

Interdisciplinary design working to the advantage of the future plant

Tecon Engineering GmbH is using SmartPlant 3D to expand its presence in key global markets. Customers profit in many respects from the systematic multidisciplinary modelling strategy employed by the engineering company writes BERNHARD D. VALNION

Effective plant design means pulling everything together. No matter whether we're talking steel, machine or equipment engineering, measurement

and control systems, pipeline or electrical engineering, design with a central repository covering all the required disciplines is the dream of all plant de-

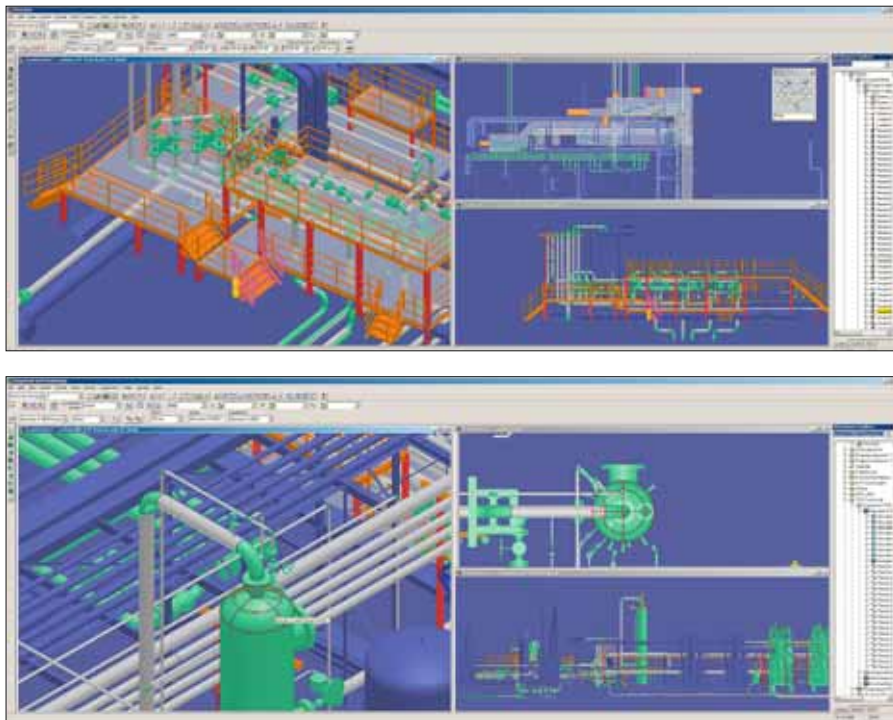
signers and operators. But what's it actually like in the field? Usually completely different. Focus is on the efficiency of the "solo solution" with only moderately networked applications, although it has long been known that optimized subsystems by no means always lead to the optimum overall system. In a heterogeneous engineering-IT infrastructure the multitude of interfaces is counterproductive; they are always a potential source of information losses. This is something that Tecon Engineering GmbH, the innovative engineering and consulting firm has long realized: "The goal of implementing multidisciplinary plant design in project work was the main reason why we opted for



Mamu gas field

Since September 2007 gas has been produced in Mamu, 57 km from Slatina in Romania. This gas was discovered and production developed by the OMV subsidiary Petrom. Total reserves of $7.82 \times 10^9 \times 10^5 \text{ m}^3$ are assumed, up to $23.8 \times 10^5 \text{ m}^3$ gas being produced daily. Mamu is part of OMV's strategy of expansion to reach oil and gas production of 210 000 boe/d before the end of this year.

Source: Pleininger / Petrom 2008



Tecon uses SmartPlan 3D for multidisciplinary plant design. In the screenshots a part of the Mamu project is depicted.

take-off (MTO) reports. The origins of Tecon go back to the year 1997, when what was then the project department of Petro Chemie Danubia (PCD), part of the OMV Group, was spun off. Its subsequent rise was accompanied initially by Auto-cad-based 2D design. Ramakrishnan recalls: "In those days design was not based on an integrative database. Material lists for isometrics, for instance, were compiled manually and then entered into an Access database." "We started with 3D

planning in 2005 with PDS, the use of which had been specified by our strategic client OMV. All the projects that we have since handled for OMV are planned with PDS. OMV also prompted us to take a closer look at SmartPlant as the Austrian petroleum and natural gas group had already opted in favour of SmartPlant P&ID. But Ramakrishnan says straight: "With SmartPlant we are still cutting our own path. In the projects in which we have a free rein, we always design with SmartPlant 3D." This is also explicitly specified by the management.

It was used, for example, in the Mamu project for the OMV subsidiary Petrom in Romania. As part of this greenfield project, for the first time, Tecon used SmartPlant 3D end-to-end for the generation of the FEED for a new processing plant for natural gas, which is produced on site. The natural gas there has a low content of H₂S. The main objective of the project was the design of suitable processing equip-

SmartPlant," explains Chandrasekhar Ramakrishnan, responsible for Business Development, to our editors. "No matter whether we are retrofitting a refinery or completely designing a new petrochemical plant, we want to be able to plan all disciplines with one system," adds Ramakrishnan resolutely, and for this, he affirms, SmartPlant was exactly the right tool.

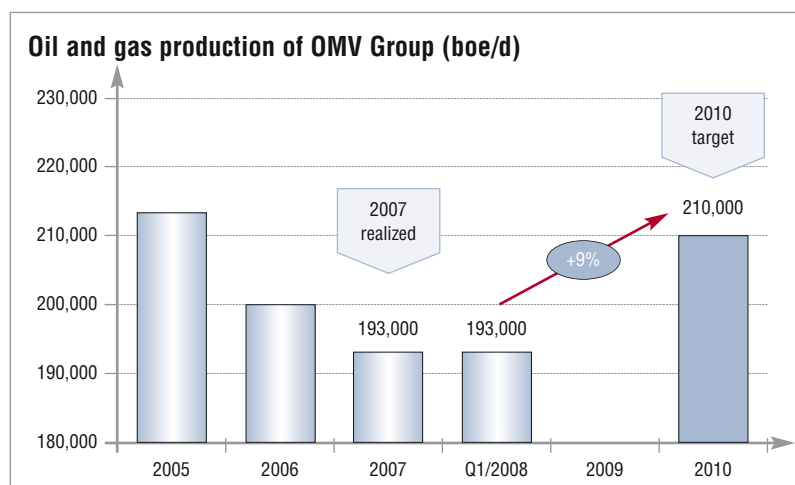
Tecon: At home in Austria and the whole world

If design does not cover all disciplines on the basis of a uniform IT platform, then often the large number of interfaces that result present an obstacle to efficient working. "That is the biggest problem in the industry", stresses the manager and adds: "The designer of one discipline may sometimes forget to forward certain information to a relevant colleague. This can even lead to collisions, for instance a pipe comes up against a steel joist because during planning without IT-assisted coordination mechanisms a pipeline has been moved by half a metre, and that is only noticed at the construction site. For multidisciplinary engineering, continues the Austrian-born manager, you need an integrated planning tool and employees who know how to use it – in word: Tecon, or perhaps better, in two words: Tecon and SmartPlant 3D.

Tecon is a renowned and very innovative Austrian engineering and consulting firm, which has been part of the ILF Group since 2006 (1). "Foundation for the success of our projects is our qualified and motivated staff. Dedicated project teams guarantee optimal, economic and flexible realization of the project specifications," that's what it says on Tecon's web pages. Around 100 people are employed in Austria, at the Leobersdorf and Schwechat sites, and another 50 at Tecon in Ploiesti in Rumania. If you want to offer this today, you have to have sophisticated methods and processes in multidisciplinary design work. Based on the predecessor version PDS and more than 25 years of experience in all important sectors of plant engineering, SmartPlant 3D from the Intergraph Corporation, based in Huntsville in the US-American State of Alabama, provides several possibilities for increasing productivity over the entire plant lifecycle, just like Tecon offers too. SmartPlant 3D includes comprehensive work-sharing capabilities, design automation tools and customizable design rules, enabling multidisciplinary teams to create and evaluate a 3D plant model. Automation extends beyond 3D modelling into drawing production, reducing the time needed to generate and update project deliverables such as orthographic drawings, piping isometrics, and material

The Intergraph tools used by Tecon:

SmartPlant 3D: 5
 SmartPlant & Photo Realism: 1
 SmartPlant P&ID: 4
 SmartPlant Electrical: 1
 SmartPlant Instrumentation: 2
 Smart Sketch: 1



ment to meet the Romanian quality standards for saleable gas and to feed the finished fluid into the Romanian distribution grid. Ramakrishnan explains, "We received the contract at the turn of the year 2008/09 and completed it in several stages up to October 2009. Internally, we were able to acquire a lot of know-how in working with SmartPlant. The client was very satisfied with the integrated application of SmartPlant, for example in P&ID generation." First a rough layout was drawn up, until the final piping design with main gas lines and main auxiliary lines was created. However: isometrics were not generated, as here the company is hoping to be awarded a follow-up contract for project implementation. The project entailed determining the size

and type of long-lead items, such as compressors and separators as part of a feasibility study and finalizing the technical concept. "Besides the technical specifications, we have also given the client the tender documentation. This allows the client to quickly order the main equipment, should we be awarded the contract, perhaps even before design is resumed."

Engineering reuse

SmartPlant can be used to transfer the know-how that is initially manifested only in the minds of the employees into explicit knowledge in an IT system. "We archive our know-how separately according to the different disciplines. The process know-how, for example for the

H₂S handling or the processing of natural gas, remains in the process engineering. Our SmartPlant administrators manage the associated best practices separately. And our design engineers archive their 3D models according to a separate system." This ensures that in future projects, existing 3D models and methods can be referenced even for quotation pricing.

Conclusion

The SmartPlant rollout went without a hitch at Tecon. At the start, two Intergraph employees were assigned to implement the necessary guidelines and templates, for instance for material lists. Overall this strategy worked out well, says Ramakrishnan: "To start with, we bought in the know-how, so that our engineers could concentrate on the engineering. In time, though, they should improve their user knowledge themselves with our own Power User." The designers would have needed around six months to get really familiar with using the design software. This is an investment in Tecon's sustainability, if you want. Ramakrishnan sums it up: it was worth it.

INFCORNER

(1) www.tecon.at

For further information on SmartPlant: www.intergraph.com

"We like to wow our clients"

Shared paths link Tecon Engineering and OMV. But now the plant designer is putting out feelers for new markets. Chandrasekhar Ramakrishnan explains how the renowned engineering and consulting firm intends to use its innovation for this purpose.

Dr Ramakrishnan, can you tell us something about the structure of the Tecon Engineering portfolio?

Our core expertise is still in consulting services and studies, project management, engineering, procurement and expediting as well as installation supervision and commissioning support in the business divisions Refinery, Petrochemicals and Up-Stream.

Is your key account customer still OMV?

That's correct. Besides the core business in Austria, we are implementing projects for various OMV subsidiaries, for example in Tunisia, Romania or Kazakhstan.

Does your company enjoy the status of an exclusive supplier?

No, we certainly have to compete against other contenders. In Austria, Tunisia and Romania we do have a framework contract with the OMV Group.



Picture: Valinon

There are projects that are only put out for tender to the framework contract partners, half a dozen of them in number. In some areas in which we have

specific experience from preliminary projects, the single-sourcing principle also applies. But that tends to be the exception. OMV projects currently account for more than half of our turnover. But we do want to diversify to reach new markets and clients.

Why?

There are several reasons. On the one side, it's to do with our strategic orientation, for Tecon Engineering has reached a certain size from which it makes sense to broaden our base. Another reason is that for our EPCM¹ core business, for example in refineries, the number of contracts awarded is declining in Austria, but also in Europe overall. We are seeing how refineries are increasingly set up where the oil is produced, i.e. in Brazil, Asia or the Middle East.

In what direction does Tecon want to move?

Here you have to differentiate. In the past we have mainly done detail engineering and realized EPCM projects, we have therefore profiled ourselves as a general designer. To a limited extent we have also acted as a general contractor, for project volumes up to around 5 million Euros. This had to do with the as-

¹) EPCM refers to "Engineering, Procurement and Construction Management".

sociated risks amongst other things. When I joined Tecon Engineering in 2004, the Process Engineering department consisted of a handful of colleagues. Here we have invested heavily and now employ 15 process engineers. We want to use this expertise, which you can't really do in a detail engineering project. For this reason, it is our intention to move more in the direction of basic engineering and early concept phases. We have successfully followed this course in the last few years and want to continue on it in markets outside Europe.

Don't you have the wind blowing in your company's face in that case?

It is absolutely clear that we can hardly offer detail engineering or EPCM in Tunisia for example, because there our hourly rates or travel costs are not competitive. In addition, detail engineering is offered at aggressive rates by Indian, Chinese or Philippine engineers. In Europe we are still competitive with our site in Rumania, but not worldwide. For this reason we focus on early project phases, there is much more scope.

Do you need special qualities to get established in countries outside Europe?

Local presence is naturally an important aspect. As a 150-man company, it is not possible to maintain an office in every country. And for this reason we are

using the network of the ILF Group, of which we have been a part since 2006. ILF has more than 30 offices worldwide and employs 1 700 engineers.

Does this mean that Tecon will operate piggyback with ILF?

Sometimes yes, sometimes no. In certain markets we shall rely increasingly on ILF, but we do intend to maintain our independence. However, we are successively adopting their engineering processes, for instance for quality management and safety management, and we are accelerating cooperation within the group.

Do you have any feedback from your clients on the performance of the designs, which you are now doing increasingly with SmartPlant?

Our clients have been very impressed by it because the 3D models can really boost the imagination. For the Mamu project, we have even recorded a video of the designed plant. A really great walk-through, set to music, with the landing of a helicopter. The client was really impressed. It is always good feeling to be able to wow clients with our work!

Many thanks for the interview!

Interview: RAIMUND LANG and BERNHARD D. VALNION

