NORMALIEN report

Edition 36 • September 2014

Interesting facts for the tool- and mould making of

STRACK NORMALIEN

Heavycon Eco – with the connector housings made of plastic Phoenix Contact has created a real alternative to the aluminium standard

Phoenix Contact
brings movement in the production

Unscrewing units of STRACK NORMA ensure perfect results

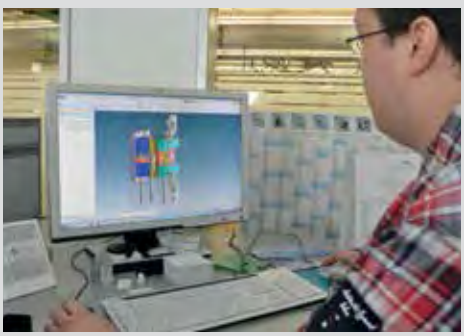
With the new product program Heavycon Phoenix Contact has created an alternative made from polyamide with 30 % glass fibres to the heavy plug connectors out of die-cast aluminium. The threads integrated in the corresponding component are demoulded with hydraulic unscrewing units of the standard part specialist STRACK NORMA.

"Each article requires innovations from your own self", explains Ralf Graebel. The engineer is the team leader in the department of Standard Tooling and was significantly involved, together with the design engineer Thomas Strippel, in the implementation of the complex tool project. In this project the renowned manufacturer Phoenix Contact implemented the idea to produce an alternative to the heavy aluminium connectors now out of plastic in a series product. One of the requirements for the tools was the search for a suitable and economically sensible solution for the thread demoulding. "Here it really suited us that we already made very good experiences with a hydraulic unscrewing unit of STRACK NORMA", reminds Ralf Graebel.

Currently six tools are used in the production for the six installation sizes (thereof 3 with each 2 variants) of the industrial plug connector Heavy Eco. These tools are equipped with 6 thread unscrewing units of the company STRACK NORMA. All these unscrewing units are equipped with a core cooling Z 5450 and a temperature control filter Z 5460.

An economic alternative

The demoulding of female threads often represents a tool-technical challenge. The hydraulic thread unscrewing unit Z 5410 is a low-cost and simple technology to demould female threads in plastic- and die cast parts. With the development of thread unscrewing units the technicians succeeded to supplement the conventional techniques of thread demoulding by a fast, precise and economical alternative. The thread unscrewing units are suited for the demoulding of injection-moulded parts, die-cast parts as well as for products which are produced in the Metal Injection Molding Procedure (MIM) and ceramic injection moulding. With the hydraulic drive which is operated by the core control of the injection moulding machine, even great diameters and large unscrewing lengths represent no obstacle. To eliminate process influences which lead to inaccuracy, the unit works with a full and frontal stop of the threaded spindle.



Tool with 2 STRACK unscrewing units and core coolings

>> Editorial <<

Design technology innovatively - this motto has again priority for us in the second half of the year and punctually to the opening of the trade fairs, we are launching a wide offer of new products and product developments. The use of products with a high automation degree and a long-lasting quality offers our customers a not inconsiderable advantage in the daily competition.

As a result always new solutions to technical problems are required and in particular products which can be produced economically for the market and at the same time in the required quality. An example for this is the plug connector from our cover story and how the renowned company Phoenix Contact managed it to replace the proven product made out of metal by a product made of plastic.

Please visit us in October and November on the various national and international fairs and convince yourself of the innovation force of the new products of our company.

Enjoy reading the report!

D. Friedrich

Dag Friedrich
Managing Director

Continue reading on the next page >>

By means of this depth stop a reproducible part quality is achieved.

Phoenix Contact uses for its industrial connectors the single thread unscrewing unit Z 5410 together with the attached core cooling Z5450 which is equipped with ceramic seals. Alternatively STRACK offers a new series of thread unscrewing units: Z 5415/Z 5425 and Z 5445 have a specially developed, integrated core cooling, an improved sensor system and are manufactured in a compact and encapsulated design.

In addition to the hydraulic units STRACK also offers the electrical unscrewing unit. This is an installation- respectively attachment solution to an injection moulding tool to be able to demould one or more threads by means of an electrically driven motor. In the catalogue you will find solutions for small (Z 5411) or greater (Z 5421) thread diameters, which are equipped with a servo motor which can be retrofitted (at Z 5410 + Z 5430).

Before the tool is built in the in-house tool construction with currently 180 employees, preliminary inspections are carried out. Here the technology of rheology is used. The analytical evaluation simulates the flow properties of the material in the tool. Tool optimizations can already be implemented on basis of the analysis during the phase of design. "We optimize the article before we go into steel", Ralf Graebel explains the way to the "ready-to-build" design. A crowing is carried out on the basis of rheology. To finally achieve the desired form of the article, the degree of deformation of the material is considered in the execution.

Based on the gained knowledge, in the interpretation is determined, in which places provisions must be considered.

After termination of the theoretical tool optimization a first prototype was produced out of soft steel. Built without thread here the material shrinkages could be retraced again. In addition to various components, more STRACK parts were used, for example the new temperature control filter Z5460, which provides for a water preparation in the cooling circuit. A fine-pored filter removes finest dirt particles effectively from the cooling medium. This is ensured by a sintered filter element inside the acid-resistant stainless steel housing which is easy to clean and to change.

The Heavycon Eco series has revolutionized the product of industrial connectors. This is a positive example for a successful project planning which particularly in the phase of design focuses the tool optimization in consideration of functional standard parts. "Certainly this is not the last project that we are implementing together with the company STRACK NORMA", assures Ralf Graebel.

„The tool-making is changing"

SIHK ERFA-Group informs itself at STRACK NORMA

The company STRACK NORMA GmbH & Co. KG based in Lüdenscheid was the destination of the recent meeting of the experience exchange group of pressing-, drawing- and punching tools looked after together by the SIHK (Südwestfalen chamber of commerce and industry) and the Institute for Metal Forming Technology located in Lüdenscheid. Ludger Müller, head of the department technology/development in the company STRACK NORMA, welcomed the participants on 30th June 2014 and gave a brief overview of the history of the company group STRACK, which has its origin in the factory representations of the company founder Friedrich STRACK in the 1920s.

Machine tools of renowned producers as well as die sets were included in the original product range. In 1959 the product range was extended by the inclusion of standard parts for injection moulding- and die casting tools. The current product folio includes more than 170.000 articles.

In his presentation titled „The tool-making is changing", Müller informed the listeners about the effects of the increasing use of new materials and technologies, especially in the automotive sector on the modern tool-making. In addition to the general trends these developments are particularly driven by the progressive globalization, the production extensions at the producers as well as by EU emissions targets.

Using the example of two major automobile manufacturers, Müller explained the different requirements imposed on a manufacturer of standard parts. For one manufacturer high part numbers, long tool lives and a product modular system are in the focus. This provides the basis for a variety of vehicle models within the Group and allows synergies between the different segments and brands. For the other manufacturer the focus is on the high variety of products. Due to a new tool-making concept faster tool turnaround times could be realized. At the same time efforts are made to use as many same components as possible to reduce the tool costs. For the increased use of high-strength sheets, reduction of work stages and new production concepts, STRACK developed a standardized cam concept specially tailored to this problem.

The new materials and technologies, among other things for the weight reduction in the automobile industry due to lightweight construction with carbon fiber reinforced plastic (CFRP) are always presenting new challenges for the tool-making. The tools for such applications are designed differently than those known in the mould construction or for the processing of sheet metal. According to Müller only in close cooperation, between customer

Construction tip

The new mini slide unit:

Demoulding of undercuts at tools with limited installation space

Which designer doesn't know the problem: when designing an injection moulding tool, in very narrow spaces locking catches, undercuts, partition walls, etc., should be integrated in the cavity.

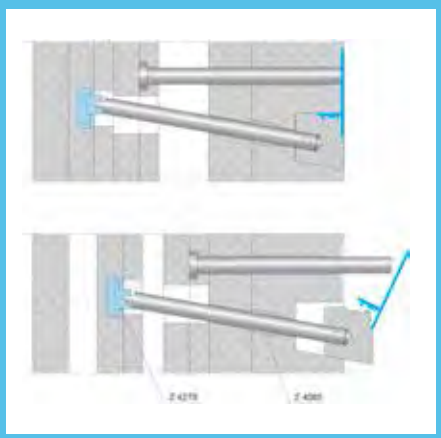
Frequently the demoulding of these elements, which are then characteristics of the plastic article, will prove difficult.

This is precisely where the mini slide unit Z 4279 intervenes.
The absolute dimensions of the mini slide unit are only 25 x 11 x 10 mm. Moreover, for the fixing, no threaded holes and screws are required which would take unnecessary place in the ejector plates.
Only two rectangular pockets have to be placed in both ejector plates.

The bolt with a diameter of 10 g6 has a total length of 190 mm and can be shortened individually according to the tool design.
The application is supplemented by the use of the guide bush Z 4085 out of Ampco 18.

In comparison to the flexible ejectors Z 4262 and Z 4264 the following advantages:

- Easy and quick installation in the injection moulding tool
- Precise restricted guidance
- No material fatigue compared to the flexible ejectors
- No wear due to sliding friction in or at the cavity



Installation example: Mini slide unit Z 4279

and standard part supplier here solutions can be worked out, securing the future for both sides as a „win-win" situation.

After the presentation, during a tour around the company, the participants had still the possibility to inform themselves more intensively and to exchange experiences with the speaker and among each other.

Meeting of the experience exchange group of pressing-, drawing- and punching tools on 30th June 2014 at STRACK NORMA

Clean and efficient

New tempering control filter ensures a smooth production process

Due to wear, leakages and overheating, impurities and dirt particles enter in the cooling circuit. The consequences are the reduction of the desired mould tempering, cycle time extension because of poor temperature control, increased plant failures and rising repair costs. Thus a continuous cleaning of the tempering medium is of great importance.

The new temperature control filter Z 5460 from STRACK NORMA was especially designed for the oil and water preparation in the cooling circuit. This filter was designed for small cooling holes or core coolings. Due to its fine filter cartridge it removes dirt particles from the cooling circuit which can otherwise cause clogged cooling channels (for example in laser-sintered core-inserts) or early wear of sealing elements in the core coolings.

The temperature control filter is produced out of an acid-resistant steel and brass. Inside the case there is the sintered filter element which is easy to clean and to change.

With a low pressure loss of only 10-15% and the fine-pored filter cartridge of less than 100 µm the temperature control filter guarantees the user clean tempering medium with minimum energy consumption. In addition the temperature control filter is equipped with a large collecting space in front of the filter cartridge where impurities are absorbed.

Tempering control filter Z 5460

New counter – now in standardized installation dimensions

Process data monitoring in new design

The standard part provider STRACK NORMA as a producer of standard parts for the tool- and mould making has further developed its mechanical counter and launches it on the market in a new design – of course in blue.

In the dimensions the counter corresponds to the usual market installation sizes and can be identified clearly by laser marking.

The mechanical counter counts the impulses of production means (injection moulds, pistons etc.) reliably and is suitable for all devices having to count an opening- and closing impulse.

The self-contained unit can be placed at or also in a retainer and can be screwed. By pressing the protruding bolt the sum counter is advanced by one figure. A reset of the seven-digit counter reading is not possible and prevents undesirable counter errors. The counter is quickly and comfortably fixed by means of two screws.

For a quick and flexible control, the mechanical counter offers a visual monitoring of process data directly on the tool.

This solution is ideal for all tool producers, which have to give their customers a guarantees for the manufactured product depending on the number of units.

Example: mechanical counter Z 5263

Comfortable from A to B

New safety ring screw for the tool-less fixing.

Tighten it simply by hand and align after loosening the locking clamp in direction of the load. The 360° rotatable safety ring screw has an exchangeable, 100 % crack-tested special screw with chrome VI free corrosion protection.

It is marked with load capacity and thread size.
In addition each attachment point is provided with an individual serial number.
Advantages:

- An attachment point which can be rotated by 360°
- Increased load capacity at straight pull
- Easy mounting and demounting without additional tools and disturbing auxiliary means

- After screwing the safety ring screw in the work piece due to the opening of the locking clamps which are securely held in each position with a patented spring, the safety ring screw will become freely rotatable.
- Patented, replaceable special screw in the strength class 10.9, 100% crack-tested and provided with a chrome VI-free corrosion protection.

Your STRACK-Team on site

euromold.

25. - 28. Nov. 2014
Fair Frankfurt / Main
Hall 8 / Stand N68

Imprint

The „Normalienreport“
is an information service of
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STRACK® *intern*

STRACK NORMA congratulates the employees belonging to company for 25 years

Norbert Resinek in July 2014
Gero Lemcke in July 2014
Ounoufrios Vrouftsis in August 2014
Horst Petzold in September 2014

Congratulations and thank you very much!