

Don't let designers stand in the rain

Parallelizing engineering processes increasingly has long been an enforced reality. Aucotec AG (Hanover, Germany), a software vendor for more than 35 years in the market, is now setting new standards in this area. With 'agile engineering', the firm wants to empower designers to much more efficiently and effectively master the simultaneous cooperation of different disciplines in mechanical or plant engineering projects.

The waterfall model is a thing of the past because water does not flow uphill. Shaki Waterfall in Armenian province of Syunik

Picture: Wikimedia

The waterfall model is a breakdown of project activities into linear sequential phases, where each phase depends on the deliverables of the previous one and corresponds to a specialization of tasks. However, this approach is a thing of the past. No designer can or want to wait until the previous project step is completely finished. Thus, he starts without the results of the neighbouring discipline. The other departments do the same. This requires interdisciplinary comparisons repeatedly. There are also inevitable external corrections due to changing customer requirements or framework conditions, with an impact on all disciplines. This results in a lengthy, error-prone cycle of change transfers. It becomes even more complicated with parallel 'waterfalls', where the new version of a released process step is edited, while others are still developing on the basis of an earlier release.



"Agile engineering is a long-term strategy"
Reinhard Knapp
Head of Global Strategies, Aucotec

Data pool secures information flow

Thus, the waterfall model is not only a thing of the past because of excessively long waiting times, but also because water does not flow uphill, i.e. backwards – and toolchains only support a predefined sequence. This is why Aucotec developed the cooperation platform Engineering Base (EB). It combines all core disciplines of machine and plant design into one system. Its central data model ensures that every change in each discipline involved is immediately visible to everyone and can be further edited directly. To stick with the water image: The model is like a pond in which circles of ripples spread out as a result of each new drop of water. Likewise, each input into EB's single source of truth immediately reaches every discipline – an existential prerequisite for mastering complex scenarios.

Parallel becomes agile

With a number of innovations, the vendor has now optimized EB to such an extent that the next step, 'agile engineering', become possible. In addition to the established data tracking with complete change history in which it is possible to individually configure whatever changes you want to see, there is attribute-level rights assignment, which enables you to define who may see and edit which status. This only works because EB focuses on data instead of documents. Restrictive rights in relation to objects are not effective here, as each object exists only once, but different disciplines work on it, even in parallel. A process engineer edits a pump just like the electrical expert, but with respect to other aspects.

In addition, the data and the entire plant structure are protected against inadvertent changes. This applies below objects as well as above them ('glue to'). Agile work is only possible with this cross-disciplinary

certainty, which does not require the freezing of data, but enables continuous visibility of progress in neighboring disciplines and immediate usability of new data for one's own tasks. As a result, the much closer interlinking of the disciplines eliminates the need for waiting times and continuous changes back and forth between departments and contributes enormous gains in terms of efficiency. During the design stage, the modification of a plant engineering project is also possible at any time: What was envisaged a year or two ago does not necessarily have to be implemented. New insights can be deployed continuously and quickly, i.e. agilely, in the ongoing process.

Benchmark for future viability

"Agile engineering is a long-term strategy," explained Reinhard Knapp, Head of Global Strategies with Aucotec, adding: "Of course, this is not a must, EB creates efficient cooperation, even without agility. However, the suitability of a system for agile engineering is today the benchmark for its future viability." Whoever wants to execute more parallel engineering due to the ever-increasing pressure on time and efficiency, whoever has to cope with more and more complexity through such Industry 4.0 requirements as the exploding variety of sensors, whoever wants to grow and invest in a future that cannot yet be envisaged exactly, they will soon reach their limits with toolchains and synchronization platforms according to Mr Knapp. EB is in his view currently the only system that provides the basis for agile engineering.

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