

Gedia Dingerkus is laying a solid foundation for the future with ProLeiS

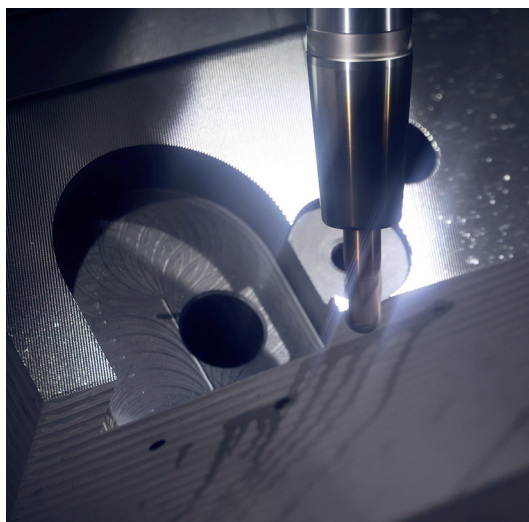
Extensively automated Job Manager creation in die manufacturing

As an automotive supplier, Gedia Dingerkus is a specialist in vehicle body construction and chassis components. While SAP is deployed as an overall ERP system in the company, this system is too inflexible to be used for planning in die manufacturing. So, the project managers rely on ProLeiS.



Easy-to-read labels and QR codes to clearly establish a link between the virtual and real worlds ensure all parts and components can be quickly and efficiently assigned to their specific project (Picture: Pergler Media)

In recent years, companies, like Gedia Dingerkus in Attendorn, Germany, have seen dies become increasingly complex, with no break in the trend in sight. OEMs are setting increasingly demanding requirements for their parts, and functional integration is calling for more features in dies and molds. The number of parts continues to increase, resulting in a rise in manufacturing processes.



Dies are growing increasingly complex

The days of production planners “planning in their heads” that was common a few decades ago is now largely impossible. Projects are far too comprehensive and involve too many details – and above all, they need to be continuously updated. Die and mold manufacturers of all sizes are realizing that software systems are indispensable for process planning and control.

“Previously, a die maker knew a die down to the last detail, including how far along each part was,” explains Ralf Hesener, Head of Die Engineering at Gedia Dingerkus. “Today the development of a die is organized very differently. The focus is on the individual part within a collaborative process chain.”

Die manufacturing places special demands on planning

Whether internal or external, global and detailed planning of projects in a die manufacturing company require very specific demands on a software environment. SAP, the ERP system used on the corporate level at Gedia, was unable to record and represent the processes specific to die manufacturing with the required level of detail.

So, the project managers began searching for a solution that would allow them to plan and control the entire manufacturing process for their dies in detail – comprehensively, semi-automatically and with no media discontinuity.

Some of the machines, which are still highly precise, are up to 20 years old. Planned automation is already prepared in ProLeiS. For example, an automated cell can be seamlessly integrated into the environment. To enable smooth bidirectional data transfers, the job management software is integrated in the MES (Picture: Pergler Media)

Excel tables as a supplement to SAP with restrictions

“The ultimate goal is to implement the various customer requirements at high-quality levels and on time – and on the single-part level,” Hesener explains. “This requires accurate planning. However, no die manufacturing operation can be controlled using only SAP – that would be far too complex. In conjunction with the Hydra MES system in place, we generated an extensive pool of internally developed and configured Excel tools to complement the SAP ERP system and support us in this process.” However, this system wasn’t functioning optimally. In particular, data consistency over the various interfaces between the different systems was a growing challenge. “We’ve put a lot of effort into our Excel solutions, including comparing the target times with the actual values,” says Hesener. “But it never really worked right, and we often didn’t have a description of the latest status.”

Precise tracking of parts and processing status

In 2015, the project managers had already begun to search for a safe, practical, end-to-end solution that could cover the entire process in Gedia’s die manufacturing operation. They needed a solution that would enable overall and highly detailed planning of the entire manufacturing process for all dies, while providing a precise target/actual comparison with the fewest possible manual inputs.

“The solution also needed to seamlessly and completely communicate with SAP in both directions,” Hesener emphasizes. “We were also looking for lot-controlled tracking of our parts. So, we needed a system that could give us an up-to-date and precise overview of the



Gedia die makers specialize in conceiving, designing and implementing highly efficient transfer and progressive dies, as well as hot forming dies for automotive base assemblies, attachments, crash components and chassis components (Picture: Pergler Media)

status of a project at all times, while giving real-time information on the precise location of each part.”

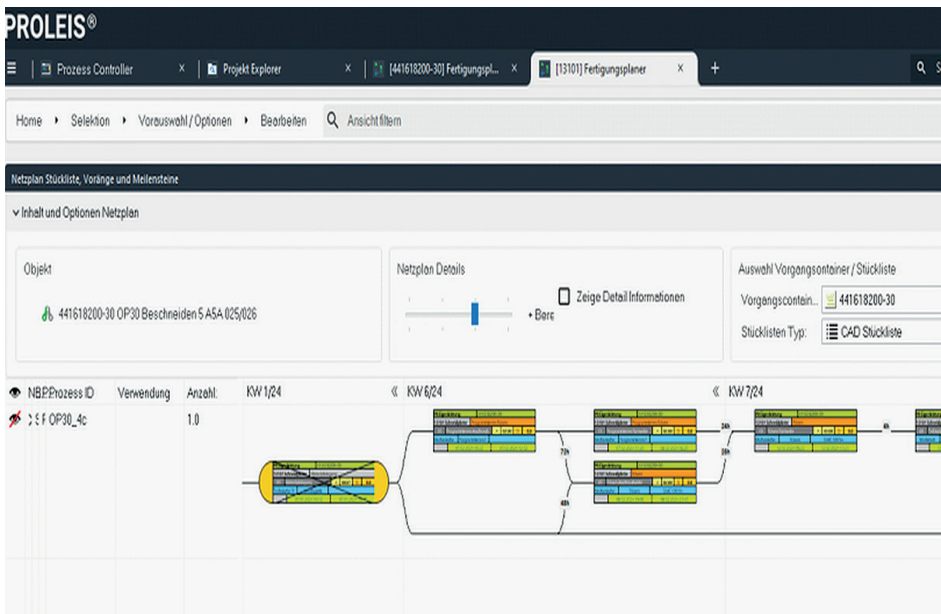
The open search for an end-to-end solution

Hesener’s team systematically prepared a comprehensive review of existing solutions on the market. It included systems used in die and mold manufacturing and tailored to particular industry requirements. The Gedia specialists conducted detailed evaluations of a number of systems. The leaders quickly separated from the rest of the pack because required criteria were clearly formulated, allowing the specialists to objectively assess the potential candidates.

However, it was more by chance that Hesener and his crew came across another solution. “We use Catia for our design work, with Tebis implemented as our in-house CAM system,” the Head of Die Engineering explains. “While we were at the Tebis Open House in Martinsried, Germany, in 2016, we inadvertently discovered that ProLeiS was a system that appeared to be the solution we were looking for.”



Each die includes digital geometry data and specific cutting data for the materials to be machined. The data comes from tool presets. An interface between the Zoller system and the ProLeiS/Tebis world ensures communication without a need for manual input (Picture: Pergler Media)



ProLeiS enables project managers to define milestones in manufacturing planning and specify the timeline accordingly. The system categorizes the individual parts of a die, allowing manufacturing to be planned and automatically optimized (Picture: ProLeiS / Gedia Dingerkus)

Two strong candidates in the final selection

The quick overview of the timeline allowed the Gedia team to draw valid conclusions about the status of a project for the internal customer. And where necessary, the high degree of transparency and intelligent algorithms in ProLeiS also enable fast changes in planning, like when project priorities change (Picture: Pergler Media)

Ultimately, there were approximately 20 different systems that Gedia assessed based on the evaluation matrix. Six of them made it to the next round, and the providers presented their solutions on-site at Gedia. In 2018, the selection was narrowed down to two finalists: ProLeiS and another well-known system used in many die manufacturing companies. "When we decided on ProLeiS in 2019, we'd thoroughly tested everything and were certain that we had found the optimal solution for our needs," Hesener affirms. "The questions that came up before implementation were: Which module should we start with? and Should we start with planning or with logistics?"

Doing everything correctly from the start

The project managers at Gedia decided on another route. "We wanted to do everything

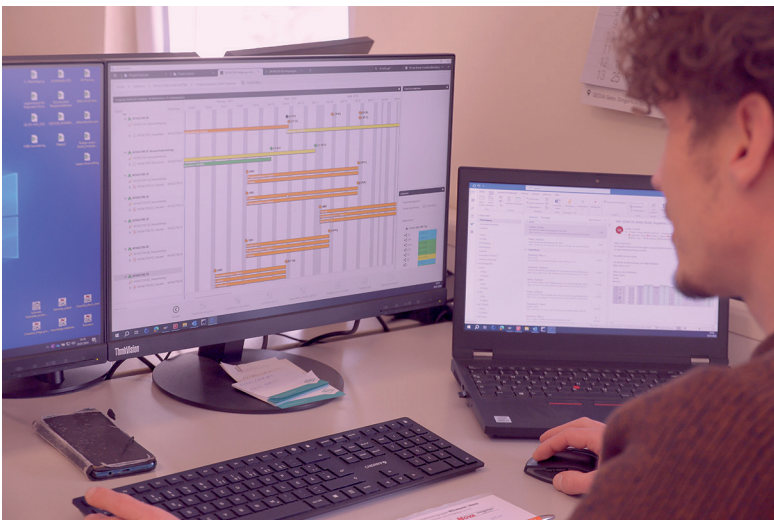
correctly from the very start," Hesener says. "We wanted the complete solution. Our goal was for everything to work smoothly when we flipped the switch, including the connection to SAP. As far as we know, we were the first company to implement the entire

process in ProLeiS in a single step." getting there wasn't without its setbacks and detours. For example, not all the intended strategies matched the planned procedures. "Some corrections opened up a rat's nest of changes," Hesener recalls. "We were very thorough in planning the implementation, and we worked with the Tebis team to include future developments in the considerations. Our goal was to have everything working at our 'go live' moment. And we achieved that."

Employees were actively included in planning

The project managers brought in employees at a very early stage, which proved to be a smart move, because they freely contributed their knowledge, new ideas and useful feedback that was included in planning. This also allowed several teams to work on implementation in parallel, which was a great advantage. The participants also set up a test environment for communication between ProLeiS and SAP very early on. The work on the interfaces became extensive.

"Our needs grew along with the implementation," Hesener recalls. "We kept wanting more functions. For example, we wanted to be able to precisely analyze where we were late and losing time. Where is the idle time? What technologies create bottlenecks? After careful analysis and planning, we wanted to implement the system in a way we believed would meet our needs. This wasn't always in-line with what our partners at Tebis envisioned. But they didn't push their standard; they implemented the requests and specifications we wanted. That made a very good impression on us."





All relevant information for the machine operator is displayed on the viewer and based on the requirements of their role. Paperless communication via ProLeiS ensures that all team members can work on a project in its current status (Picture: Pergler Media)

Profile

Gedia Gebrüder Dingerkus GmbH

Gedia Dingerkus has a history that extends back for more than a century. The company has been supplying the automotive industry since 1955. It currently employs more than 4,600 people at nine production facilities and is also involved in several joint venture and research projects. The company's die manufacturing department ranks among the best die makers in Germany. They have already won three awards in the "Excellence in Production" competition – also winning in the "internal die manufacturing with over 50 employees" category. More than 160 employees in Germany, China and Spain design and manufacture state-of-the-art dies and fixtures. Die manufacturing is also supported by an in-house prototyping department, consistently applying new insights from product development in die design. The company's capacity is supplemented by a network of international die manufacturers.

Lean structure and seamless communication with SAP

The result is a lean structure in ProLeiS that works in hierarchies comparable to those in SAP. The die makers compile all project inquiries, whether they involve a new die, a change, or repairs to dies and resources. For example, highly accurate hourly rates can be estimated in advance during the overall planning.

A quick overview is facilitated by the high degree of data consistency and transparency in ProLeiS. Manual data entry and data transfer are minimized to the greatest possible extent, and the automated processes enable all participants to work with the most up-to-date data (Picture: Pergler Media)

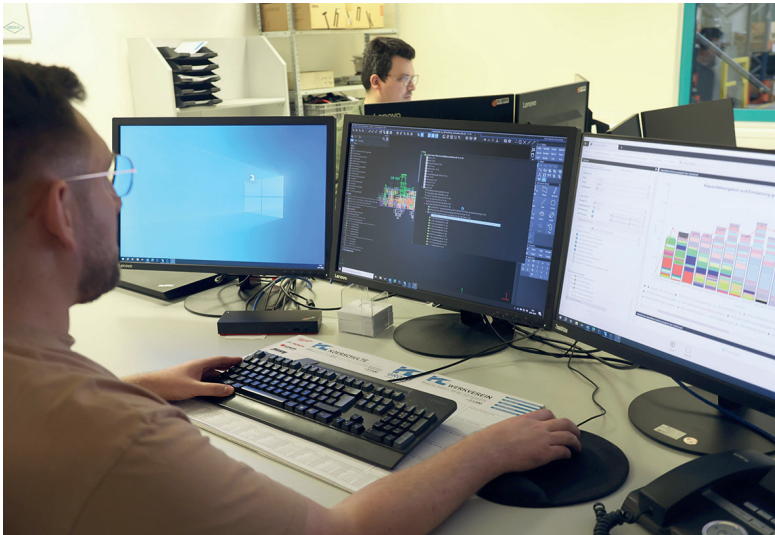
The new planning and control tool uses information that includes the version-numbered bills of materials it receives directly from Catia. Orders for the standard parts that Gedia primarily procures from the manufacturer Tecnorm are automatically triggered and routed to SAP for execution. The standard parts are delivered, complete with QR codes, and registered with assignment to the bill of materials.

Extensively automated Job Manager creation

"In detailed planning, we implement productive planning based on standardized manufacturing processes," Hesener explains. "The Tebis specialists developed the templates on-site with our people. The templates were extremely advanced at a very early stage, logically linked with each other. We can realize extensively automated Job Manager creation by categorizing the individual parts."

ProLeiS opens up new options. The processes and workflows in the projects are very easy to control, and changes are made based on the current status. Because ProLeiS has all





The work methods have fundamentally changed with ProLeiS. The internal customer can now quickly receive precise information on the status of a project. Throughput time is also shorter, especially because idle time was optimized (Picture: Pergler Media)

Capacity planning precisely indicates the allocation of existing capacity, and in ProLeiS it's very easy to see where in-house capacity is no longer sufficient and where the die manufacturers may need to procure services and products from external suppliers (Picture: ProLeiS /Gedia Dingerkus)

the data from the NC programming of setups, NC programs, tool lists, step information and documentation from the released CAD design data and bills of materials – and because the operations are assigned to the associated equipment, the bills of materials item and the planning process – it provides a simple and complete overview. It also enables flexible changes with the click of a mouse, allowing for accurate and easily optimized sequences for “what if” scenarios.

Changes had to be made in the process chain

“Most employees enthusiastically pitched in from the start. Their feedback was instrumental in the success of the project,” Hesener says. “The ProLeiS implementation brought with it a fair number of changes for individual employees.” This started with the designers.

Focus

Manufacturing Execution System (MES) ProLeiS

Gedia Dingerkus clearly relies on ProLeiS as a manufacturing execution system for implementing and tracking its internal customers' requirements down to the individual part level. Among other tasks, MES solutions provide manufacturing control to optimally process all scheduled production orders within the specified deadlines and with the available resources. The MES controls implementation, and also incorporates feedback from production. ProLeiS provides outstanding flexibility for the user: Short-term changes and unexpected outages can be quickly and optimally rescheduled. Stored roles and access privileges ensure that every user knows their tasks and can complete them in the correct order. The user only sees the current data that are relevant for them. ProLeiS controls all communication with a clear approval concept and also ensures a smooth workflow.

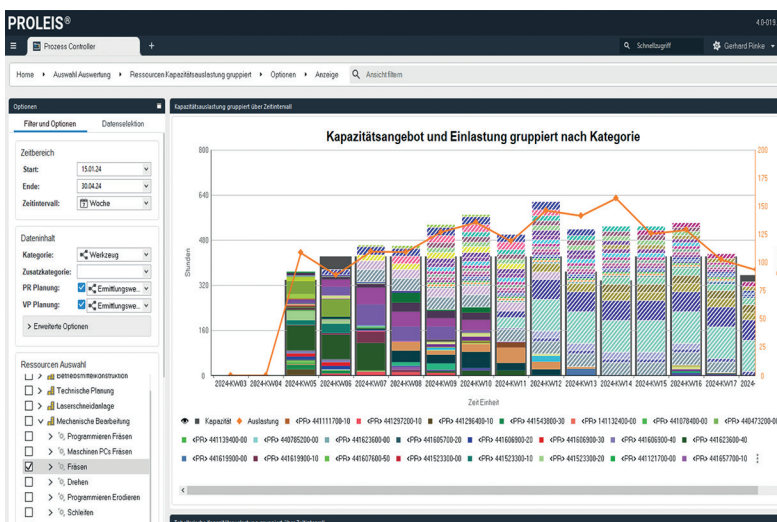
“In the past, they all had their own style, for example, when preparing a bill of materials. This process is now standardized and requires accurate entries in the associated fields. We worked this out and developed it together, and it now runs seamlessly.”

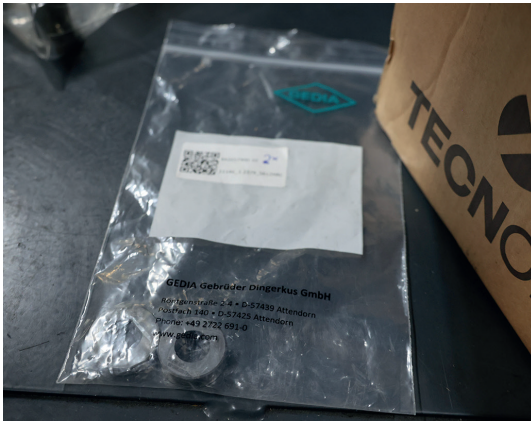
There were many areas where work had to be done to automate steps that were previously performed manually. “All the knowledge we gained from this has been standardized and integrated in the process,” the Head of Die Engineering remembers. “We did a lot of cleanup work and completely reorganized a lot.”

Elimination of institutionalized internal logistics

The employees have agreed that in the future, a “supply obligation” should apply, “Everyone is responsible for ensuring the part they’ve processed is delivered to the next processing station,” the production expert explains. “We no longer have our own internal logistics.”

The planners wanted to renew their machines when ProLeiS was introduced. “Some of our machines are 20 years old, they hardly have any automation, and their tool magazines are relatively small,” Hesener says in reviewing the current situation. “The machines are operated in three shifts with one operator each. But we’re already working with digital twins of the machines, which have been precisely remeasured. A lot has already been set up to enable future automation.”





ProLeiS automatically triggers orders of parts from the bills of materials in close coordination with SAP – on time and aligned with the appropriate steps in the operation. All parts can be precisely identified by QR codes and assigned to the project (Picture: Pergler Media)

Intelligent use of new potential

Using the knowledge they've acquired from ProLeiS, the die manufacturers want to increase their automation this year. "At present, we're still outsourcing 12,000 hours of machining capacity to external partners. We want to bring a large amount of this into our own production," the die specialist confirms. "We want to break out of the 1:1 ratio of human to machine. The goal is to achieve a higher throughput with four fully linked machines and significantly fewer on-site operators. The machines should be able to run around the clock, unattended whenever possible. We can then apply the operators' expertise to higher-value tasks."

ProLeiS has also significantly changed other aspects of the way work is done at Gedia. The internal customer can now quickly receive precise information on the status of a project. Throughput time is also shorter, especially because idle time was optimized. "We now make our purchases in a completely different way, on the basis of operating steps," Hesener explains. "In the past, we purchased everything at once, and the parts and materials often lay unused for months until they were needed. This is now completely different – we procure things when we need them. This reduces the capital tied up and saves space."

Nobody wants to go back to how things were before ProLeiS

Thanks in large part to its high degree of transparency and many customizable options, ProLeiS is an important system for day-to-day work, and it's also laid the groundwork



for future development. "Nobody wants to go back to how things were before ProLeiS," Hesener laughs. "The system quickly provides us with all the data we need and enables us to quickly and flexibly respond to short-term challenges. With ProLeiS, we're also laying a solid foundation for our automation, which we will be taking on soon. The Tebis and ProLeiS team are partners who take us seriously and take action to address our requests and needs. Working together, we're establishing and shaping the future of our die manufacturing."

Author: Richard Pergler

The project managers have an overview of individual parts as well as entire dies in the ProLeiS MES (Picture: Pergler Media)



Ralf Hesener, Head of Die Engineering at Gedia:

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Perspective First things first

When building a house, you don't start with the roof and then think about how to lay the foundation later. Everyone knows that would be the wrong order. But this isn't so obvious in some automation projects, which often get rolled out from the wrong end. Not so for Gedia: The die manufacturers began by considering their workpieces and processes and cleaning up their structures. They've standardized everything extensively and established a system on the software side that can transparently handle all procedures in die manufacturing – laying a solid data foundation for the entire manufacturing process. Therefore, automation isn't the starting point, it's one of the last links in the chain. And it becomes much easier when all the groundwork is laid as accurately as Gedia has done.

Richard Pergler