



Set-up at a high speed

How do I quickly mount a clamping device onto the lathe so that I can manufacture on demand? This was the project definition in Arburg's CNC shop.

The manufacturer of injection moulding machines found the solution with the Centrotex quick change-over system from Hainbuch. The savings are incredible: With a classic jaw chuck the change took approximately one hour. Now with the Centrotex it takes only 10 to 15 minutes.

The Centrotex quick change-over system, here on the main spindle of the machine, significantly reduces the time for clamping device change-over.

In terms of production at Arburg they have their own philosophy. Not only are all injection molding machines manufactured exclusively in Loßburg, the manufacturer also produces the key components. The proportion of in-house production is an impressive 60%. Appropriate machining know-how is also required for this high level of manufacturing expertise. One of the experts in this area is Production Planner Joachim Bronner: »In our



Arburg Production Planner, Joachim Bronner [left] and Uwe Fischer, Technical Consultant at Hainbuch GmbH, in front of the work space of the lathe.

department the machining processes are optimized and the new investments are planned. This not only includes machines, but also includes clamping devices and tools.« 82 employees work in the CNC shop and here components weigh between 2 and 400 kilograms. Parts are machined in lot sizes from 1 to 120. »Whenever possible, we always strive for a complete machining process. We want to keep the throughput times for a component as short as possible«, emphasizes Bronner.

Set-up occurs several times each day

»Therefore, our goal is to manufacture the components in an efficient batch size. That means frequent set-ups; several per day are very common«, continues the Production Planner. Thus, the workholding technology comes into play, and here Bronner imposes the clear requirements: »For the respective machining, we always want to have the optimal clamping device on the machine. This is the only way we can get the productivity and quality right. This is only possible via a quick change-over system. With the Hainbuch Centrotex, it really doesn't matter whether we need an I.D. or an O.D. clamping. We simply change-over.«

The quick change-over system was immediately convincing

Based on his experience the Production Planner also knows the process flow without a quick change-over system and describes: »When turning, up to 70% of work involves chuck parts, for which a jaw chuck is sufficient. When machining a workpiece, for which a mandrel for I.D. clamping is required, in the past we collect-



The sub spindle of the lathe is also equipped with the Centrotex adapters.



The machine adapter is on its way into the work space. Production Planner Joachim Bronner is very satisfied with the quick change-over system.

ed the components based on the clamping devices. This was necessary to keep the set-up costs within a reasonable limit. This however, resulted in longer lead times.« The first contact between the manufacturer of injection molding machines and the clamping device manufacturer came about in 2010 when selecting a clamping device for a universal grinding machine. At that time, Bronner visited the Technology Forum at Hainbuch and

was immediately convinced of the advantages of the quick change-over interface and the modular system. Other projects followed. All of them on lathes, and in 2012 the first Centrotex quick change-over system was purchased. This investment was also the start of video analyses and time studies to optimizing set-up times.

Chucks from other manufacturers

Finally in September 2015, the workholding technology was configured for a turn-mill center. On the machine with sub spindle, workpieces up to 50 kilograms and diameters of 20 to 150 mm were produced. Due to the high number of part variants all clamping types are used. »In such cases, at Arburg there is no getting around a quick change-over system« states Bronner, for whom it was then a logical consequence to stay with the Hainbuch Centrotex. For the system a machine adapter with bayonet-coupling for the drawtube connection is mounted onto the lathe. The chuck is fitted onto the clamping device adapter and then changed-over via the bayonet. The bayonet locking mechanism enables a fast change-over without any alignment. For a WFL lathe Arburg purchased the following from Hainbuch: two machine adapters for the main and sub spindles, two clamping device adapters for the jaw chucks size 260, two Toplus



The clamping device waits to be exchanged. The placement cart is an in-house construction from Arburg.

ABOUT LOSSBURG

Arburg GmbH + Co KG are one of the world's leading machine manufacturers for plastics processing. The portfolio includes hydraulic, hybrid, and electrical all-round injection molding machines with closing forces between 125 and 6,500 kN, the industrial additive manufacturing system Freeformer, robot systems, as well as customer-specific and industry-specific turnkey solutions. The company produces exclusively in the main plant in Loßburg, Germany and the in-house share of production of approx. 60%. The usable floor space is 171,000 m². In 2016 Arburg's consolidated turnover was € 636 million which the export shares were approximately 70%. The family business was founded in 1923 and today employs more than 2,800 employees, of which approximately 2,300 work in Germany. The global sales and service network ensures local customer support. Arburg is represented worldwide with its own organization in 25 countries at 33 locations, as well as being represented in more than 50 countries via trade partners.

chucks size 100 [pull-back und deadlength], one Mando T211 segmented mandrel, along with various clamping heads and jaws. »The great advantage of our quick change-over system is that even the chucks from other manufacturers can be used«, points out Uwe Fischer, Technical Consultant at Hainbuch GmbH. »That was also an important argument for Arburg. Not to mention the fact, that we can likewise adapt the mandrels for I.D. clamping with the quick change-over interface. They are characterized with having a very high concentric precision and clamping force.«

Machining is possible without a tailstock

Compared to the classic jaw chuck, independent of the quick change-over system, actuation of the clamping head combined with pull-back scores with the ability of machining long components without tailstock support. »I don't need any support with a steady rest or a tailstock and we get no vibration«, describes Bronner. »If possible, we use the pull-back clamping.« And Fischer adds: »When using pull-back clamping, the component can be pulled against the end-stop in the chuck and you gain a high rigidity.«

Jaw change occurs outside of the machine

The quick change-over system offers a crucial advantage. »A practiced worker requires approximately one hour for the classic jaw chuck change. Today, with the Centrotex we calculate a time of only 10 to 15 minutes to change the clamping device including cleaning«, explains the Arburg Production Planner, and the clamping device change-over is also included in this time. »It only takes about three minutes to change just the chuck. Cleaning is also important because the contamination always impairs the accuracy and swarf damages the clamping device.« The set-up not only includes changing the basic chuck via the adapter but also replacement of jaws and end-stops. Arburg built their storage trolley for the clamping devices. »It offers the worker the necessary accessibility to change the jaws and end-stops externally in the cart while the machine is running«, Bronner has just one objective in mind: »Chips must fly and we want to always bring the machine back into the value-creation range.« The Hainbuch workholding technology meets our expectations, or better yet they have exceeded them. »If we weren't happy, we wouldn't have further extended the quick change-over system«, points out the Production Planner. Additional projects are already being worked out.

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