

A MOULD CAVITY DEVICE TO REDUCE RESIDUAL MOISTURE OF PULP-MOULDED PRODUCTS DURING COMPRESSION

FIELD OF INVENTION

The present invention involves a mould cavity device which reduces the residual moisture of pulp-moulded products during the compression of fibres.

BACKGROUND OF INVENTION

Pulp-moulded products are usually made by using mould devices with cavity. As shown in Figure 1, the present mould device with cavity consist of an upper mould piece (2) with holes, a lower mould piece (4) with holes (3), and a metal net (5) which is fixed on top of the lower mould piece (4). Water and pulp slurry enter into the top of the lower mould piece (4) and water is squeezed out by pressure difference. The moisture-containing product (6) is placed on the metal net (5) and the product (6) is transferred by a transfer process to a hot mould for hot pressing, drying and setting. Finally, the product is raised from the hot-pressing upper mould piece as finished product.

Under normal compression, there will be residual moisture, especially when there is incomplete airflow between the base of the pulp-moulded product and the mould surface, resulting in moisture at the base of the Pulp-moulded product and increase in the loss of heat energy in the post- working procedure hot pressing.

SUMMARY OF INVENTION

The present invention is a mould device with cavity which reduces the residual moisture of pulp-moulded products during compression, thereby lowering the loss of temperature during hot pressing.

To achieve the above purpose, the technical solution offers by the present invention is to provide a mould device with cavity which reduces the residual moisture of pulp-moulded products. The device consists of an upper mould piece with air inlets and a lower mould piece with air outlets. The special feature of the device is a layer of

porous material attached to the base of the upper mould piece and the top of the lower mould piece.

There are air inlets and outlets on the aforesaid lower mould piece. The air inlets are connected to the atmospheric air or compressed air while the air outlets are connected to a vacuum device.

The aforesaid upper mould piece is without holes.

The aforesaid porous material (7) may be made of porous metal or sintered metal bead panel, or single or multiple layer joint metal net.

The present invention uses the porous material to increase the air intake and air inflow and air outflow are take place simultaneously so that air can penetrate the product more evenly and effectively to increase airflow and to carry away any residual moisture from the product, the porous material, mould holes, mould surface and the surface of the porous material. In comparison with conventional technology which concentrates on the pressing of fibre, this device operates at a faster rate, with a larger area and is more effectively in reducing the overall moisture content, especially the residual moisture at the base of the product during the hot pressing process thus avoiding the collection of moisture at the base of product.

The advantage of the present inventions is to reduce the moisture at the base of the pulp-moulded product and thereby saving heating energy during hot pressing process.

BRIEF DESCRIPTION OF DRAWINGS

Figure 1 is a structural schematic diagram of the current mould device with cavity.

Figure 2 is the structural schematic diagram of the present invention with the first embodiment.

Figure 3 is the Structural schematic diagram of the present invention with the second embodiment.

Figure 4 is the structural schematic diagram of the present invention with the third embodiment.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Preferred Embodiment 1

As indicated in structural schematic diagram in Figure 2, the present invention consists of an upper mould piece (2) with air inlets (1), and a lower mould piece (3) with air outlets (4). The special feature of the device is a porous layer (7) attached to the base of the upper mould piece (2) and the top of the lower mould piece (4).

The porous material (7) may be made of porous metal or sintered metal bead panel, or single or multiple layer joint metal net.

Firstly, the upper mould piece (2) is pressed on top the product and pressure difference is generated in the cavity of the upper mould (2) and lower mould (4). Compressed air is added to the upper mould piece (2) while vacuum/atmospheric air is added to the lower mould piece (4). Alternatively, atmospheric air is added to the upper mould piece (2) and vacuum is added to the lower mould piece (4). Air enters through the holes (1) on the upper mould piece (2) and passes the various components in the following sequence: Porous material (7), product (6), porous material (7) and is eventually pumped out through the holes (3) of the lower mould piece (4). The airflow carries moisture in the holes, product, the porous material and the space between the porous material and the mould pieces out of the lower mould piece (4), especially moisture retained in the base of the product.

Preferred Embodiment 2

As shown by the structural schematic diagram in Figure 3, the present invention consists of air inlets (10) and air outlets (11) in the lower mould piece (4). The air inlets (10) are connected to the atmospheric or compressed air while the air outlets (11) are connected to a vacuum device (12), and there is a layer of porous material (7) on top of the lower mould piece (4).

The porous material (7) may be made of porous metal or sintered metal bead panel, or single or multiple layer joint metal net.

Firstly, the upper mould piece (2) is pressed on top of the product (6) and atmospheric or compressed air is applied into the air inlet (10) inside the cavity of the lower mould piece(4), and the air outlets (11) is connected to a vacuum to suck the air out. The air passes through the various components in the following sequence: Porous material (7), product (6), air outlets (11), product(6), and carries moisture in the holes, product, porous material and the space between the porous material and the mould pieces out of the lower mould piece(4), especially moisture retained at the base of the product.

Preferred Embodiment 3

As shown by the structural schematic diagram in Figure 4, the present invention consist of the upper mould piece (8) that does not have holes. The rest of the inventions is the same as preferred embodiment 2.

CLAIMS:-

1. A mould device with cavity which reduces the residual moisture of pulp-moulded products during compression and consists of an upper mould piece (2) with air inlets (1), and a lower mould piece (3) with air outlets (4). The special feature of the device is a porous layer (7) attached to the base of the upper mould piece (2) and the top of the lower mould piece (4).
2. A mould device with cavity of claim 1 above, with the air inlets (10) and air outlets (11) on the lower mould piece (4). The air inlets (10) connect with the atmospheric air or compressed air while the air outlets (11) connect with a vacuum device (12), and a layer of porous material (7) is attached to the top of the lower mould piece (4).
3. A mould device with cavity of claim 2 above, where the upper mould piece (2) is an upper mould without holes (8).
4. A mould device with cavity of claim 1 or 2 above, where the porous material (7) may be made of porous metal or sintered metal bead panel, or single or multiple layer joint metal net.