in multiple geographic locations
- Analytical projects or programs that involve multiple engineering contractors
- Managing multiple systems or packaged equipment suppliers
- Concurrent modernizations and expansions
- Significant integration with existing infrastructure and installations

Siemens Process Analytics is the ideal partner to deliver a Main Analyzer Integration Contractor (MAIC) solution to a number of industries and markets. Decades of expertise with a wide range of analytical (process & environmental) and communication platforms provides the essential skills needed to assist clients in selecting the best solution that fits their unique business requirements.

Global Project Management — Best Performance Around The World

Program / Project Management

Siemens MAIC serves as your single point of contact with a focused approach ensuring the project scope is well defined at the outset, the work is planned well in advance of execution activities, execution responsibilities are identified and agreed between all participants and detailed project specific plans covering all aspects of the work are established, implemented and followed. Siemens has an extensive and well established project management procedure "PM@ Siemens" program allowing our project management team to oversee the complete details of each MAIC program, including coordinating OEM vendor activities and support.

Our team develops a scalable solution for each client based upon the following variables:

- Size of the organization and/or locations
- Number, size and duration of projects
- Economic and financial objectives
- The client's organization functionality
- Roles and responsibilities for execution

The recommended solution leverages Siemens global expertise and provides common methodology across projects/ programs and platforms.

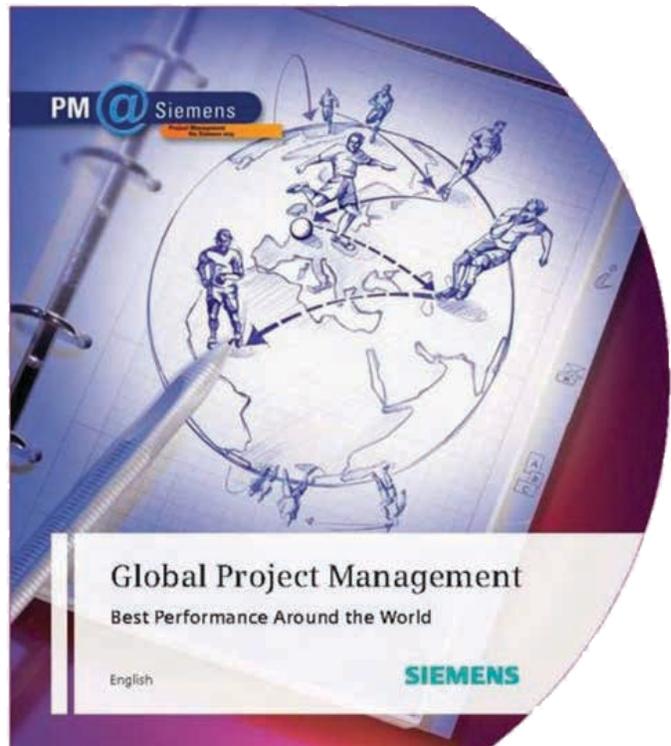
Prior to beginning the project, Siemens conducts a complete feasibility study, which includes:

- Site assessment
- Technical and industrial feasibility
- Market analysis and feasibility
- Financial feasibility and business case
- Risk assessment, investment strategy and recommendations

Project Controls

Siemens PM@Siemens procedures and project control function ensures that your entire global project execution team has the information they need to complete the work with a focus on quality and regulatory compliance. Working as your MAIC, we utilize our quality system to monitor and control the entire process and provide a clear audit trail.

PM@Siemens establishes specific processes for achieving sustainable success. Our methods incorporate proven best practices while remaining flexible enough to accommodate the unique needs of each client /project. Ultimately, our PM@ Siemens methodology provides consistent standards for meeting critical objectives. Acting as a project framework, Project Complete ensures that all work is performed within the established scope, schedule and budget.



Our structure guides each project from concept to implementation:

- **Define** the objectives and gain approval
- **Design** and specify appropriate integrated systems and technologies
- **Develop** the programs with value added engineering
- **Deploy** the solution with complete training and testing
- **Direct** the appropriate talent
- **Document** the process

From beginning to end, depend on Siemens to execute proven strategy with complete control, achieving overall project and business objectives:

- Financial feasibility and business case
- Risk assessment, investment strategy and recommendations

FEED and Detail Engineering

Siemens implements the front end engineering and design (FEED) stages of projects to provide the right resources needed to work with clients, owners and engineering, procurement and construction (EPC) firms. Selecting Siemens to coordinate the FEES and/or FEED and detail engineering work yields maximum efficiencies and cost savings over the project lifecycle. This is because upfront engineering solution development helps establish an accurate project scope and minimizes your risk and cost.

Systems Integration

Siemens has been providing customized analytical system integration solutions to the process industry for over three decades. We've learned that a properly engineered Enclosure (Shelter, Rack, Cabinet) is more than just a place to keep the equipment dry. The design and implementation of a properly designed analyzer packaging directly impacts analyzer system's long-term accuracy and reliability performance. From the process sample tap to the data networking interface, Siemens supplies you with a fully integrated measurement system.

Procurement Support

With Siemens working as your MAIC provider, we serve as your eyes and ears when communicating with your engineering, procurement and construction (EPC) firm throughout the project lifecycle. Siemens services allow you to remain in control of all decision making while receiving knowledgeable expertise from industry experts. We help you select the right products, services and solutions required to meet today's project requirements.

Third-party Equipment / Package Interface

As part of the definition stage of any MAIC program project, Siemens manages the procurement and / or integration of third-party / OEM equipment and interfaces. Our technicians and engineers have extensive experience working with equipment from all major providers in the marketplace. Regardless of the required interface hardware needed, you can depend on Siemens to supply the interface with your plant's main operating system to keep your plant up and running.

Construction Support

During the construction phase of any MAIC program, Siemens selects and supports a team of construction engineers who oversee facility construction according to the design detail. Our construction managers manage schedules, materials and workforce to achieve mechanical completion. Successful integration of the design information—such as shelters, skids, racks, piping, foundation designs, and sample bundles details—is critical.

Commissioning Support

Following the construction of a new plant, Siemens works to assemble and manage a team of engineers who can provide commissioning support needed for your automation scope of work. The team first divides the new plant into process and technical systems and tests them over a designated period. During pre-commissioning, teams check the complete installation against the design, develops operating manuals and trains the operators. Actual commissioning phase then proves system functionality by establishing safety, measurement, control and utility systems. Finally, the plant undergoes performance testing. Safety is the top priority throughout all phases.

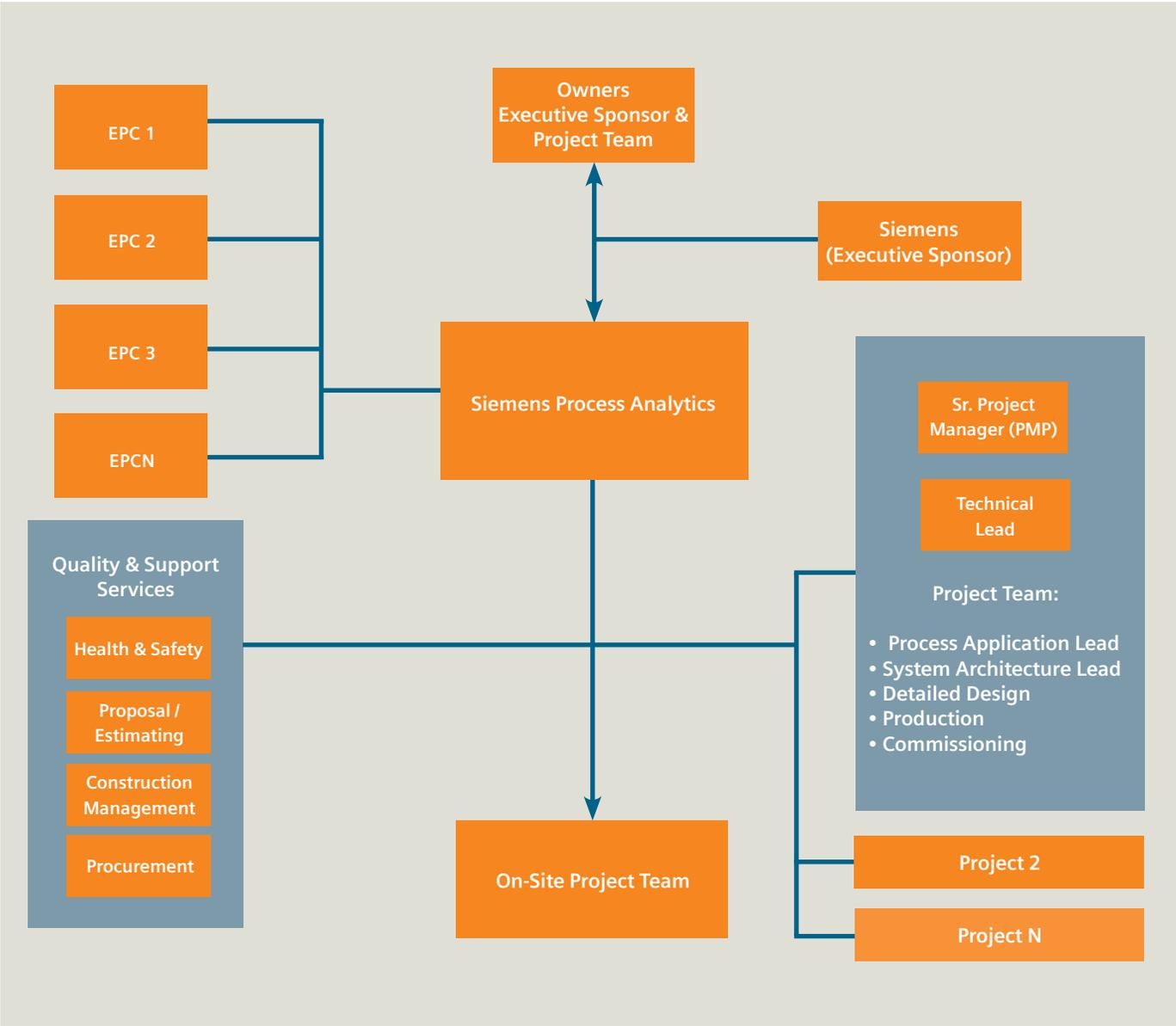
Scope of MAIC Services available from Siemens Process Analytics

Project Management	Project Engineering	Analyzers	Sample Conditioning System	Sample Recovery Systems	AMDAS
Control & Optimization	FAT	Analyzer Software Configuration	Field Installation	FEES	Commissioning & Spare Parts
Project Controls	SAT	Training	Health Safety Environmental	FEED	Subsystems / Integration
Procurement	Systems Integration & Testing	Asset Management	Modular Buildings	Shelter Alarm System	HVAC
Planning & Scheduling	Network / IT Infrastructure	Electrical	Civil Requirements	On-Site Maintenance Support	Environmental Monitoring
Construction Management	Operator Effectiveness	Sample Transport Requirements	Probes	Shelter Utilities	Maintenance Considerations

Organizational Coordination For Multiple Projects

Large grassroots projects can often involve multiple EPCs; each responsible for a specific segment of the overall project. Complicating things even more is that the EPCs can be located in different regions of the world. These projects create unique challenges for ensuring the overall analytical system integration is managed correctly. Siemens has the MAIC experience to bring all of these elements together with an organizational chart

shown below as one example of how to approach this class of projects. The proposed organization allows for focused execution within each geographic facility and even within a given location if there are multiple projects and / or initiatives. This enables leveraging, to the maximum extent possible, centralized and standardized engineering and program management processes and people.



Process Analytics Consulting from Concept to Commissioning — Reduced Risks, Effort and Costs whether you are plant operators/owners or belong to an EPC contractor, you will benefit in various ways from FEED for Process Analytics by Siemens.

- Analytic, application and industry know-how available right from the beginning of the project
- Established studies and concepts, that lead to realistic investment decisions
- Reduced project management and coordination effort, due to one responsible contact person and less time involvement
- Additional expertise on demand, without having the costs, the effort and the risks of building up the capacities
- Superior analyzer system performance with high availability
- Fast and clear design of the analyzer system specifications, drawings and documentation
- Lowest possible Total Costs of Ownership (TCO) along the lifecycle regarding investment costs, consumptions, utilities supply and maintenance.

What customers say about the benefits of FEED for Process Analytics, based on their experiences

- "The additional process analytics experts we had available assigned our project with the necessary personnel. At this time we did not have the resources to do that by ourselves. The close interaction between Siemens project leader and our key persons made sure that the requirements were fulfilled quickly and completely. Siemens employees were able to perform many of the activities, without direct supervision or involvement of our technical personnel. We could focus on other core activities and saved a lot of time."
- "The established studies, concepts and comparisons we received led to a clear reduction of investment in analyzers, network communication and shelters, because of the common standards we applied after FEED for Process Analytics was done. We got an optimal solution, considering investment and operational expenses along the system lifecycle."
- "We received comprehensive, unambiguous drawings and specifications in shortest time, before bidding. That avoided waiting until the analyzer system supplier reviewed engineering drawings after the purchase order, because installation could be prepared already. Therefore the whole bid process was quicker."
- "The available specifications and drawings we received through FEED for Process Analytics, did not allow arbitrary interpretation and there were no cutting corners left. The spread of fixed price quotations was reduced significantly. Furthermore, the available detail information, drawings and specifications reduced change orders not due to scope changes to a minimum."

Siemens Process Analytics Operations — Your Global Partner

With our strategically located centers of excellence in Germany, U.S.A., Singapore, Dubai and Shanghai, we are present globally and acquainted with all the respective local and regional requirements, codes and standards. Siemens Process Analytics is also integrated as a unified operation for efficient project execution where elements of the project are located in multiple regions.



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