Drills from Soilmec are put to heavy-duty use in infrastructure projects worldwide.

ITALIAN TOOL SPECIALIST REVS UP

GIANT DRILL NEEDED, *PRONTO!*

Soilmec's drills have no trouble boring holes with a diameter of 3.5 meters. But in order to provide this sought-after excavation equipment rapidly and flexibly to customers worldwide, the company now needs to think of its machine platforms in modular terms. Beneficiaries include the Leaning Tower of Pisa.

GERALD SCHEFFELS

CEO Simone Trevisani and his management team

When the Costa Concordia cruise ship ran aground near the Italian island of Giglio in January of 2012, no one imagined that experts from the region of Emilia-Romagna would later be playing a role in the extensive salvage operations. After all, the staff of Soilmec S.p.A. in the northern Italian city of Cesena are not maritime engineers, but rather specialists in excavation drilling equipment. However, CEO Simone Trevisani and his team are absolutely not accustomed to thinking in terms of "business as usual." Soilmec's gigantic drilling systems eat their way through the earth at large-scale construction sites 24 hours a day, seven days a week. They're at work on foundations at New York's Ground Zero and are helping to build subway systems in places like Amsterdam and →

By modularizing components across model series, Soilmec has saved development, procurement, and production costs.

Copenhagen. For the wreck of the Costa Concordia in the Mediterranean, heavy machinery was needed to test the seabed and anchor the 36 steel cables that would rotate the 50,000-ton ship by about 65 degrees into its upright position. Jobs of this type demand unparalleled reliability—on the part of both the machines and the operators. It's clear that Soilmec can't leave any part of its products to chance.

A reputation for quality quickly makes the rounds. And that's why Soilmec's references might be confused with a list of major tourist attractions. The Cesena-based company is involved in stabilizing the Leaning Tower of Pisa, for example, and in building the MOSE dam system that will protect Venice from floods. In both cases, Soilmec machinery is being used in preparatory work for laying the foundations.

THE CUSTOMER'S PERSPECTIVE: TOP QUALITY—AND FAST!

Given these many areas of application, Soilmec's product range extends from very compact machines to gigantic systems that weigh 150 tons and can drill holes 100 meters deep—with diameters of up to 3.5 meters. The ever expanding product range ensures that all customers find precisely "their" product. But it also means ever greater complexity, and complexity is the enemy of flexibility. This of course is clear to Simone Trevisani. "We want to be highly flexible—and we have to be," he says. "Superior quality alone is not enough for our clients' complex demands; we've also got to ensure short delivery times. We realized that these potentially conflicting aims can only be reconciled by taking a modular approach to designing our machines."

To achieve this, Soilmec looked around for a consulting partner who had demonstrated expertise in reducing complexity—and selected Porsche Consulting. "We took a very close look at how the Porsche sports car company designed its own production in order to generate high brand value and to raise customer satisfaction to a very high level. That fit in perfectly with our aims."

THE ANALYSIS: A CLOSER LOOK AT THE TECHNOLOGY

To reduce complexity in such sophisticated and specialized drilling systems without impairing functionality, performance, or quality, you've got to delve very deeply into the technology. This was precisely the task assumed by several teams comprising members from both Soilmec and Porsche Consulting (see next page: Complexity Management methodology). It may be surprising that in addition to developers and production experts, the teams also included after-sales specialists from Soilmec. But for Simone Trevisani, this made perfect sense. "Superior product availability is one of the promises of our brand," he notes. "Customers don't just want to buy machines; they want these machines to work. That's why quick service and minimum maintenance are key factors that we take into account back in the concept development phase. Or to put it another way, we view ourselves less as a maker of machines than as a provider of solutions. And as far as modularization goes, we want our solutions to be even more attractive to the construction industry."

A comparatively simple result of the two companies' joint efforts is described by principal Giulio Busoni: "The pilot control for the hydraulics that regulate the drilling system used to consist of different blocks to which additional valves were added, depending on the desired function. We've now defined a basic block that applies to all model series and sizes, plus two additional blocks. This means that we can cover all the desired functions with a limited number of variations. They all use the same mounting points, so the periphery always has the same design as well. "In addition—and this factor is of nearly paramount importance to Soilmec's decision-makers—the new hydraulic system is not only simpler but also more reliable because it doesn't need any external piping.

Based on this general principle, the teams also modularized other operational elements such as the winches. Results from their joint efforts are flowing step by step into both existing and new model series. Ivan Del Seppia, who is in charge of production, describes the outcome briefly and succinctly: "Fewer parts have to be kept on hand and preassembled, we save time in the production process, and that lets us shorten the throughput times." →

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REDUCING COMPLEXITY

An ever larger product range means more components, greater complexity, and higher costs associated with the design, procurement, and production processes—but this chain reaction can be broken by targeted complexity management. Porsche Consulting has designed a methodology for this task, whose goal is to develop a trans-series modular approach to machinery and vehicles.

The consultants go through the following steps together with their clients:

1. ANALYSIS OF THE CURRENT SITUATION

The entire product range is carefully examined and its architecture is analyzed from financial and technical perspectives. In parallel to this, the costs of product complexity are determined.

2. GENERATION OF A VARIANT MATRIX

Market demands are systematically analyzed to determine existing product variety. The features and functions of the different products are also examined to determine the degree of component variance.

3. MODULARIZATION OF MACHINERY DESIGN FOR NEW MODEL SERIES

A modular architecture is developed with the objective of decreasing product variation in future generations of machinery. For every module, business cases are carried out to determine optimum component design.

4. MODULARIZATION OF EXISTING MODEL SERIES

Application ranges and functions are specified for the respective modules. A system for module administration and usage is also defined.

5. OPTIMIZATION OF PROCESSES

The modular approach enables procurement and production processes to be streamlined; product variation is shifted to the final steps of the process.

This platform strategy has enabled Soilmec to reduce the number of components by 40 percent, and its component and production costs by 10 to 15 percent.

Porsche Consulting METHODS

Reducing complexity begins at the design stage—for example, by modularizing hydraulic drive systems.

MEASURABLE RESULTS: SEVEN-DIGIT EURO SAVINGS

The project took six months. Its results can be quantified in euros and cents. A modular approach to the main components across different model series is leading to direct savings for Soilmec of around 1.1 million euros per machine platform—calculated with respect to the platform life cycle. Simplifying the development, procurement, and production processes is saving an additional 700,000 euros. With the help of this new strategy, Soilmec has put a "same component policy" into practice that has already proven itself in the automobile industry as an example worth emulating. But Soilmec and Porsche Consulting are not yet finished working together. As CEO Simone Trevisani reports, "We've got more to do. Our next project will be to optimize the product engineering process and the whole supply chain." In other words, they'll be delving even deeper. ←

SOILMEC

Soilmec S.p.A. is one of the world's leading makers of drilling equipment. Founded in 1969 and headquartered in Cesena, near the Adriatic Coast, the company's 2012 turnover was around 250 million euros. Soilmec is present in more then 70 countries, including subsidiaries as well as sales and service partners. It is a member of the Trevi Group, which also includes Drillmec S.p.A., a maker of oil and gas drilling equipment, Petreven S.p.A., a drilling contractor in the same sector, and Trevi S.p.A., a world leader in geological engineering services. The Trevi Group employs 7,500 people worldwide and posted sales of 1.2 billion euros in 2012.

Complete Vehicle · Styling · Body & Safety · Engine · Drivetrain · Chassis · Electrics & Electronics · Testing · Industrial Engineering · Production Engineering

The greatest inventions were made in the garage.

A formula for success – and we're sticking to it.

Porsche Engineering
driving technologies

PORSCHE

Fuel consumption (in l/100 km) urban 18.9 · extra urban 8.9 · combined 12.4; CO_2 emissions 289 g/km