



## BRIQUETTING OF STEELMAKING BY-PRODUCTS



Since more than a century, SAHUT-CONREUR is specialized in the design and construction of briquetting units and additional equipments enabling the treatment of steel-making by-products issued to steel production. These by-products that represent generally 10% of a steel production can be present under several shapes (sludges of blast-furnace, steel-industry sludges, oily sludges of rolling mills...) with a size range going from several hundred of microns up to some millimetres.

The technology used for the briquetting process of these steel-making by-products enables to transform a powder in briquette through a double roll press (still called press or compactor). Our established experience in this field allows us to propose turn-key installations or specific equipments adapted to the requirements of our customers.

The treatment of these steelmaking by-products, through the briquetting process, presents some advantages :

- An **economic** solution enabling to evitate the loss of product under dust shape, by the valorisation of these one in the industrial process (uniformity of product obtained, reduction of dust volume, recycling of a product at high value added).
- An **ecologic** solution, accepted on the environment level, consisting of the problem suppression associated to the producing and dispersion of dust and therefore to the atmosphere and ground pollution.





# BRIQUETTING OF

## PREPARATION

The moisture rate of dust to agglomerate that is generally high, a preparation unit of product can be integrated in the process for the drying of steel-making by-products.

This pre-treatment unit can be realized by the introduction of a dryer enabling the by-products drainage before their passages in the press. An other solution enabling to reduce the moisture rate of by-products consists in the introduction of quick lime by the means of a mixer and so enabling to cause a chemical reaction of product dehydration.

## BINDER

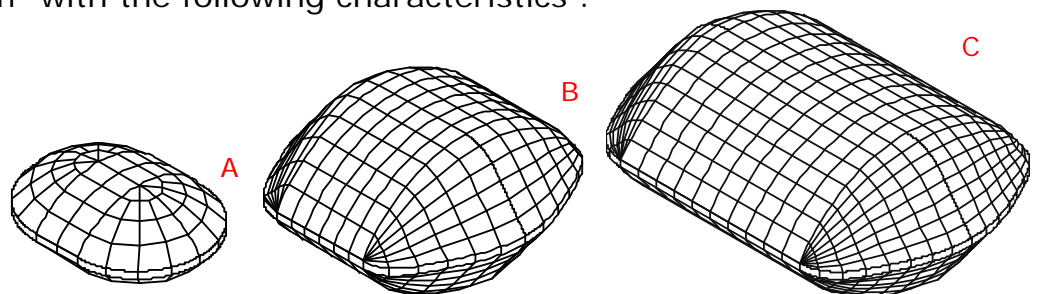
During the steel-making by-products briquetting process, the attraction strengths of granules opposite to the other being low, the use of a binder is necessary to reinforce the linkage of these particles. This one must be mixed in the product with the more possible great care because it has to penetrate all the mass and coat each granule of a thin film.

The binder used can be molasses added to dead lime with eventual adding of cement or lignosulphonate. In case of briquettes used back to the blast-furnace, a binder with cement and bentonite or sodium silicate will be required for obtain a adequate briquette strength at high temperature.

The binder choice is dictated by the physical property of product, the use of briquettes and its cost.

## BRIQUETTES

The briquettes obtained can be of various sizes and shapes according to their final use or the customer's requirements. In the case of steelmaking by-products, there 3 types of briquettes having a volume from 8 up to 62 cm<sup>3</sup> with the following characteristics :



		A	B	C
Volume	cm <sup>3</sup>	8	32	62
Width	mm	36	46,6	71,5
Height	mm	27,8	47	50
Thickness	mm	15,5	28	29

## PROCESS

The capacity of a steelmaking by-products sludge briquetting unit can go from 500 kg/h up to 100 t/h without any human intervention.



# STEELMAKING BY-PRODUCTS

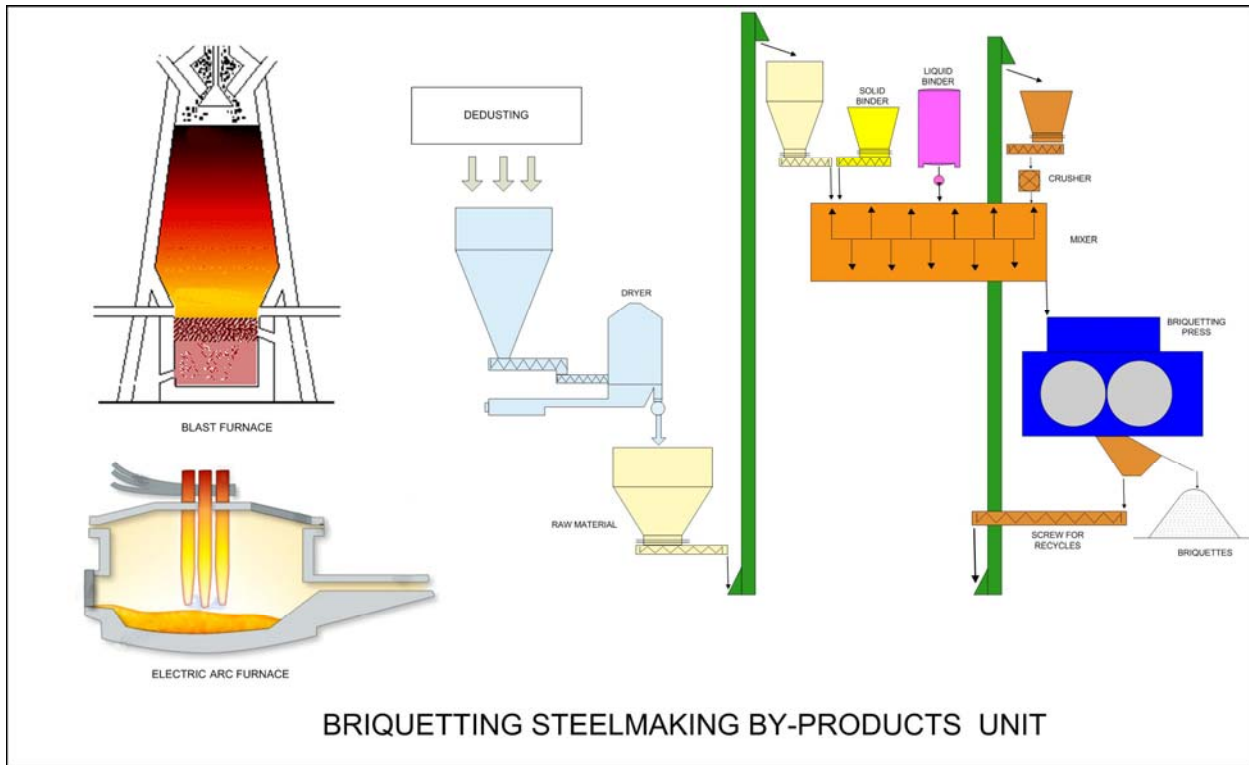


There are three main steps in the process :

- Preparation unit of product (measuring-grinding, drying, screening)
- Dosing-mixing unit of product with binder(s)
- Briquetting unit

The technology used for the product mixing with its binders is an horizontal mixer or a ploughshare mixer. It enables a constant distribution of mixing before its passage in the press.

The briquetting units can be completely automated by programming and optimization of production parameters.



## PRESS

The double roll press is equipped with a feeding system and two parallel rolls, in rotation around of an horizontal axle and separated by a defined gap. The axle of the one of rolls is fixed, whereas the axle of the seconde can move in translation.

During the briquetting process, this system enables to apply a constant load on the mobile roll with the help of hydraulic jacks. These pressures, ensured by an hydraulic circuit are relatively low, from **10 to 50 kN** per linear centimetre of roll's width.

The feeding system of rolls is ensured by an hopper that enables to feed by roll's gravity, this one is equipped with inclined flaps, adjustable manually or automatically. However, in particular cases, specially about the product density, a force-feeder can be installed.

The size of a press is characterized , beyond its characteristics, by its roll's diameter (from **250 up to 1400 mm**) and its roll's width ( from **40 mm up to 1200 mm**).

The briquetting Press is equipped with a special double-output gear-box and internal gear couplings able to withstand the axial misalignment caused by the mobile roll movement. The roll speed can go up to a tangential roll speed up to around **0,5 m/s**, even higher in particular cases.



## ***SERVICES PROVIDED***

**SAHUT-CONREUR** supplies the following services :

- Test runs and feasibility studies at the pilot plant.
- Custom-made production of batches at the production plant.
- Rental of industrial presses for industrial site testing.
- Basic and detail engineering of a briquetting unit.
- Design and manufacture of key-equipment of these units (press, mixer, crusher...).
- Technical assistance for mounting and commissioning of the units.
- Training of operators.
- Supply of spare parts.
- Modernization of existing plants and equipment.
- Adaptation and supply of SAHUT-CONREUR technology to equipment manufactured by other makers.



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