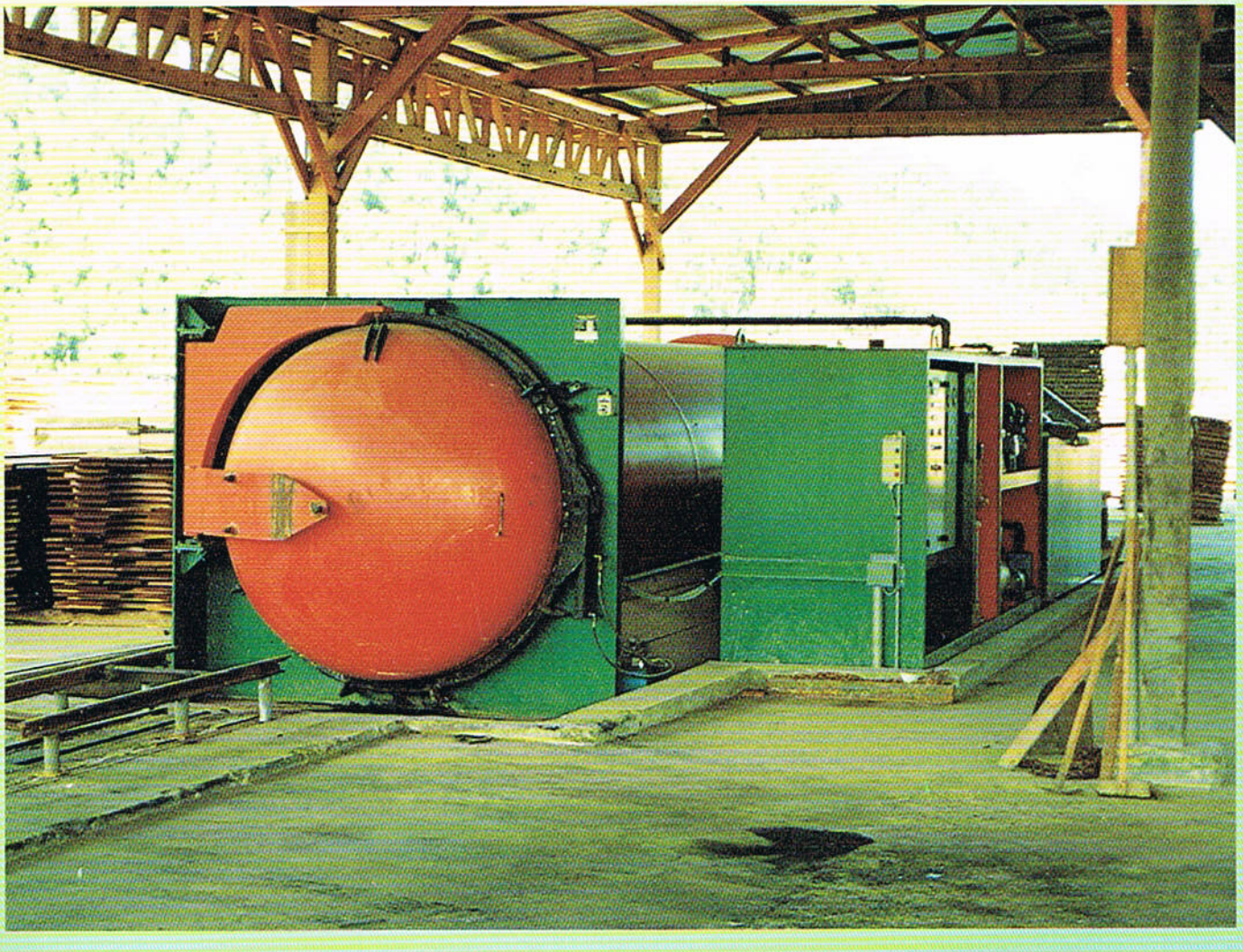
MOLDRUP SYSTEMS PTE. LTD.

Product data

IMPREGNATION PLANT

Leaflet 97021

DWT T10 VACUUM PRESSURE IMPREGNATION PLANT



- the most widely sold plant in Asia and Europe for vacuum pressure impregnation of timber with water-borne wood preservatives.
- simple design and high capacity.
- easy operation and simple maintenance.
- delivered as a pre-fabricated, turn-key unit.

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FEATURES OF THE DWT T10 VA

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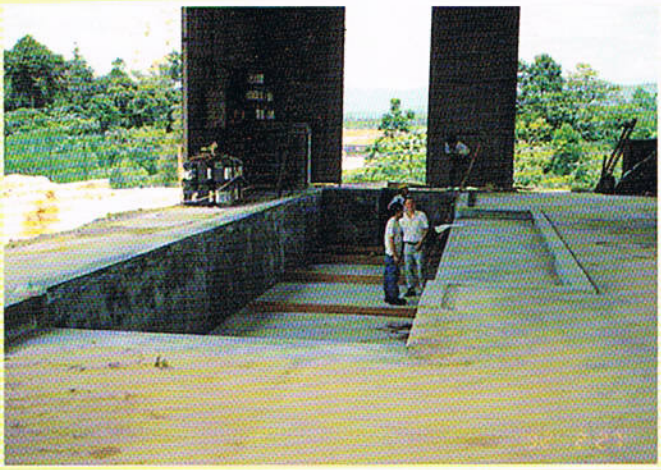
Application

The DWT T10 impregnation plant is used for vacuum pressure impregnation of timber with water-borne wood preservatives such as CCA, boron, copper amine and fire retardants.

With more than 500 unit installed in Asia and in Europe the DWT T10 impregnation plant is the most widely sold plant in Europe and Asia for impregnation of timber with water-borne wood preservatives.

DWT T10 impregnation plant for impregnation of timber with water-borne wood preservatives



The DWT T10 impregnation plant is very compact and requires only a simple foundation.

Simple and efficient design

The DWT T10 impregnation plant is built with the pressure vessel placed above the storage tank. This design allows the preservative solution to be transferred from the pressure vessel to the storage tank by gravity, which has the following advantages:

- no pumps required to transport the preservative solution from the pressure vessel to the storage tank.
- enables the pressure vessel to be completely emptied for preservative solution at the end of the pressure phase.
- makes the plant very compact which minimizes the area of land required for the installation of the plant.
- minimizes the number of valves and pumps.

The DWT T10 impregnation plant is supplied in form of a transportable, turnkey unit.

Turn-key

The plant is supplied as a turn-key, transportable unit, which is ready for operation immediately after being placed on the concrete foundation and connected to electricity and water. The installation is uncomplicated and fast, and the plant can easily be relocated to another site, if required.

High capacity

All transport of impregnation solution is by vacuum and gravity which is a quicker and more efficient mode of transport compared to transport by pump. To further reduce cycle time, all valves, pipes, pumps etc are of larger capacity than in traditional impregnation plants.

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CUUM PRESSURE IMPREGNATION PLANT

DWT T10 Impregnation plant Installed in Indonesia

Low maintenance costs

To minimize maintenance costs, the plant is provided with the following features:

a) all pumps, valves, electrical components etc are of well known, international brands.
b) the number of pumps and valves are kept at a minimum.
c) pipes, valves and pumps are made of stainless steel.
d) vacuum system is supplied with an anti-cavitation system.
e) in-line filters in front of most pumps.
f) storage tanks made of 8 mm steel plates.

The robust and simple design allows the DWT T10 impregnation plant to be operated for decades without the need for major repair works.

Easy to operate

Most of the DWT T10 impregnation plants are controlled by a fully automatic control system. With a fully automatic control system, the operator just has to push the start button and the impregnation cycle will be completed automatically. This minimizes labour costs, increases plant capacity, and makes it possible to carry out the impregnation process correctly even if the operator has little experience in wood treatment.

Extra large storage tank

The volume of the storage tank is 30% larger than the volume of the pressure vessel. This helps to ensure that the plant can be operated even if it contains little or no timber. The extra large volume of the storage tank also ensures that the storage tank does not need to be refilled with fresh preservative solution after each treatment cycle.

Easy monitoring

To monitor the impregnation process, each plant is equipped with the following measuring instruments:

a) vacuummeter
b) manometer
c) process recorder
d) measuring tank

Hydraulically operated door

The door is one of the most important components in any impregnation plant, and the DWT T10 impregnation plant is equipped with the DWT quick locking door, which is considered to be the most user friendly door on the market.

The DWT T10 impregnation plant is supplied with up to two storage tanks installed below the pressure vessel.

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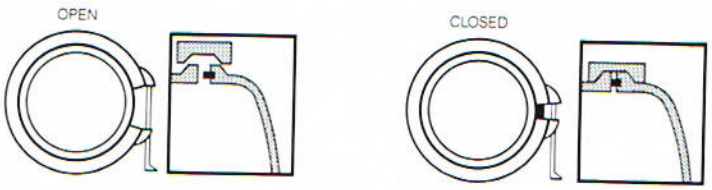
DESCRIPTION

DWT quick locking door

The pressure vessel is equipped with one or two hydraulically operated DWT quick locking doors. The design of the DWT quick door is patented, and comprises of a contracting ring which holds the door flanges together by the force of a hydraulic cylinder. A square rubber seal in the flanges ensures that the door is completely leakproof during all phases of the impregnation process.



- DWT quick-lock door is unique in its simplicity and high degree of efficiency
- DWT quick-lock door is hydraulically operated, fully automatic, and equipped with all necessary safety devices
- DWT quick-lock doors are available in diameters from Ø 900 mm to3,500 mm and for pressures of up to 70 bar.

Loading procedure

With doors in both ends of the pressure vessel it is possible to minimize delay between two charges by having a second set of loaded boogies ready to be pushed into the pressure vessel as soon as the preceeding charge is pulled out. With one door, more time is required between two charges, as the next charge only can be pushed into the pressure vessel after the preceeding charge has been pulled out and the boogies have been unloaded and loaded with the next charge.

Tanks :

In addition to the pressure vessel, the DWT T10 vacuum pressure impregnation plant is equipped with the following tanks,:

Storage tank

The storage tank is a rectangular steel tank placed below the pressure vessel for holding the impregnation solution. The storage tank has a volume about 30% larger than the volume of the empty pressure vessel .

Measuring tank

The measuring tank is a rectangular steel tank placed besides the pressure vessel. It has a volume equivalent to 15% of the pressure vessel and serves two functions:

a) ensure that the impregnation solution feeded to the pressure pump is free from particles of sawdust and dirt,

b) allow the up-take of preservative solution in the treated timber to be measured as accurately as possible.

The measuring tank is refilled with solution from the storage tank after each impregnation process.

In-drum mixer for safe and efficient mixing of preservative chemicals in paste form

Newly Installed DWT T10 impregnation plant

Mixing tank

The mixing tank is used for mixing the concentrated preservative chemicals with water. The mixing system depends on the type of preservative chemical. An agitator is used for mixing of chemicals in powder and liquid form, while an in-drum mixer is used for mixing of chemicals in paste form.

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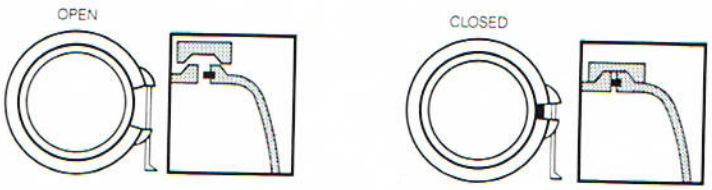

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FUNCTIONAL

PUMP STATION

The pump station is a rectangular, selfcontained steel tank placed besides the pressure vessel. It contains most of the valves, pumps, filters etc together with the measuring tank, control system and electrical cabinet.

Pressure pump

To build up the pressure used for forcing the impregnation solution into the timber, the plant is equipped with a vertical multistage centrifugal pump for a working pressure of up to +14 bar.

Vacuum pump

To evacuate the pressure vessel for air, the plant is equipped with a vacuum pump which can create a vacuum of about 75-80% (=appr 600mmHg).

The vacuum pump is a socalled liquid ring pump, which is considered to be the most durable. The liquid ring consists of impregnation solution, but can also comprise of water from a separate cooling water tank. The liquid ring serves two functions:

a) cools the vacuum pump

b) act as an air tight seal in the vacuum pump.

Anti-cavitation system

Cavitation in the vacuum pump can cause severe damage to the pump. To minimize the risk of cavitation, the plant is equipped with the following features:

a) the vacuum pump is continously supplied with fresh solution to cool the pump.

b) the vacuum pump is equipped with an anti-cavitation system in form of an air intake valve

Transfer pump

To cool the vacuum pump and to refill the measuring tank with preservative solution, the plant is equipped with a transfer pump which pumps preservative solution from the storage tank to the measuring tank.

Pressure relief valve

To control the working pressure, the plant is equipped with a spring-loaded pressure relief valve. The actual working pressure depends on the timber species and on the required penetration depth.

Valves and piping

Most of the valves and pipes are made of stainless steel and are of much larger capacity than in the traditional impregnation plants.

Float switch

Between the pressure vessel and the vacuum pump is installed a float switch which automatically stops the vacuum pump, when the pressure vessel is full of impregnation solution.

Control system

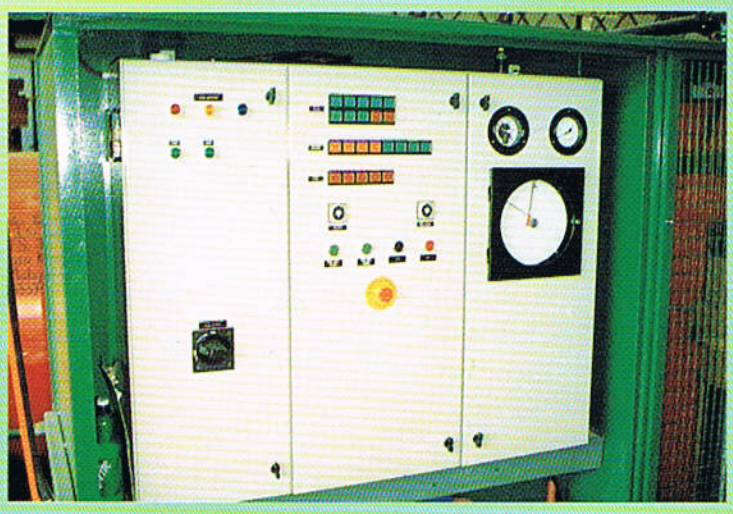
The plant can be supplied with either a manual or an automatic control system.

Fully automatic control system.

The majority of the plants are supplied with a fully automatic control system, which consists of a PLC controller together with a number of timers.

The fully automatic control system has the following advantages compared to the manually operated plants:

a) *labour saving.* The automatic plant need no



Fully automatic control system complete with monitoring instruments

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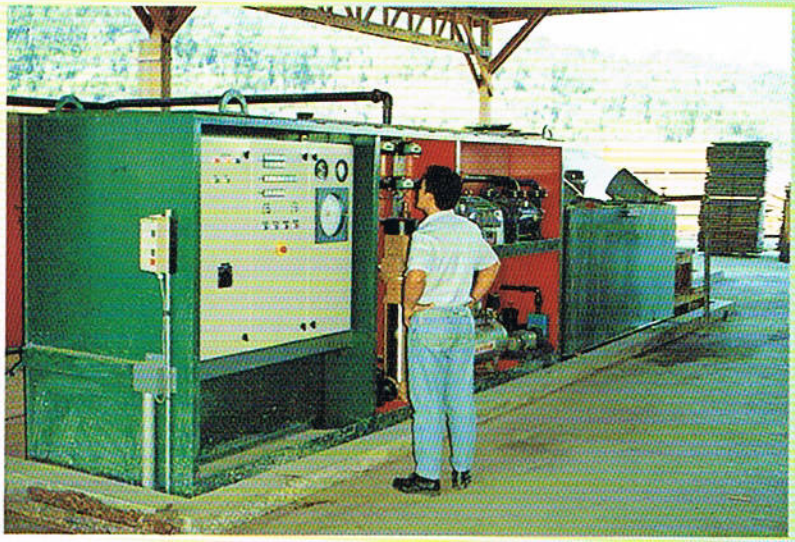
DESCRIPTION

attention by the operator during the whole of the impregnation process. As soon as the operator has started the plant, the automatic plant can complete the whole impregnation process by itself, while the manually operated plant need continuos attention from the operator.

b) *Increased capacity* . Since the automatic plant can perform the whole impregnation process by itself after the operator has started the plant, the operator can load a charge just before ceasing work and return, next morning, to unload the treated timber.

c) *better impregnation quality.* The automatic impregnation plant follows a preprogrammed schedule and this helps to ensure a more consistent impregnation result than can be obtained with the manually operated plant.



DWT pump station

Measuring instruments

To assist in the control of the impregnation process and to record the impregnation process, the plant is equipped with the following instruments :

a) manometer to measure the pressure

b) vacuum meter to measure the vacuum

c) special tank to monitor the up-take of impregnation solution in the treated timber

d) process recorder for registration of time, pressure and vacuum on a circular chart paper.

Electrical cabinet

The plant is supplied with an electrical cabinet complete with all necessary electrical wiring, thermo-relays, contactors, etc.

Pneumatic system

The fully automatic plant is using pneumatically operated valves together with one air compressor and all necessary pneumatic components.

3 units DWT T10 impregnation plants installed in Sabah, Malaysia.

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