Mashine Set-Up Times: Unused Capacity and Cost Reserves

Mashine Set-Up Times: Unused Capacity and Cost Reserves

(Dr. Hans-Peter Krapohl)

Installationworksat a die casting installation for E-mobility parts with already set-up die casting mould. Set-up times can be decreased relatively easy by approx. 60 %, according to Mr Dr. Krapohl.
PICTURE: WARREN RICHARDSON

Machine set-up times are still neglected. They hold considerable potential, some of which can be tapped with the simplest means. The industrial switch to e-mobility and the ongoing process of converting to aluminum chassis with high follow-up investments, the emergence of new materials, a shrinking market, increasing foreign competition, rising factor costs and stricter environmental requirements describe the cost screws that foundries face with falling revenues. Asian and American competitors are buying less, but are building new, efficient, costoptimized and highly productive capacities in Europe in record time. More and more foundries are noticing this pressure. “Old fashion” is out – for good. Darwin’s theory of evolution applies to companies as well as to nature: companies that do not adapt have no chance of survival, so they are sorted out over time – today, faster than ever. The capital costs in machines, buildings and facilities necessary for survival, which hae to be earned over the years in the form of depreciation and loans, place foundries in front of considerable problems. Problematic, when only small profits can be achieved, recessions or pandemics cloud economic prospects. Foundries that manage to generate competitive advantages by activating unused production resources perform significantly better in competition. Stagnating and / or capital-intensive foundries, on the other hand, experience a painful increase in their cost pressure, which they can only compensate with difficulty.
A completely underestimated potential lies in the mostly neglected set-up times. It is astonishing to find die-casting machines of the same type with set-up times of up to 24 hours, especially since times of significantly less than 60 and even less than 15 minutes can be achieved. Set-up times of one shift are not uncommon for simple core shooting machines and molding lines often lack model plates close to the molding

machine.

Logistics instead of efficiency, time instead of products. Solution-oriented approaches are not present in many places. With a set-up process study, a SWOT analysis, a multi-moment study, a sanity check, even with Refa or other similar tools, the causes of non-optimal set-up processes can be analyzed promptly and inexpensively and measures can be taken.

The Approach

Visualization:
The basis for reducing set-up times is an open review of the current situation. Together with the responsible persons, temporal process studies and technological surveys are carried out on site at selected machines or production islands. All hand movements and time units that elapse in order to convert a machine / production island from item A to B are recorded. At the same time, the existing organizational structure and the line-up of the setup team are analyzed.
This is followed by a visualization of the results to discuss the set-up times. Experience has shown that the established set-up times are many times higher than stated before the project started. On the basis of the results obtained, focus points with clear objectives can be derived to reduce set-up times.

These can be, for example, in the following areas:

- Organizational deficits (structural organization)
- Planning activities (work preparation)
- Setup team building (responsibilities and training)
- Available work equipment (tools)
- Tool technology (constructive relief)

- Machine technology (facility management)
- Construction of production cells (facility management, accessibility)
- Moulds / patterns etc. (ability to set up quickly)
- and lots more

Set-Up Time Reduction:
Every unit of time shown and required by the setup process study within a setup process can be optimized in two directions:

1. Work content redesigned and optimized in such a way that an employee can handle them more reliably and more quickly.
2. Work contents to be made basically superfluous.

Step one can usually be implemented on short notice. Step two takes a little longer, but is much more effective on a long term basis. This means a subdivided raising of established setup potentials in the form of two packages of measures in:

- Steps that can be implemented immediately with little or no investment
- Steps with medium investments and a preliminary planning phase

The most important instrument in the implementation of suggested set-up time-reducing measures is the formation of properly staffed set-up teams.
These must be factually and technically capable of causing decisions in the horizontal as well as vertical hierarchy of a company. This results in the requirement that workers, set-up

workers, foremen, foundry managers and designing engineers should be equally integrated into set-up teams.
To ensure the same level of knowledge, it is essential – even though unpopular – to have all team members set up at regular intervals. This ensures that daily, usually constructively modifiable problems are known to everyone and can be eliminated in planning at an early stage. In addition, the installation of competing setup teams has proven to be very beneficial. In support of this, it is advisable to introduce a suitable remuneration that rewards the reduction in set-up time.
Together with the defined teams, the methodology is determined by means of which the set-up time-minimizing steps are implemented in practice.
It is important to define ambitious but achievable goals and to set benchmarks by which the success and sustainability of the implementation of the measures can be gauged. It is important to ensure that the optimization path initiated as part of Kaizen measures continues to exist over the actual duration of the project. An end point of a set-up time optimization is never reached. The achievement of a goal always forms the basis for something higher. The ultimate goal is to simplify set-up processes in such a way that they can be carried out error-free within a very short time.

In the past few years, Krapohl-Wirth has seen an increasing demand for the “set-up time reduction” method, which was developed on the basis of many years of practical experience. Set-up time reductions of over 60% can usually be achieved with simple means, before what has been achieved can then be further optimized with a lot of effortand know-how. The rule of thumb is that foundry machines, regardless of the type, can achieve set-up times of <15 minutes, if the prerequisites are created.

We can talk about it – contact us – about your competitive advantage!

Dr. Dipl.-Ing. Hans-Peter Krapohl (RWTH-Aachen); managing partner and CEO of the Krapohl-Wirth Consulting Group. He has been rooted in the foundry industry for over 30 years, trained in Japan for a long time, internationally active, established independently on the market for over 18 years, he has successfully completed interim and restructuring projects and newly built foundries.

Full Order Books – Krapohl-Wirth

Krapohl-Wirth Consulting Group

Full Order Books – Krapohl-Wirth Company Group Satisfied with the Result of GIFA in June 2019 in Dusseldorf, Germany

Krapohl-Wirth Consulting Group is very satisfied with the fair result of this year's GIFA. The Krapohl-Wirth consulting team is represented in Dusseldorf already the fourth time in a row and they have registered the biggest demand of all times.

Interesting projects and orders were ensured. The regions Germany, China, India and Russia are constituting important focus points. Especially, the consulting performance and the engineering in China are to be stated. The demand towards

automobile suppliers has increased substantially. In this respect, the qualitative requirements of politics and environment, as well as the high cost pressure become clearly noticeable. The wind energy finds itself in front of a turnaround. Relocations to Asia due to cost reasons and the requirements towards productivity / scrap reduction are interesting challenges for the specialists.

Without cast, no car is driving and no wind wheel is turning.

Krapohl-Wirth Consulting Group as big player on the market has currently taken over further business sectors within its consulting portfolio and has initiated an own recruiting programme to encourage young talents.
„Our approaches lead consistently to improvements in the value added chain and thus, to a positive cost income ratio of our customers“ says the CEO, Mr Dr. Hans-Peter Krapohl.

A strong sector: the foundry sector is one of the most important suppliers in Germany. The companies gain an annual turnover of approx. 14 billion € and invest annually 500-600 milion € in modern process technology, improved process cycles, new materials, innovative construction technology and training. Worldwide, the location Germany is to be counted among the **Top Five**, after China, India and USA.

With our performance and our consultant-portfolio within the market, we will continue to contribute to the sector’s success, respectively to help in shaping the success. With new strategies and new growth areas within the company, we will set new benchmarks.

Cast – a strong part of the future – Krapohl-Wirth – a strong partner – we develop markets !

Press Release Schuler AG

(Power Press June 2014)
Content:
Dr. Hans-Peter Krapohl has supported since March 2014 company Schuler as interim manager Schuler cast. Now, he has taken over the position of managing director cast and thus, he is following Marco Nagler, who is leaving the company on 30th June 2014. He is reporting to Dr. Peter Jost, as well managing director of the foundry, board member and COO.

Consulting Competence for the Foundry Sector

(Magazine *Gießerei-Praxis*, 6/2012)
Content:
The suitable point in time for the establishment and the trust of the first customers in the KW-Consulting-Group – which was already known in the foundry sector – have built the basis for a successful company which was able to gain a first-class reputation at satisfied customers worlwide, by means of its competence and reliability.

The Company Success has Many Facets

(Magazine *Bayerisch-Schwäbische Wirtschaft*, 3/2008)
Content:
Dr. Dipl.-Ing. Hans-Peter Krapohl is CEO of the KW-Consulting-Group located in Augsburg and one of the most successful consultants within the metal-processing industry. Since 2004, the specialized consulting company KW-Consulting-Group supports companies in the foundry sector. He evaluates their future according to his sector knowledge; this not only in Bavaria.
Our Conclusion:
Challenge us! We would be pleased to support you concerning your projects in the foundry business.

KW-Consulting-Group Germany, Achievers for the Foundry Industry

(Foundry Magazine India, vol.xx / no.4, July /August 2008)
Content:
The company KW-Consulting-Group presents itself and its business philosophy: THINKING AHEAD – CREATING – ACCOMPANYING within the Indian magazine for progressive metal casters.

Our Conclusion:
Do not hesitate to contact the KW-Consulting-Group because its aim is the improvement of the profits of their clients.

Men of Action for the Cast Industry

(Magazine *Giesserei Praxis* 9/2007, Author: Stefan Heine)
Content:
The author presents the Augsburg-based KW-Consulting-Group in all its facets and together with the subsidiaries Krapohl-Wirth Consulting GmbH, KW-Engineering GmbH and KW-International GmbH. The main features of the company are: thinking ahead, creating and accompanying.

Foundry Specialists with Glowing Passion for Liquid Metal

(BHM, 152 year 2007-paper no. 9)
Content:
The author presents the competencies of the KW-Consulting-Group GmbH & Co KG who manages to connect foundries and full-scale industrial complexes through the approach of KNOW-HOW,

DO-HOW and TO-DO in order to be able to save at least 15 % of the formation costs.
Our Conclusion:
We would like to support you concerning your new building or reconstruction plans.

Glowing Passion for Liquid Metal

(Cast Metal & Diecasting Times, 09.2007)
Content:
The author presents the competencies of KW-Consulting-Group who manages – together with KW-Engineering GmbH – to connect foundries and entire industrial complexes with the help of following inputs: “Know-How“, “Do-How“ und „”To-Do“ in order to save at least 15 % of the emerging costs.
Our Conclusion:
We would be pleased to support you at your new building or renovation plans.

New Finish Cutting

(Magazine *Giesserei* 94, 07/2007)
Content:
The KS Aluminium Technology AG (KS-ATAG) presents in its press release the implementation of the new CNC-finishing cutting

for Porsche Cayenne 8-cylinder block. It is about a 2-storied hall with a length of 160 x 85 m piled in a channel. Planning, project management and realization are being successfully carried out concerning time and budget by Krapohl-Wirth Foundry Consulting GmbH.

Our Conclusion:

Thus, Krapohl-Wirth Foundry Consulting GmbH proves again that they are the right contact and business partner for the realization of big industrial projects.