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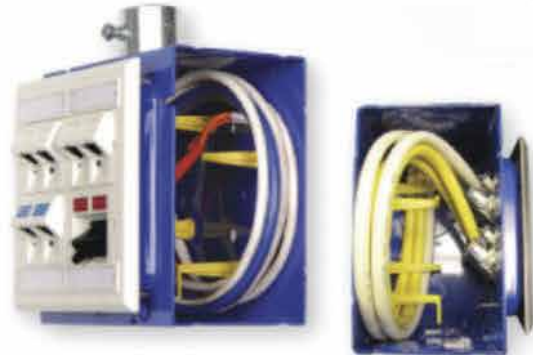
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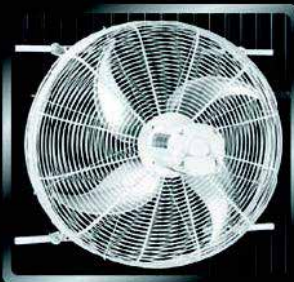
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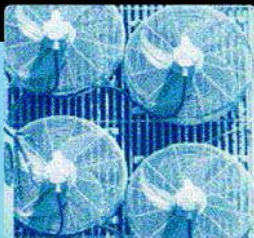
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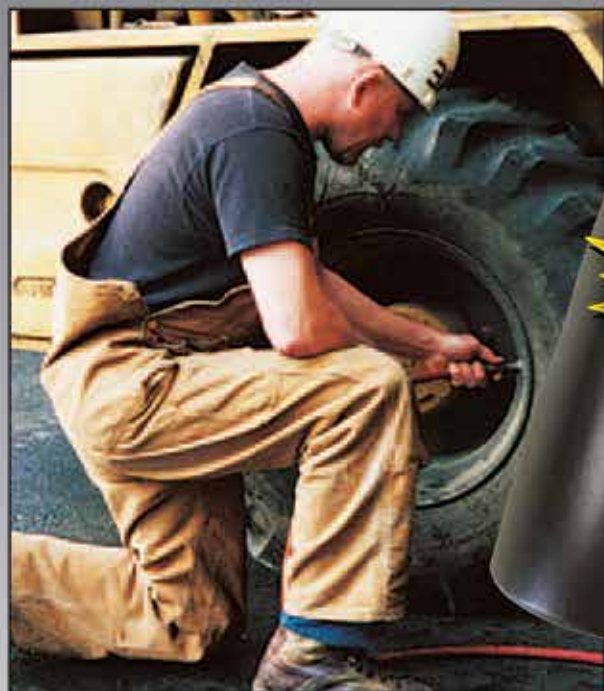
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Prima Power Highlights Combination Machines for Flexible Sheet Metal Fabrication for the Construction Industry

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Prima Power, a global leader in sheet metal working manufacturing solutions, showcases the Combi Genius and Combi Sharp advanced punch-laser combination machines that integrate high-speed punching and precise fiber laser cutting within a single, compact footprint.

The Combi Genius redefines flexibility, productivity, and efficiency for modern manufacturers in construction. At its core is a high-capacity turret combined with IPG fiber laser resonators (3-, 4-, or 6-kW), enabling multiple operations, including punching, tapping, forming, marking, and laser cutting, in a single setup. This integration eliminates the need for multiple machines, reducing production time and optimizing floor space, which are critical advantages for construction fabricators managing tight project timelines and limited workshop space.

Both machines deliver rapid, high-quality cutting across a wide range of materials and thicknesses such as aluminum, mild steel, stainless steel, brass, and copper up to 8 mm. This capability is particularly valuable for construction applications, including steel doors and frames, electrical cabinets and boxes, HVAC and air ventilation systems, wall panels, and structural components. The ability to quickly adapt to shifting production demands makes these systems ideal for construction manufacturers facing variable project requirements.

The modular design enables full customization and seamless integration with Prima Power's automation solutions, including automated loading/unloading, material handling, part sorting, and storage systems.

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Supporting up to 400 tools, the Combi Genius reduces downtime and enables complex part production with improved material utilization. Intelligent ram technology with an optional rotating punching ram further shortens changeover times.

Automation solutions, such as the Compact Express, LST/LSR, and Night Train, streamline part sorting and reduce manual handling, enabling lights-out production and maximum throughput.

Energy efficiency is built in through servo-electric EcoPunch technology, delivering up to 82% energy savings, low maintenance, and high operational speed. This results in lower operating costs and a reduced environmental footprint. User-friendly software, including the Tulus® Suite, simplifies programming, monitoring, and production flow with intuitive interfaces, ERP integration, and real-time analytics.

Comprehensive life-cycle support, including process analysis, training, preventive maintenance, and remote care, ensures long-term performance and customer satisfaction.

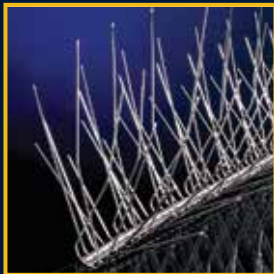
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Functional Safety at Scale: Safeguarding One of the World's Largest Ethylene Plants



Inside Chevron Phillips Chemical's pursuit to build not just the largest, but the safest ethylene and polyethylene facilities in the world.

When you design and build one of the world's largest ethylene and polyethylene facilities, size amplifies everything: throughput, complexity, and operational risk. For Chevron Phillips Chemical (CPCChem) and QatarEnergy's Golden Triangle Polymers Project, that reality kept safety at the forefront of every decision. The objective was to build big, operate safely, and sustain it for decades.

"Safety isn't just a goal; it is a foundational principle that guides every decision we make," says John Bergen, Process Control Engineer for the ethylene unit, who oversees all aspects of process control, including the plant's safety shutdown systems. "To achieve that, we ensure every process is designed and managed so that materials stay safely contained. We want to ensure that all our employees and contractors go home safely at the end of the day."

Located in Orange, Texas – about 100 miles east of Houston – the facility will include a 2,080 KTA ethane cracker and two 1,000 KTA high-density polyethylene units. The total cost of the project is expected to be around \$8.5 billion.

With a greenfield complex of this scale, CPCChem wanted to ensure nothing was overlooked. That's why the company viewed Functional Safety Assessments (FSAs) not only as critical to safety but also as an economic decision. Performing Stages 1 and 2 correctly reduces

overall project costs by preventing expensive redesigns, delays, and rework later in the process.

"CPCChem conducted comprehensive internal risk assessments in collaboration with our design contractor," explains Bergen. "To strengthen the integrity of our safety approach, we also engaged an independent third party to perform an FSA. Their role is to validate our assessments and design specifications, ensuring nothing is overlooked and that we meet or exceed all applicable safety standards."

From risk to readiness

An FSA is an independent, evidence-based review of a plant's instrumented protection layers against recognized safety standards. It confirms that hazards are correctly identified, required safety functions and Safety Integrity Levels (SIL) are defined, and the design will deliver the performance the risk analysis demands.

Stages 1 and 2 lay the foundation for the entire safety lifecycle. Stage 1 tests the quality of the hazard and risk work, while Stage 2 scrutinizes the detailed design.

To provide that independent perspective, CPCChem engaged SIS-TECH, a Houston-based engineering firm specializing in process safety management, instrumentation, and electrical systems. These early stages are more than technical exercises; they are financial safeguards.

"Stages 1 and 2 ensure a high-quality design everyone agrees on," explains Angela Summers, President and CEO of SIS-TECH and a licensed professional engineer

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with over 30 years of experience in process safety. “If issues are found early, they’re just changes to a document.

Once you get to Stage 3, when the equipment is already installed, the cost and delay can skyrocket.”

Stage 3, which is underway now, will provide the ultimate confirmation: ensuring that what’s installed in the field matches the design and performs exactly as intended before startup.

Stage 1: getting the hazard picture right

Stage 1 focused on the initial hazard and risk analysis. The goal is clarity: understanding which operational and business risks exist, what protection layers are required, and whether the assumptions behind those layers are sound.

Eloise Roche, a senior consultant at SIS-TECH, led the Stage 1 assessment. She describes the process as a “cold eyes” review that follows strict rules for identifying and describing instrumented protection layers.

“It’s about confirming the risk assessment truly matches the process, and that the instrumented protections are independent, fully described, and aligned with the standard,” says Roche.



Both Roche and Summers bring a unique perspective to these reviews. As long-time members of the ISA 84 committee and contributors to the international IEC 61511 safety standard, they don’t just interpret the rules; they help write them.

“There is a big difference between trying to interpret the rules and being part of the multi-year process of crafting them,” says Summers. “It’s important to know the intent behind the standard and how to apply it across different regulatory environments worldwide.”

For a mega-project of this scale, that rigor is essential.



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Multiple companies contribute to the design and execution, and responsibilities can blur. Clear documentation of roles and responsibilities is critical; without it, vital tasks can slip through the cracks. Bergen, from CPChem, has seen the challenge firsthand.

"We're building on proven designs from previous facilities, which gives us confidence in the overall concept," he says. "However, scaling up introduces complexity, more systems, more interfaces and more opportunities for risk. That's why we place a strong emphasis on detailed planning, thorough documentation and proactive risk mitigation strategies. The larger the project, the more critical it becomes to be deliberate and precise in how we manage safety."

Summers adds that this isn't just about safety, it's about protecting the business itself.

"When you're building bigger, you are also producing more," notes Summers. "If there's a disruption, the financial impact can escalate quickly: from lost production to missed delivery commitments. That's why early assessments matter so much."

Roche points to three factors that strengthen an assessment team:

Human performance: looking beyond hardware and logic to policies, procedures, and training and focusing

on the people who will use and maintain the systems.

Seniority and experience: assessors who have seen enough projects, and enough problems, to recognize subtle inconsistencies that can cause trouble years later.

Standards competence: deep familiarity with the current SIS standard and related guidance, plus awareness of revisions on the horizon.

Stage 2: proving the design will deliver

With the hazard basis established in Stage 1, Stage 2 shifted focus to determining whether the detailed design could deliver the required level of safety performance. This phase is where SIL verification, voting architectures, diagnostics, and proof-test intervals are scrutinized against the hazard analysis. It's also where human factors and long-term maintainability begin to shape the design.

Stage 2 also laid the groundwork for safe, consistent plant operations once the facility is turned over. Procedures, proof-test methods, and training materials had to be aligned with the design so that operations and maintenance teams inherit a system they can sustain for decades.

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erful safety tool,” Bergen says. “If someone doesn’t understand how a system works, or why it works a certain way, they’re more likely to make mistakes. Our goal is to make it easier to succeed and harder to fail.”

Stage 3: prove it in the field

Construction is now well underway. As sections of the plant are completed and turned over, Stage 3 will provide the ultimate confirmation: ensuring that what’s been installed matches the design and performs as intended.

Summers notes that Stage 3 also aligns closely with regulatory requirements under OSHA’s Process Safety Management (PSM) and the EPA’s Risk Management Plan (RMP).

“It’s the final check to ensure everything is installed, tested, and ready before a plant can safely start up,” she says. “It includes inspecting hardware, reviewing test results, and confirming that operations and maintenance procedures, along with training, align with the design.”

When functional safety systems work, potential issues are managed seamlessly, and operations continue without disruption.



For Bergen and the team at the Golden Triangle Polymers Project, they have their own way of measuring success.

“While this facility is rightfully recognized for its size, we want it to be known for its safety,” Bergen concludes. “High production capacity and high safety standards are not mutually exclusive; they go hand in hand. Safety is embedded in our design philosophy, our work processes and our culture. It’s not something we add on; it’s something we build in from the start.” •



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