AQUARIUS TECHNOLOGIES PRIVATE LIMITED India

VACUUM DEWATERING SYSTEM

A high quality concrete floor or pavement requires not only to be level but it should also have high wear resistance, high compressive strength, reduced shrinkage and minimum water permeability.

THE CONCEPT

The TREMIX method, pioneered by TREMIX AB, SWEDEN and introduced by Aquarius in India in 1987, is a system for laying high quality concrete floors with superior cost-effectiveness. Aquarius subsequently entered into a technical collaboration with TREMIX AB, in 1991 to start production of Vacuum System in India.

The key to the use of this method is the dewatering of concrete by vacuum process. Surplus water from the concrete is removed immediately after placing and vibration, reducing the water : cement ratio to an optimum level. Therefore, adopting the TREMIX method facilitates use of concrete with better workability than what is normally possible.

A lowered water : cement ratio automatically leads to a noticeable improvement in almost each of the concrete properties.

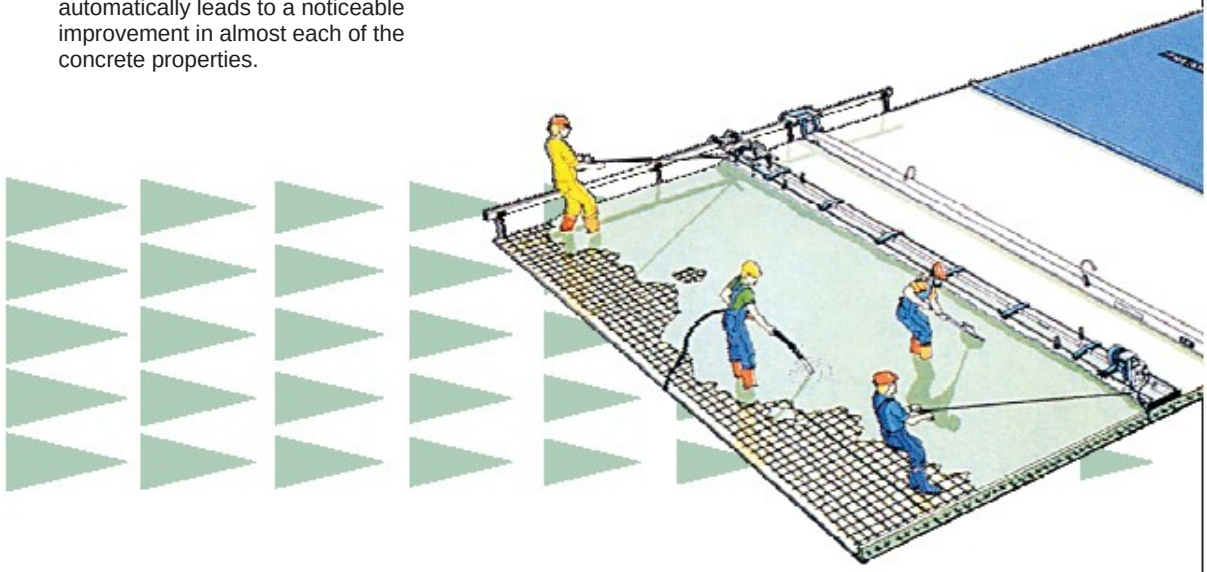
THE OPERATION

In order to obtain a high quality concrete floor using this method, it is essential to follow the various operations in the correct sequence. Initially, poker vibration is essential, especially at the panel edges. This results in proper compaction of the concrete and hence elimination of voids and entrapped air.

Poker vibration never really gives a levelled surface. It is therefore essential to combine this vibration with surface vibration (screeding), in order to obtain a vibrated concrete with a levelled surface. Two passes with surface vibrator are normally recommended.

The Surface Vibrator is guided by two men, standing on either side of the panel.

Vacuum dewatering process removes surplus water always present in the concrete. This is done using the Vacuum Equipment comprising of Suction Mat Top Cover, Filter pads and Vacuum Pump. The process starts immediately after surface vibration.



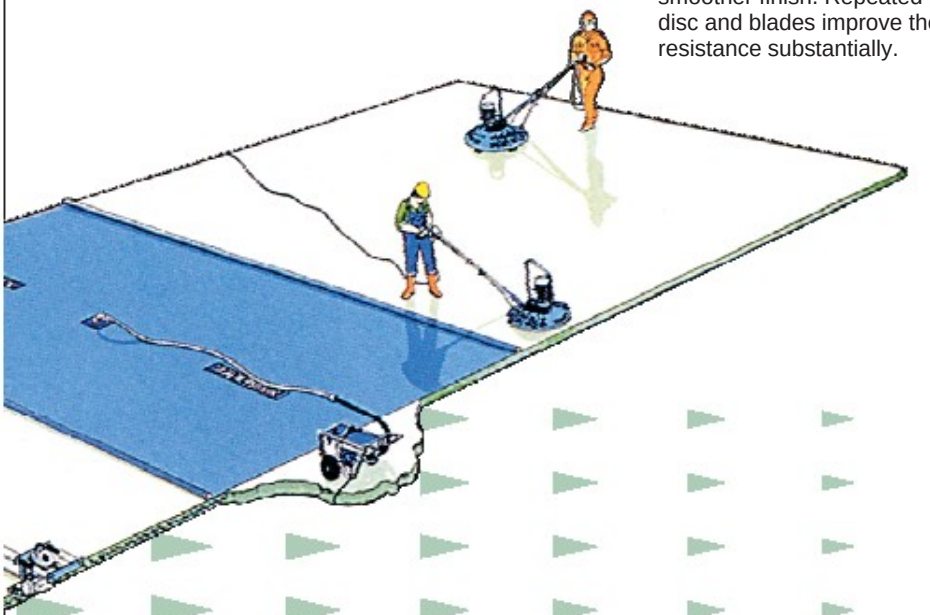
Filter pads are placed on the fresh concrete leaving about 4 inches of fresh concrete exposed on all sides. The Top Cover is then placed on the filter pads and rolled out till it covers the strips of exposed concrete on all sides. The Top Cover is then connected to the vacuum pump through a suction hose and the pump is started.

Vacuum is immediately created between the filter pads and the top cover. Atmospheric pressure compresses the concrete and the surplus water is squeezed out. This process lowers the water content in the concrete by 15-25%.

The dewatering operation takes approx. 1.5 - 2 minutes per centimeter thickness of the floor. The dewatered concrete is compacted and dried to such an extent that it is possible to walk on it without leaving any foot prints. This is the indication of concrete being properly dewatered and ready for finishing.

The finishing operations - Floating & Trowelling take place right after dewatering. Floating operation is done with Floating disc. This ensures aftermixing of sand & cement particles, further compaction and closing the pores on the surface. Floating operation generates skid-free finish.

Trowelling is done with Trowelling blades in order to further improve the wear resistance, minimize dusting and obtain smoother finish. Repeated passes with disc and blades improve the wear resistance substantially.



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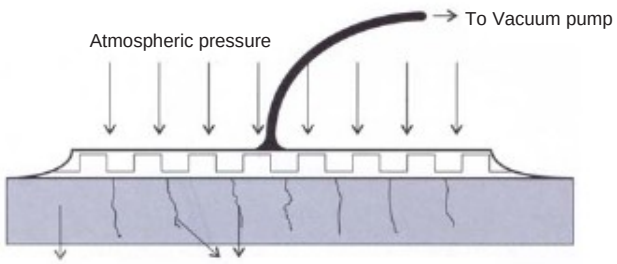
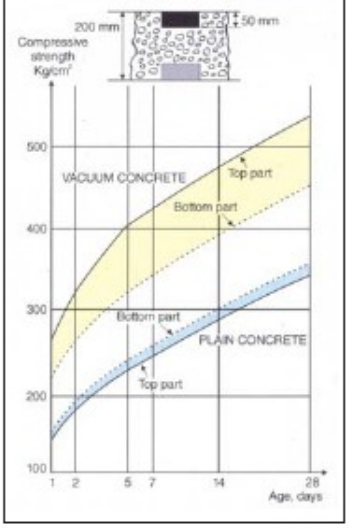
Why only TREMIX method?

SCHEMATIC SHOWING VACUUM DEWATERING PROCESS

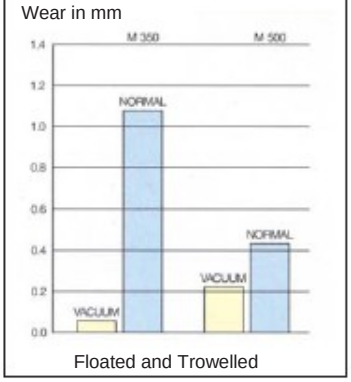


Suction Mat of special grade multilayered polymer sheets alongwith reinforced distance cushions on the Filter Pads ensure sufficient cross-sectional area to squeeze out and remove excess water from the concrete. This design is a prerequisite for effective dewatering.

INCREASED COMPRESSIVE STRENGTH



IMPROVED WEAR RESISTANCE



ELIMINATION OF CURLING