

INSTALLATION FOR USE OF A BITUMEN WASTE

Description

Bitumen products grow old during the period of work and lose the waterproofing properties. The material excluded from a cycle of work, keeps partially the properties of a reuse in the same work cycle, only after a cycle of reanimation. Simultaneously, use of installations on processings of a bitumen waste and reception of industrial bitumen would promote the solution of a problem connected with storage of some industrial wastes. On the other hand, would promote reduction of environmental contamination and avoidance of illegal storages of this waste.

Process of work of the technological scheme on use of a bitumen waste consists that necessary thermal energy for bitumen fusion turns out at the expense of a bitumen waste. Owing to, a bitumen waste is fuel raw materials. Thus, we exclude burning of natural gas or other fuel from process. Ruberoid fuel or other bitumen waste which are part of soft coverings is burnt in a fire chamber of the special furnace to receive fused bitumen from the same waste. This procedure is accompanied by manual division of this waste from superfluous elements (a stone, concrete, etc.).

Technical characteristics of elaborated sample are:

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|--------------------------------------|----------------|
| Bitumen production | 280 – 430 kg/h |
| Amount of bitumen waste used as fuel | 15 – 20 kg/h |
| Rated power up to | 170 kW |
| Installed electrical power | 6 – 8 kW |
| Working days in a year – | 215 days |

Innovative Aspect and Main Advantages

The principle of work of installation is based on fuel burning in a fire chamber, releasing easily evaporating substances and a soot (with the sizes about from 0.003 cm to 0.03 cm). For full combustion of such particles it is necessary, that the burnt gases have passed a distance in 3-5 m at temperature 800 °C. Therefore, an oven in which there are these processes of combustion is carried out the round form, and the special device for raw materials loading in the chamber is provided.

Gases heat up air which passes through the device of preliminary heating to 200-300 °C, heated air stream feeds the chamber of burning of the furnace, increasing thus efficiency of combustion, and 10 % of these gases heat up gases after, preventing thus dew effect.

Process of fusion of a bitumen waste and their transformation to industrial bitumen occurs in the radiant chamber to installation, where target gases are fused without burning a bitumen material, transforming it in fluid bitumen. Fluid bitumen gathers in special bunkers where briquetting in a solid condition is then made.

The executed experiments have confirmed, that components being in a bitumen waste approximately are equal to those from black oil:

- Ashes in bitumen make 7%
- Ashes in ruberoid make 11-12%
- Humidity (summer) make 1%
- Contents of volatiles make 5%.

Moreover, the quantity of emissions has been established at burning of 5000 m³/h:

- SO₂ – 300-370 mg/m³
- NO_X – 79 mg/m³
- CO – 530 mg/m³
- CO₂ – 15500 mg/m³
- Ashes – 612 mg/m³

Stage of Development

The sample of installation was elaborated.