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ARPAT® provides transparency and efficiency in the silicon brick production

The new Arnold-Remote-Production-Analysis-Tool „ARPAT®“ from the Arnold Gruppe, Weilburg/Lahn in Germany enables transparent production processes and high cost efficiency within the silicon brick production.

Despite the current fall in prices of wafers, a continuous economizing of the resources of silicon in the course of the solar cell production is necessary. The cost efficient production of highly precise bricks in shortened production periods is therefore a defining success factor for the future of wafer producers. Due to this a justifiable high technological demand has become orientated towards technologically matured production systems, its peripherals, process monitoring and an integrated, analytical process data acquisition. With Arpat® by Arnold producers of wafers can now possess an intelligent tool, which contributes to a transparent and efficient production of bricks.

Arpat® is a data-base based and via web-browser controllable software tool which can be installed on the industrial PC (IPC) of any Arnold production machine. The tool enables the acquisition, analysis and storage of the provided process data from the Arnold production machines. The obtained data is the foundation for the determination of the Total Cost of Ownership (TCO). Through the long-term acquisition of consumption and process data, Arpat® allows its customers to analyse not only the acquisition costs but also further aspects such as energy, maintenance and service and to incorporate these into the billing procedure.

The proprietary development of the Weilburger brick production specialist continuously documents all relevant production and process data through a variety of sensors. Axis position, torques, cutting- and feeding-speed are stored periodically “on-board”, meaning in a MS-SQL data-base within the production machine. Additionally the exact consumption data of energy, compressed air and water and more can be ascertained. The manufacturing formulations and quality data of each produced brick are documented by Arpat®. Hereto belong for instance block measurements before and after grinding, velocity profiles, grinding times, feed rates, brick geometry and chamfer widths.

All parameters, data and evaluations can be visualised on the control panel of the machine, without affecting the running production. Provided the production machine

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is linked to a data network and corresponding access rights assigned, internal and external process specialists can inspect and analyse all results from each network-compatible PC and Smart-Phone via the wireless local industrial network (IWLAN). The accuracy of the determined parameters thereby are substantially higher than in a central Manufacturing Execution System (MES).

In this way process engineers obtain valuable information over all relevant alterations within the production process and the effects regarding the process quality and productions costs. But also the production benefits from the considerable functionality of Arpat®. Due to the evaluation of the previously pre-processed process data, maintenances and service works can be planned preventively. Equally, qualified analyses of production- and downtimes and the according causes are possible. This data provides valuable insights, helping to optimise the productivity and sustainability of the investment.

The on the machine level acquired data can by request be transmitted via a configurable data interface to the central production master computer or to a superordinated MES. The advantage hereby is that through the MES-system the data can be called upon “on-demand” - if necessary due to the internal data storage also with a delay of up to 4 weeks. This means a real-time communication within this solution is not necessary.

Older Arnold machines within the plant can be retro-fitted with Arpat® at anytime, meaning they can be integrated into advanced production control systems. Arpat® is available for immediate delivery, price on request.

Bilddatei: Arpat, Arnold Gruppe.jpg

Bildunterschrift:
Arpat® supplies valuable data to maximize productivity

Quelle:
Arnold Gruppe, Weilburg/Germany

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Company Profile:

Herbert Arnold GmbH & Co. KG, founded 1950 in Weilburg/Germany, is one of the worldwide leading manufacturers of burners, tools and machines as well as ready-to-use systems for customers in the area of photovoltaic, glass and quartz glass processing, fibre-optic and the automotive production. The core competence in the area of photovoltaics is in the mechanic cutting and grinding/polishing of poly-, mono- and multi-crystalline silicon-ingots and blocks.

The core competence in the area of photovoltaics is the mechanic cutting and grinding/polishing of poly-, mono and multi-crystalline silicon-ingots and blocks. Traditional values and experiences are the base of thermal and mechanical glass production which, next to a wide range of burners and tools are nowadays also incorporated into the solar thermal glass tube production.

The Arnold Gruppe consists of the following companies: Herbert Arnold GmbH & Co. KG, Helmich Automationstechnik (1998); B&C (2005) und Heathway Ltd. (2004). The foundation stone was laid by Herbert Arnold. The realisation of innovative production technologies for glass and later for quartz glass processing, turned the one-man company within a short time into an enterprise with an international reputation. The Arnold Gruppe nowadays employs over 170 employees and exports to all the key markets of the world.

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