

October 2022, Kottlingbrunn/Austria

PRESS RELEASE

WITTMANN BATTENFELD at the K 2022

WITTMANN BATTENFELD operates a machine with solar power at the K 2022

One of the greatest challenges of our time concerns climate protection, reduction of CO₂ emission and efficient use of renewable energy. WITTMANN BATTENFELD meets this challenge with a concept for powering a machine with direct current generated by renewable energy from solar panels.

Solar cells on corporate roofs offer companies the possibility to generate their own electricity and thus not only to save costs but simultaneously protect the environment. An answer has been found by WITTMANN BATTENFELD together with its customer WAGO to the question of how the continuous current generated by solar cells can be used directly for driving injection molding lines, without loss by first passing through inverters, transformers and high-voltage power lines. By way of a conceptual study using a machine from its all-electric EcoPower series, WITTMANN BATTENFELD has demonstrated the solution and applied for a patent jointly with WAGO. On an EcoPower 180/750+ operating with direct current, a part for the customer's "basic clamp" is produced from flame-retardant polyamide with a 24-cavity mold supplied by WAGO. The parts are removed by a modified WX142 robot from WITTMANN in a DC version powered directly via the intermediate DC circuit of the EcoPower, and which also returns any excess energy set free by axis deceleration to the intermediate circuit.

This concept not only enables energy costs to be kept down by direct use of solar electricity, but direct current is also easy to store in conventional batteries, thus providing an excellent way to handle current peaks.

But reducing energy costs is not the only advantage which an injection molding machine laid out for DC operation has to offer. Due to the inherent synergies between energy storage device, energy consumer and energy generator, even complete power failures can be bridged within a DC grid for a certain length of time. This would ensure, for example, that production could be maintained even at locations with an unstable power supply. This technology increases productivity,

prevents unplanned production standstills and reduces energy losses caused by otherwise unavoidable power conversions and transfers.

Apart from the mere input and recovery of direct current on the injection molding machine, this development project also includes a facility for partial switchover to alternating current. Thus, it enables the operation of various ohmic consumers such as temperature controllers, stand-alone conveyors or beside-the-press dryers with alternating current as well. Parallel to the partial switchover, the intermediate DC circuit still operates with continuous current via the DC grid. In this way, the equipment can be fitted with two power connection lines, a DC connection to drive the power electronics (drive technology), and the AC power connection to serve the auxiliary appliances (the ohmic consumers). This application now has two different types of voltage at its disposal to supply all actors, motors and various consumers on the injection molding machine without energy loss or conversion.

In times of the energy crisis and climate change, direct current is regarded as a key technology. As a leading manufacturer of energy-efficient machinery, WITTMANN not only displays the machine, but a complete production cell based on this technology. In addition to creating a DC-based infrastructure with its consumers / generators, such as an injection molding machine, WITTMANN has succeeded in reaching all of its goals concerning the development project, including the partial switchover to accommodate consumers using an alternative power supply.

The EcoPower 180 is equipped with the new B8X control system, featuring several control system components developed in-house. These enable a higher internal clock frequency, resulting in shorter response times to sensor signals and thus higher parts reproducibility, while the equipment's user-friendliness and familiar visualization display remain unchanged. The specially manufactured control system components enable the WITTMANN Group to optimally adapt and/or continuously improve the power electronics in combination with a direct current infrastructure, in order to maximize the efficiency of the energy management within a work cell and to benefit from the advantages of renewable energy.

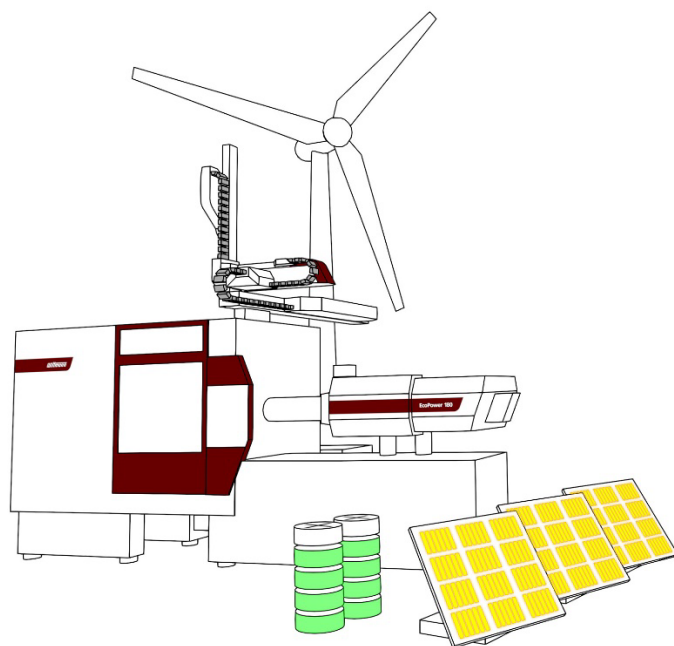


Fig. 1: Schematic illustration of use of direct current for the operation of the injection molding machine

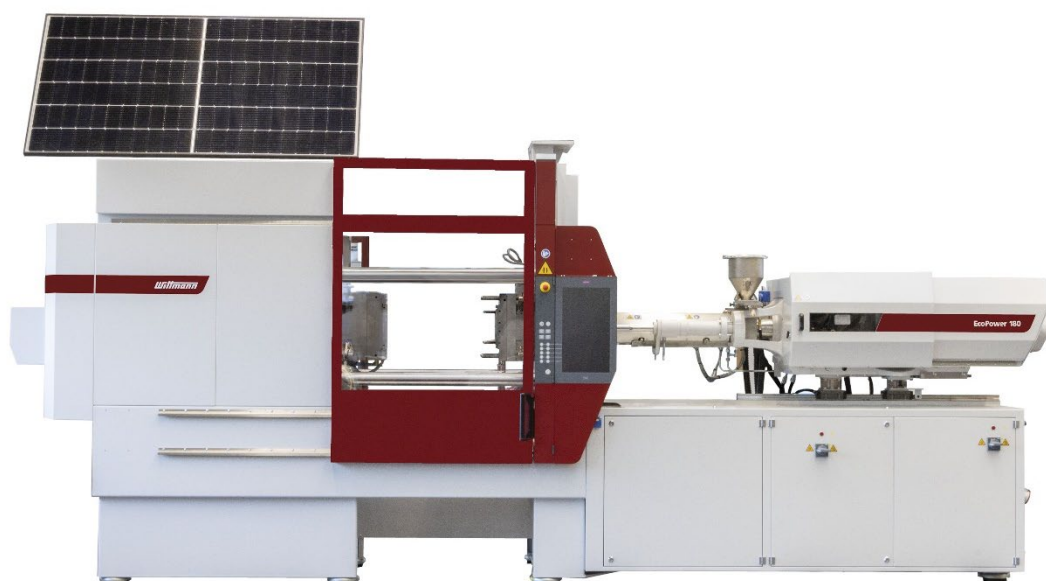


Fig. 2: EcoPower 180/750 powered by solar electricity



Fig. 3: EcoPower 180/750 with switches for changing between direct and alternating current

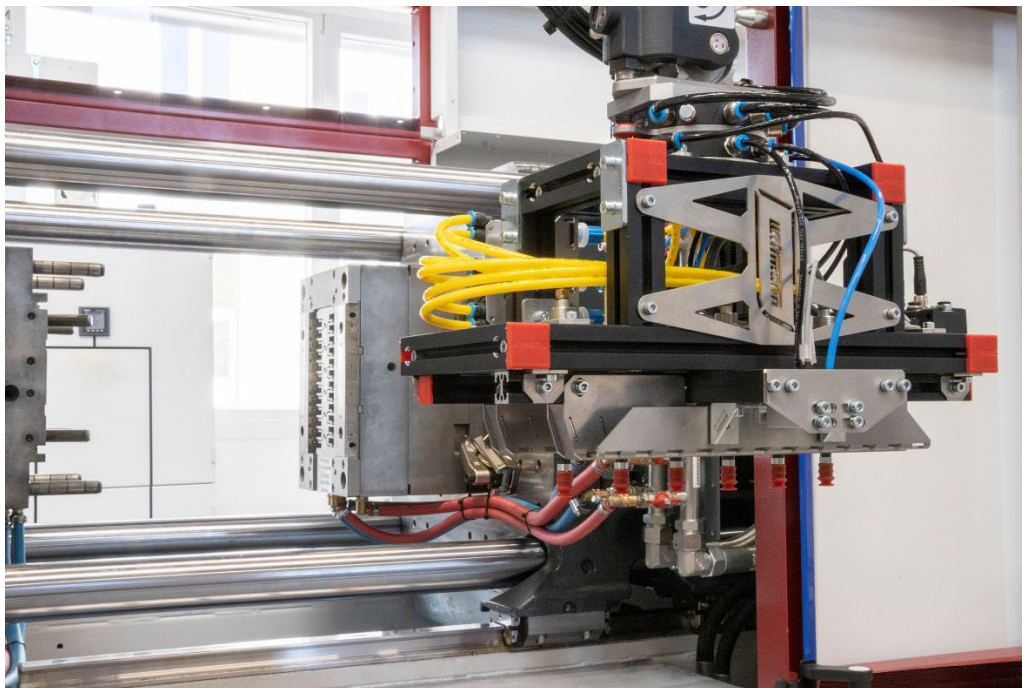


Fig. 4: The WITTMANN WX 142 robot in DC version is powered directly via the intermediate DC circuit of the EcoPower.

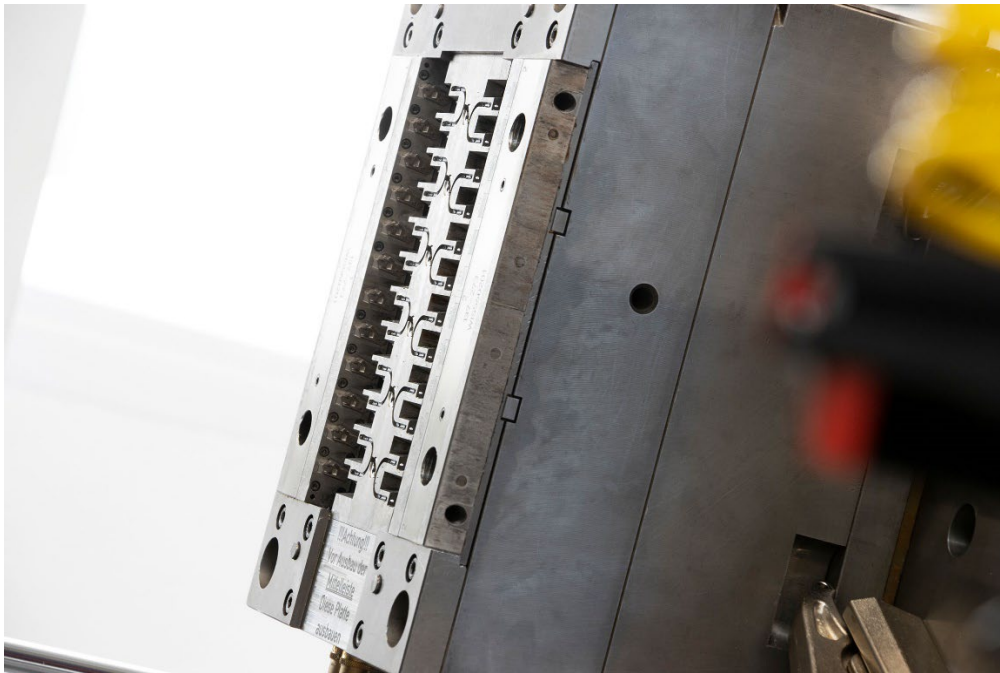


Fig. 5: 24-cavity mold from WAGO for manufacturing a part of the WAGO "basic clamp".
made of flame retardant polyamide



Fig. 6: WAGO "basic clamp".

The WITTMANN Group

The WITTMANN Group is a globally leading manufacturer of injection molding machines, robots and auxiliary equipment for processing a great variety of plasticizable materials – both plastic and non-plastic. The group of companies has its headquarters in Vienna, Austria and consists of two main divisions: WITTMANN BATTENFELD and WITTMANN. Following the principles of environmental protection, conservation of resources and circular economy, the WITTMANN Group engages in state-of-the-art process technology for maximum energy efficiency in injection molding, and in processing standard materials and materials with a high content of recyclates and renewable raw materials. The products of the WITTMANN Group are designed for horizontal and vertical integration into a Smart Factory and can be interlinked to form an intelligent production cell.

The companies of the group jointly operate eight production plants in five countries, and the additional sales companies at their 34 different locations are present in all major industrial markets around the world.

WITTMANN BATTENFELD pursues the continued strengthening of its market position as a manufacturer of injection molding machines and supplier of comprehensive modern machine technology in modular design. The product range of WITTMANN includes robots and automation systems, material handling systems, dryers, gravimetric and volumetric blenders, granulators, temperature controllers and chillers. The combination of the individual areas under the umbrella of the WITTMANN Group enables perfect integration – to the advantage of injection molding processors with an increasing demand for seamless interlocking of processing machines, automation and auxiliaries.

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