



Script

for the successful relocation of
injection moulds

The world is changing: there are political forces at play, there is Covid-19, there is the climate and there are fluctuating costs. As a consequence, a growing number of companies are relocating the production of strategic components. In the case of plastic injection moulded parts, this also means moving moulds and other production resources.

Relocating moulds from one supplier to another? Don't even think of it! This is a complex and time-consuming matter in which the risks and (initial) costs are incalculable.

This perception is fundamentally grounded in ignorance, because there is no clear roadmap or scripted method for the mould transfer process. Until now! This white paper is intended to support companies in the effective and successful management of mould transfers.

There are a wide range of reasons for moving moulds and they are different for each company. At local level, in addition to supplier bankruptcy, issues such as poor communication, low product quality, excessively long delivery times and insufficient

flexibility may be at play at the existing mould-injection company. At global level, issues such as political shifts, cost increases and the consequences of Covid-19 also play a role. Many companies are looking for security in the form of increased local production.

Delivery problems lead to frustration for engineers, quality managers, buyers and account managers. After all, a disrupted production and logistics process could lead to high hidden costs, such as downtime, delays and extra effort on the part of the employees.

Good preparation for a mould transfer

At the start of each mould transfer project, the new injection moulder will have to draw up a specific action plan in consultation with the owner of the mould (the customer). The following tips could be helpful:

Tip 1: Check in advance whether you have full ownership of the injection mould. It sometimes happens that you only own the mould partly, which could present unnecessary surprises during a (planned) move.

Tip 2: Determine all the responsibilities in the project on both the customer and supplier side. This will prevent misunderstandings and miscommunication.

Tip 3: Assess the condition and service life (expected life cycle and number of products still to be produced) of the mould. Checking and assessing this in advance can help you prevent problems later on.

Tip 4: Collect data for the required machine and production environment. What is needed for the product? What are the minimum machine specifications on which the mould can operate, taking into account mould dimensions and the minimum required shot weight and closing force? Are additional activities and related equipment required?

	Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Production of safety stock		■	■													
Transport of safety stock				■	■	■	■	■	■							
Buffer safety stock										■	■	■	■	■	■	■
Mould transfer				■	■	■	■	■	■							
Material delivery time					■	■	■	■	■	■	■					
Mould optimisations										■	■					
Test run												■				
Quality control													■	■		
Start of production															■	
Delivery of first batch																■

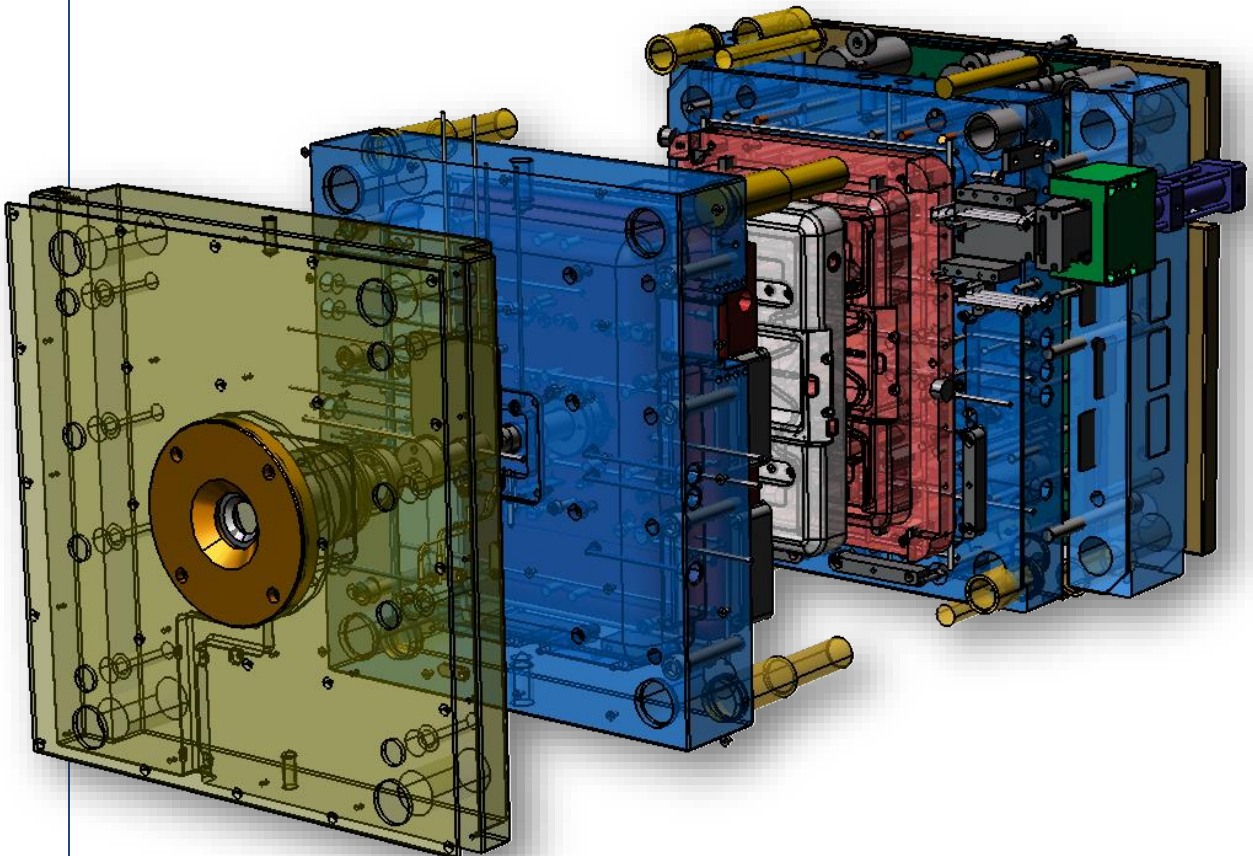
Bridging Series

Before the moulds are relocated from A to B, it is recommended to produce a bridging series. In the case of mould transfers from Asia to Europe, it can easily take fifteen weeks before an injection mould is 'up and running'; especially if the mould is shipped. An attractive alternative from China is rail transport with Tilburg as the end station. Depending on the status and complexity of the moulds, this process is significantly shorter in Europe.

Available Information - Check-list

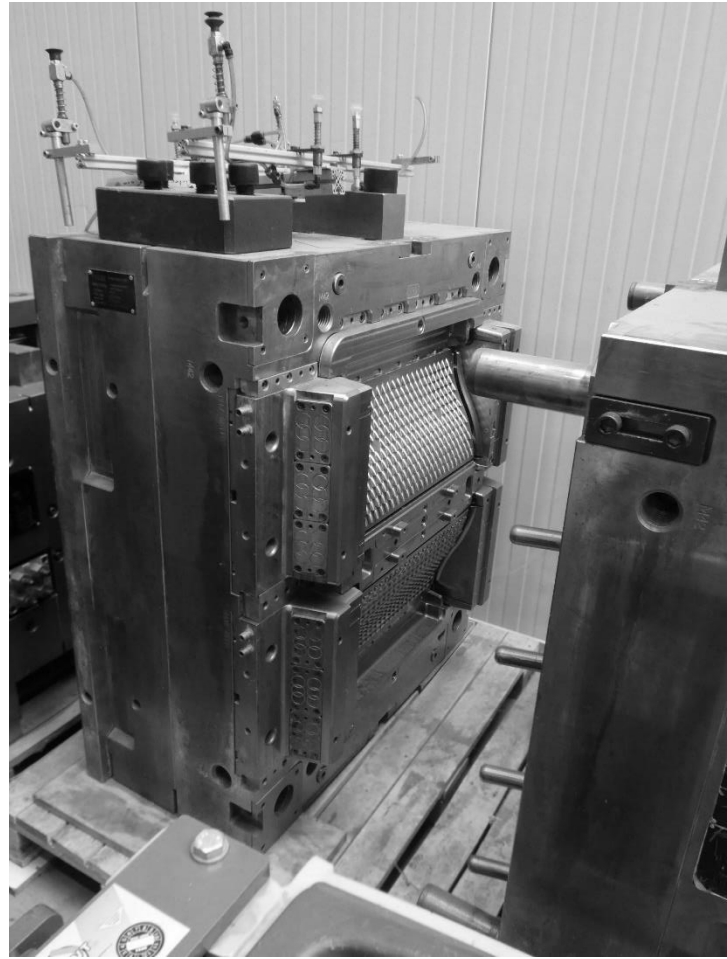
The more of the following data you have at your disposal, the easier the transfer process will be:

1. Mould construction in the form of a 3D file and/or 2D drawing
The mould construction is executed with the use of the 3D file of the product. The construction drawing of the mould will therefore also be produced in a 3D file. This often remains in the control of the toolmaker, who manufactures the mould or the producer of the products. Mould repairs and modifications can be much easier and cheaper if the 3D files are available. So, do make sure you have those mould files at your disposal before the mould is transferred.



2. Photos of the mould in open and closed states

A lot can be deduced from a photo: What does the injection mould look like? How is it stored, which cooling connections are visible, and which injection principle is used? Process engineers who work with moulds on a daily basis will immediately recognise problems.



3. Dimensions and weight of the mould

These data are important in terms of suitability for the new machine, but also for transport by forklift truck and crane track.

4. Process parameters, machine settings, machine dimensions (tonnage/closing force)

It's always possible to reinvent the wheel, but if the production parameters (such as closing force, cooling time, injection speed, etc.) are known, the start-up could proceed without time loss.

5. Data pertaining to the current and intended machine

Moulds are constructed for specific injection moulding machines that are available at the manufacturer (injection moulding company). In general, injection moulding machines are fairly universal and, with a few minor interventions, the mould could be adapted to work with another injection moulding machine of equivalent capacity.

6. 3D Product file and/or 2D drawing

The file and 2D drawing form the basis of the product. It's always good to compare those data with the latest products when relocating. Do they match the drawing?

7. Reference product

The same applies here: Were the last products manufactured as intended?

8. Product Quality Protocol

Ideally, all of the above information will be available. It's nevertheless possible to make the most important costs and risks transparent based on a minimum of available information. It's possible for the new injection moulder to do an initial analysis with a mould and product drawing. The injection moulder will determine whether the mould and the product fall within the available injection moulding capabilities. He will also be able to give an indication of the expected costs based on this initial analysis.

Detailed inspection at the new injection moulding company

Once the initial available information has been assessed and the new supplier and customer have discussed this, the mould should also be assessed. It is preferable for the new injection moulder to physically assess the mould in advance on site. If this is not possible, the best alternative is to move the mould to the new production location in a conditioned environment. The new injection moulding company can then assess the mould based on a check-list. It is generally possible to make the mould suitable for the new injection moulding machine with a few minor adjustments.

The following adjustments or work may be necessary:

- Conditioning (e.g. for transport from Asia)
- Replacing cooling nipples
- Replacing centring ring
- Flow-through in cooling channels
- Cleaning mould components
- Coupling the ejector package with the injection moulding machine
- Fitting injection and nose radius, and connecting hot runners, where necessary.

If the injection mould has major imperfections, the new injection moulder will make his expertise available to analyse the mould and solve the problems. It is highly preferable for the new injection moulder to have his own tool shop, so that mould repairs can be carried out quickly and at the lowest possible cost.

Trial Production

The purpose of the trial production is to assess the functioning of the mould and the quality of the product. It is recommended that the customer be present to conduct an initial product assessment. The machine settings can then be optimised on site and the cycle time determined in relation to product quality.

It is important to compile a report of the findings during trial production. The report must include the machine settings and mould status. In other words:

- Does the mould show imperfections that still demand further adjustment?

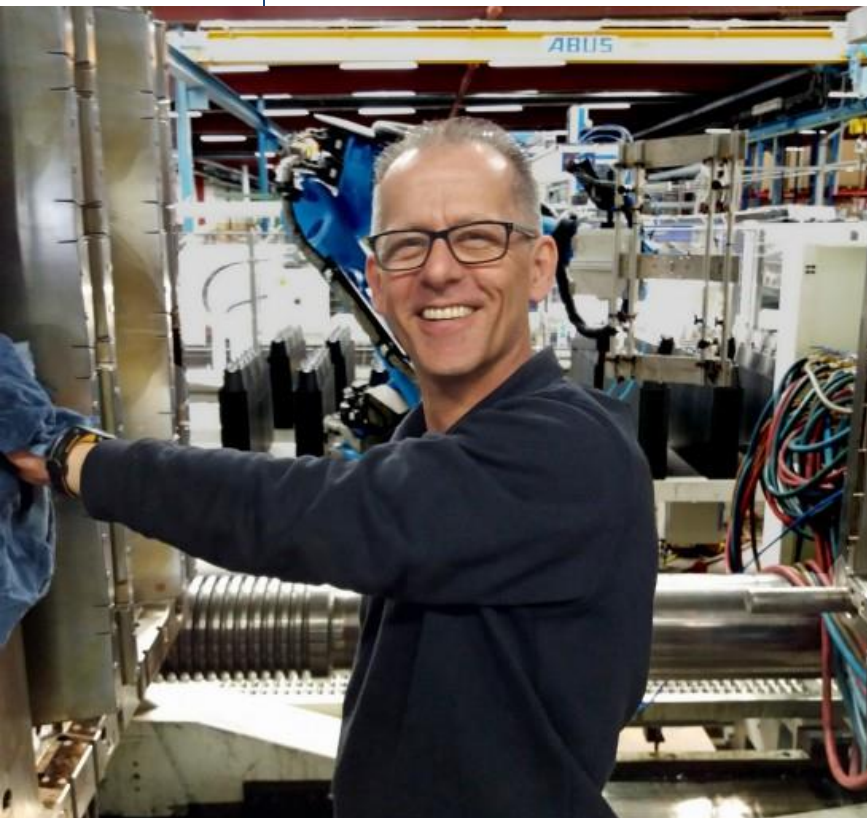
- Can additional maintenance or repairs be expected in the short term?
- Is the injection mould ready for production?

The first products are validated based on a 2D drawing and/or sample product. During the validation, the product is measured again and a visual inspection is conducted. If the product meets the customer's specifications and expectations, it can be released for series production. Once the production protocols and quality protocols have been compiled, the mould transfer project will be completed and series production can start at the new supplier.

Last but not least

The project costs and efforts involved in transferring moulds can be controlled very effectively. It is however important to draw up a thorough and complete plan of action prior to the transfer, whereby agreements are needed concerning building a buffer stock and good detailed planning. In addition, information is collected about the new supplier's mould, the product, the process and the machine. A detailed check-list helps to rule out risks and uncertainties to the greatest extent possible.

TIP!
Do not forget to take out the necessary insurance for transport, fire and other risks.



Physical inspection at the old or new injection moulder usually indicates that only a few minor adjustments are required to render the mould suitable for production at the new location. The machine settings are optimised based on a trial injection, the product is validated and then released for series production. After the production and quality protocols have been compiled, the mould transfer can be assumed to have been completed successfully and the supplier can start series production.



Pekago Covering Technology produces plastic housings and technical components for customers by means of injection moulding and TSG. In addition, products are also lacquered, assembled and provided with, among other things, printing. We develop our own injection moulds and advise our customers on the manufacturability of plastic products. Our markets include medical devices, aircraft interiors, analytical devices and vision systems.

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