

قوالب الحدادة الآلية ودورها في تحسين مكونات منتجات الحديد المعماري سابقة التجهيز

Automatic Forging Dies and their Role in Improving Prefabricated Architectural Iron Products Components

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Abstract

Despite the widespread of architectural iron products in Egypt and the increasing demand on such products to fulfill the urgent architectural requirements (e.g. doors, gates, fences, railings, windows, lighting fixtures and furniture in public and private facilities), the production of these products still depends mainly on traditional handcraft methods. The **Research Problems** are represented in the following questions: Can the stages/steps of the design and production of architectural iron products be organized so that it can be produced quantitatively in the form of prefabricated elements and components ready to use and serviceable, which meets the architectural iron different customer requirements? - Do the forging dies used in digital automatic forging machines contribute to improving the quality of prefabricated iron products elements and components? - The **research aims** at organizing the operations of the architectural iron products design and production by applying prefabricated systems methods and techniques and using automatic forging dies, which contribute to the simplification and the standardization of prefabricated iron products elements and components. The research follows the **descriptive analytical approach** in investigating the prefabricated systems of architectural iron products, the simplification of prefabricated iron products, automatic forging with hammering, automatic forging dies, open die forging, closed die forging, and bending dies. -The following are some the most important findings and implications of the research:-

- Prefabricated systems methods (e.g. linear, uniform and volumetric modular units, simplification, product coding, standardization and scheduling of elements) facilitate the transportation, storage, exchange and marketing of prefabricated iron products elements and components.
- The availability of various international industrial institutions that produce prefabricated iron products components supports the possibility of following and applying these industrial systems in Egypt to improve the quality of architectural iron design and production.
- Automatically forged iron products components are distinguished by their high strength and durability, the reliable consistency of their internal structure, the quality finish and the reduced use of raw materials, which is reflected on the quality of the product as well as the assembly.
- Bending dies save time and effort in forging linear ornaments units while maintaining the cleanliness and safety of the surface(s) and the edges of the forged works and ensuring production high quality which cannot be achieved by the traditional handcraft methods when trying to forge similar units.
- The necessity to activate the prefabricated systems in designing and forging architectural iron products components in the specialized industrial institutions in Egypt as they have proved to be effective, in many respects, in improving the quality of the production and promoting such industries.