

# “We Want the Injection Moulding Driver Licence to Become a Recognized Standard”

*Interview with Helmut Kraft, Holder of the Trademark for a Special Training Certificate*

“If you cannot explain something, you haven’t understood it. Just ask them in an injection molding shop about backpressure. But without an understanding of the process, how can you expect to produce good parts efficiently?” Helmut Kraft is familiar with a lot of expensive knowledge gaps, and he has, you could say, a mission: to limit the waste of material, energy and money that occurs in all too many production halls. In an interview with **Kunststoffe**, he talks about his concept and his ambitious plans.

His face is probably well known to many plastics processors, particularly in South Germany: Helmut Kraft, as managing director of his engineering and sales consultancy, traveled throughout Germany over many years. And at some stage began to give user training sessions – as a sideline at first. Two years ago, he left sales to its own devices and devoted himself to developing a practically oriented training concept for injection molders. The “Injection Moulding Driver Licence” was born. At an age at which others only make educational trips, the 61-year-old jets around the world to market his ideas – and help processors achieve a higher quality level.

**Kunststoffe:** *Mr. Kraft, you invented the Injection Moulding Driver Licence, which you hope will make injection molding production more effective in companies. If there are shortcomings in putting the lessons that have been learnt into practice, is there a risk that the license might be withdrawn?*

**Helmut Kraft:** *(Laughs.)* We don’t have this sanction for the Injection Moulding Driver Licence – and we don’t need it, since we take the associated examination very seriously. You can see that alone by the fact that we have a failure rate of almost twelve percent. If someone has cleared this hurdle and performed all the practical tests leading up to it, they don’t forget what they have learnt so quickly. They can call on the knowledge they have acquired at any time.

**Kunststoffe:** *As an owner of a sales agency for injection molding machines for many years, how did you come up with the idea of the Injection Moulding Driver Licence?*

**Kraft:** I have attended several injection molding training courses and talks over the last 25 years, for example at the South German Plastics Center (SKZ), German Engineering Association (VDI) or at the Plastics Institute in Lüdenscheid, Germany. The nature of the instruction or of the talks was okay, but at the end I often had the feeling that the trainees were not yet capable of putting the theory into practice. At some point I said to myself, when I have

time, I’ll work out a concept myself that will go a step further and include important practical tests on working production systems.

**Kunststoffe:** *How do you explain to a company that it should release its employees for training for several days, and pay a tidy sum for it?*

**Kraft:** That’s right; we often hear the excuse that they haven’t got time to send the employees for training. But just the reverse is true: every training course that the employees take is an investment in the company’s future. The better performance of the trained employees is directly reflected in profits, since we optimize the production plants together with them.

**Kunststoffe:** *How can that be measured?*

**Kraft:** Primarily in that the quality of the injection molded parts increases and the reject rate falls, and often the process rates of the machines even increase as well. That only applies if the employees have understood the essence of the injection molding process. There is plenty of optimization potential. For example, in injection molding shops, we see time and again that the injection process is incorrectly adjusted and the changeover point is not right. It’s not surprising if incompletely filled parts are delivered. That is easy to avoid with the closed-loop controlled machines that are now standard in Europe. And that is precisely what we are targeting.

**Kunststoffe:** *Why are there such poorly qualified operators at the machine’s controls? Is it a problem with training?*

**Kraft:** I believe that training for industrial engineers in the plastics/rubber industry is good in many technical colleges. But if the college lecturer is a specialist in extrusion or extrusion blow molding, he cannot convey the necessary practical knowledge at the injection molding machine based on his experience. The Injection Moulding Driver Licence makes up for this deficit, and gives the employees the process understanding that they lack.

Lateral entry employees are also a major issue – somebody has to bring them up to scratch. Here, there are particularly glaring knowledge gaps.

**Kunststoffe:** *Who are you training? Who is your target group in the companies?*

**Kraft:** Over half of the participants are people directly involved at the machine or with part quality, starting from engineers and production managers through to job planners and QA specialists or lateral entry employees, who might have to take on a department or a shift soon. There are also mold makers and designers of plastic parts, who also require a basic understanding of the injection molding process, and managing directors, even if they do not always complete the full Driver Licence program.

*“There are some real energy guzzlers used here.”*

**Kunststoffe:** *Can your courses really, within a few days, replace years of industrial experience and of learning to deal with different materials?*

**Kraft:** Of course our courses do not produce engineers. But we have concentrated the most important process knowledge and only teach what is really important.

**Kunststoffe:** *How does your Driver Licence differ from the many other training opportunities that are available on the market?*

**Kraft:** Many training courses have the design fault that it is principally the instructor who talks. In the workshops for the Injection Moulding Driver Licence, we conduct a continuous question and answer game with the trainees over two days, true to the motto that it is only if you can explain something, that you have understood it. The technical content only differs a little from other training opportunities, but in the end we are not satisfied with a certificate that, unfortunately, is often not worth the paper it is printed on. In our case, the trainees must complete an oral and written examination and also perform seven practical tests on a series machine at their own injection molding shop, or one located near to us. At the end, we check every test result.

**Kunststoffe:** *That means you assess the parts from series production that the candidates submit?*

**Kraft:** Precisely. The trainees send us their completed documents, with photos, filling series, gate sealing point determination – all the tests that we consider important. Alone through the cycle time optimization, the training pays off several times over for the company. The trainers check everything and correspond with the candidates via email, Skype or FaceTime, until the test has been performed correctly. Only then is the participant admitted to the examination.

**Kunststoffe:** *How many participants have you trained in Germany until now?*

**Kraft:** Since the start of 2013, we have had over 1,000 trainees in about two years. A part of the recipe for success is also that we train in small groups of ten persons at most.



## About the Interviewee

**Dipl.-Ing. (FH) Helmut Kraft** (61) studied plastics technology at Aalen University of Applied Sciences, and then was head of applications technology at Klöckner Ferromatik GmbH. In 1992, he started his own business, an engineering and sales consultancy – from 1995, Kraft Kunststofftechnik GmbH, and until 2012 was a sales representative for, among others, the injection molding machine manufacturer Ferromatik Milacron in southern Bavaria, Germany. Since July 2012, he has been managing director and owner of the training center for injection molding technology in Regensburg, Germany, and, since January 2014, CEO and owner of the German Training Centre for Injection Moulding Asia Pte. Ltd., based in Singapore.

**Kunststoffe:** *What is the response of the participants overall?*

**Kraft:** After every course, we ask for the participants' opinions with a questionnaire on ten specific points. On a grading system from one (best) to six (worst), we are rated between one and two. We need this feedback for the certification that we are planning now.

**Kunststoffe:** *What are you aiming for here?*

**Kraft:** Quite clearly, we want the Injection Moulding Driver Licence to be recognized in Germany as a standard. That is my big aim, and we are not so far from achieving it.

**Kunststoffe:** *What hurdles do you still have to overcome?*

**Kraft:** First we are looking for an institution that recognizes this examination. We are currently finding out who we can do »

that with, with a university, the IHK (Chamber of Trade and Industry) or with a TÜV certification. But there is no need to rush into it; the success of the Injection Moulding Driver Licence so far gives us the necessary leeway. We haven't lost any commissions yet because we are not certified. If we get the opportunity to present our concept to the production manager or managing director, we usually receive the commission. But of course we are occasionally asked for our certification, and we are therefore pursuing this topic thoroughly.

**Kunststoffe:** *This involves serious commercial interests. Are you already feeling the mistrust of your competitors?*

**Kraft:** Not yet. Competition is not negative in itself. That applies not only to technical developments but also to training, which can be further improved as a result. Why shouldn't new ideas be adopted by others? I wouldn't have any problem with the training institutes exchanging information with one another in this respect, and wouldn't interfere with the situation in which, in Germany, as in other countries, various training suppliers and training centers work side by side.



Only those who have successfully completed their assignments on the production machine will be admitted to the driver's license examination. A scene with course participants from Singapore (figure: H. Kraft)

**Kunststoffe:** *"Other countries" is a good head word. At K2013, you attracted attention with your announcement that you are taking your training concept to the world, and expanding internationally. Why, and what has happened since then?*

**Kraft:** If you consider that many German or European injection molders are having to locate to Asia to supply Mercedes, BMW and Audi locally, then these companies are having problems finding qualified personnel there. Asia is a fast growing market – by far the most injection molding machines in the world are manufactured and sold in China. It makes sense to engage with this region. In January 2014, we opened an office in Singapore, called GTC – "German Training Centre for Injection Moulding".

**Kunststoffe:** *How do you work in China?*

**Kraft:** We have a partner there in Anston Tan, who built up and headed an injection molding company on his own previously, with over 50 machines. Tan speaks several languages and precisely un-

derstands the requirements of mold making and injection molding; he is not only our managing director for Asia, but also managing partner of the German Training Centre for Injection Moulding Asia.

**Kunststoffe:** *Did you tailor the training program to Asia?*

**Kraft:** At first, we converted the training program of the Injection Moulding Driver Licence one to one into Chinese, and into English for other countries, but then we saw that we had to take a twin-track approach: at a slightly simpler level and at the higher German level in parallel. Interestingly, we had to supplement the program, because there are fewer closed-loop controlled machines there than in Europe. In Asia, open-loop controlled machines are still delivered, so we had to fall back on the knowledge we had 25 years ago. It's fair to say that the majority of the injection molding companies in Asia work in the way that Germany did 20 or 30 years ago. But it's clear to me that they are fast learners – and we start precisely at the point at which they lack practical experience.

**Kunststoffe:** *On a scale from sophisticated and complex to needs-based and user-friendly, how do you rate the new generation of machine control systems? Do companies use their capabilities in full at all?*

**Kraft:** I believe that, since closed-loop control was introduced in the mid-eighties, injection molding machines have become very good, at least at the injection side. In recent years, largely closed-loop controlled or fully closed-loop controlled injection molding machines have predominated in Europe. That makes it generally easier for the setter to set up a process – if he has understood it. Injection molding machines have always included extra features that aren't used – such as process graphics, injection work, melt flow index or plastication work – the situation was just the same 20 years ago. I estimate that only about ten percent of the training participants use these features. But we are trying to encourage people to use more of these features, so that a machine purchased at great expense pays off in the end. The discrepancy between what the injection molding machine manufacturer provides in options, for example for process monitoring, and what is used in practice is definitely too great.

**Kunststoffe:** *Do you think that your recommendations to use such options will really be taken seriously in practice?*

**Kraft:** The trainees are for the most part very eager to learn, and return to their company determined to implement what they have learnt, for example to set up process graphics. However, it is also necessary to support production managers and managing directors with this. If the supervisors give their employees this leeway, the company will benefit overall from better quality and fewer rejects.

**Kunststoffe:** *Your concept presupposes good didactics and a lot of practical experience. How do you choose your course leaders?*

**Kraft:** We call them trainers; that is more apt.

**Kunststoffe:** *So, how do you choose trainers with adequate experience?*

**Kraft:** That is an important topic. Our trainers are always engineers who have studied plastics technology and have already collected practical experience in an injection molding shop,



whether in mold making, in design or in production. In addition, every trainer undergoes an intensive training program with us. In general, that can take several weeks – depending on their existing qualifications – every trainer then has to take the Injection Moulding Driver Licence, too.

**Kunststoffe:** *When working abroad, a knowledge of the local language is also important.*

**Kraft:** That's right. In particular, those who want to succeed in China must work together with nationals. We have two trainers there who teach in Chinese. Our Chinese adventure has thus got off to a good start; we already have a presence at six training locations and with workshops in several companies. We want to have over ten training locations in China by the end of this year. Admittedly, this plan is very ambitious.

**Kunststoffe:** *And in other countries of Asia?*

**Kraft:** Besides China, we train in Malaysia, Singapore and Indonesia, with two trainers who teach in English. We teach in Taiwan with a Taiwanese trainer, and we are starting in Vietnam this year.

**Kunststoffe:** *All quiet on the Western front?*

**Kraft:** If you are referring to North America: At the end of March, we will be at NPE in Orlando to find a partner who will take on our concept in the USA as a franchise. Of course there are already training opportunities there, but I believe that America needs an Injection Moulding Driver Licence to combine practice and theory so skillfully.

**Kunststoffe:** *How do you acquire new customers mainly?*

**Kraft:** We gain most interest from recommendations, when people spread the news about how good this training is. Abroad, that mainly also includes active networking with partners who have a knowledge of the country. The Material Data Center is perhaps another piece in the jigsaw. On our [spritzgiessfuehrerschein.de](http://spritzgiessfuehrerschein.de) web site, we offer free access to this database, which is available in ten languages, without the need to register. I'm proud of that, and it was an expensive step for us.

**Kunststoffe:** *Back to process optimization: Do that your course participants ever report that nothing can be optimized on the test machine?*

**Kraft:** That occurs sometimes. We are delighted of course if we find that the injection molding shop has done everything right. But we then point out politely that alongside this machines there are others, which may not be so well set up.

**Kunststoffe:** *What role does the concept of sustainability play for you?*

**Kraft:** In a certain sense, this idea does play a part in the striving for process efficiency and optimum part quality. We want to add the topic of energy consumption to our curriculum soon. We are planning, among other things, to introduce a practical experiment in which the trainees have to set up a machine as energy efficiently as possible.

**Kunststoffe:** *But the topic goes well beyond the injection molding machine.*

## Profile

The Injection Moulding Driver Licence is a certificate awarded to participants in a training program, which consists of several parts of two days each, after they have passed a theoretical and



Sample of the German version of the Injection Moulding Driver Licence

(figure: H. Kraft)

practical test. The training center for injection molding technology was founded by Helmut Kraft, who, with his idea, has achieved success well beyond Germany (12 training locations in several German Länder). The first courses under the umbrella of the GTC (German Training Centre for Injection Moulding Asia) in China, Taiwan, Indonesia, Malaysia and Vietnam have already been held, or are about to start. However, the Baltic Plastics Academy, founded in 2013 in Riga, Latvia, for the Baltic and Russian market, has not yet made the breakthrough. Kraft also plans to export the concept under license to the USA and Brazil.

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**Kraft:** That's right. It includes the temperature control equipment, the material feed, drying – there are some real energy guzzlers used here, and there is often a lack of awareness of the issue. Topics such as cooling systems or energy recovery have not yet been tackled in many medium-sized and small operations.

**Kunststoffe:** *Does that mean the ancillary equipment Driver Licence will come next?*

**Kraft:** I wouldn't say that, but energy saving is essential for mastering the future. You only need to look at the current political planning.

**Kunststoffe:** *Doesn't that close a circle for you? You know all about purchase recommendations for low-energy machines ...*

**Kraft:** (Laughs.) That's true, and a lot has happened on the market in this regard. Except that, unfortunately, you have to say that it hasn't yet taken root in the heads of our trainees. Purchases are repeatedly made on the basis of optimizing costs – I consider that a big mistake. You have to invest somewhat more for a machine with electric, hybrid or servohydraulic drive. But you also get something in return – the license for energy saving. ■

Interview: Clemens Doriát, editor