

The design of the permeable brick permeable coefficient test method

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Abstract: According to the standard content, it provides a completely satisfy the permeable brick permeable coefficient test detection device. This for improvement of the permeable brick permeable coefficient test device, the vacuum control system, electric control system and weighing tank organic union, more in line with test operation process. It has a strong and durable, easy maintenance, the advantages of small human error influence, the systematic test device and automatic control, and single convenient operation, the operator simple sample preparation is more secure, more HuanYang easy, intuitive visual measuring instrument, collect data and calculate quickly at the same time. The test data with high precision, small error, high efficiency, low requirements for the operator, scope of application is wide.

1 The introduction

The utility model in accordance with the national standard GB/T 25993-2010, 6.5, 7.4, appendix C operation specification, the test work flow section of each device effectively upgrade the process, integrated into one device, function and appearance are optimized. Permeable pavement brick and permeable pavement plate permeable rate of testing equipment, integrate innovation test operation process, the overall structure is more practical and beautiful. Its characteristics mainly embodies in four

parts, namely the sample preparation section [1], water system, test device and circuit control system four parts. It includes sample preparation includes water drill, sample preparation, sink, protective dust removal device; Water system including airless vacuum system water device, vacuum box for sample preparation, water source heat preservation box, water system, water treatment system; Test unit including the main frame, the overflow tank, porous cylinder, cylinder seal, caching, weighing water tank;

Circuit control system including temperature detection, vacuum control, water supply, according to operation.

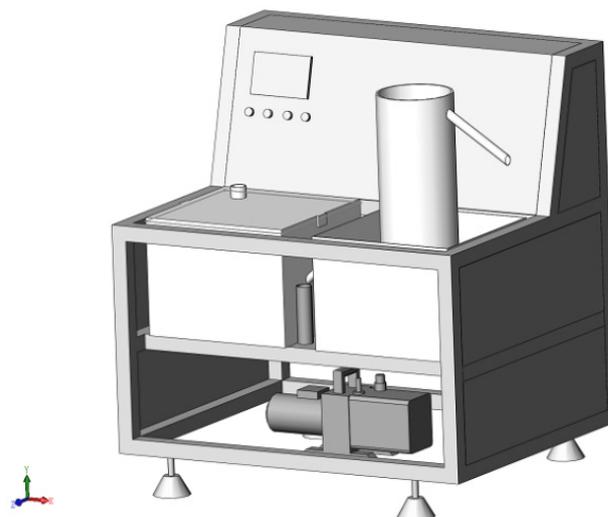


Fig 1. Permeable brick permeable coefficient measurement device schematic as a whole

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2 New permeable brick permeable coefficient test device

2.1 Sample preparation section:

sample preparation is card in card water drill head, drill water installation in the sink, sink peripheral protective dust removal device, the sink drain connection precipitation tank water treatment system.

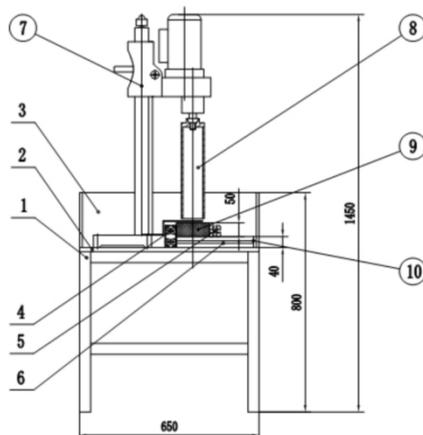


Fig 2. Ceramic drill sample preparation

2.2 Water supply control system

2.2.1 Airless vacuum system water device

water used in the production test. Tap water through the filter, then through the valve into the vacuum tank, vacuum tank installation mechanical vacuum gauge and vacuum sensor; Vacuum tank via pipeline is divided into two road respectively connect the vacuum pump, water pump. In turn connect between vacuum tank and pump suction bottle, steam trap, the valve; Followed by pump pressure regulating valve, valve, connected to water source heat preservation box[2].

2.2.2 Vacuum box for sample preparation

the measured samples used in vacuum, gas. Water inlet valve box, box installation mechanical vacuum gauge and

vacuum sensor; Case by the pipe connection steam separator, valve, vacuum pump; The water tank water to precipitation tank water treatment system.

2.2.3 Water incubator

adjust test water temperature above ambient temperature $3\text{ }^{\circ}\text{C} \sim 4\text{ }^{\circ}\text{C}$.

2.2.4 Water supply

water, water heat preservation box test above through porous cylinder pump to test device.

2.2.5 Water treatment system

the main processing vacuum box for sample preparation, sample preparation part of the used water.

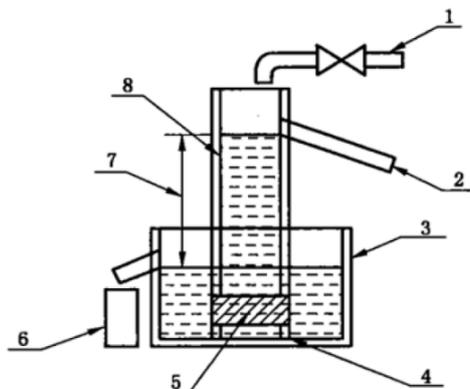


Fig 3. a permeable coefficient test apparatus

Water supply system 2. The overflow mouth 3. The overflow tank 4. Stents Sample 6. Measuring cylinder 7. Water level difference 8. Transparent cylinder

2.3 Test device

the main frame, the overflow tank, porous cylinder, cylinder seal, caching, weighing water tank

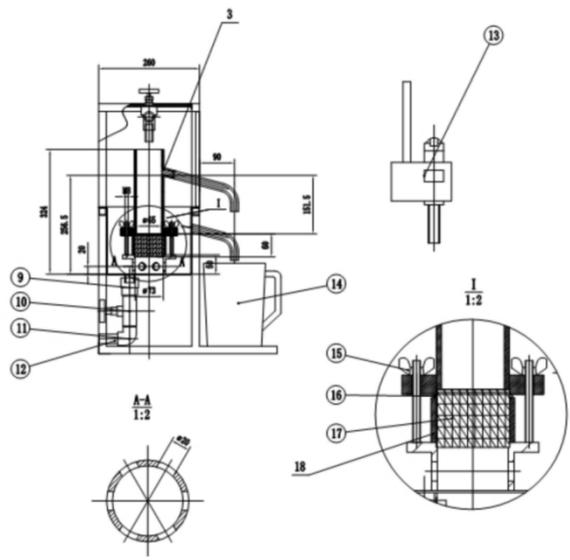


Fig 4. Test apparatus analysis diagram

2.4 Circuit control system

temperature detection, vacuum control, water supply, according to operation

3 The principle of analysis

This equipment adopts touch screen control, output pressure, liquid level difference, rate and related data. It has reached the closed-loop control. The precision is poor, program automatic real-time record equivalent stress, displacement, weight, and convenient late research, in order to improve the accuracy of brick of pottery and porcelain rupture modulus and fracture strength data.

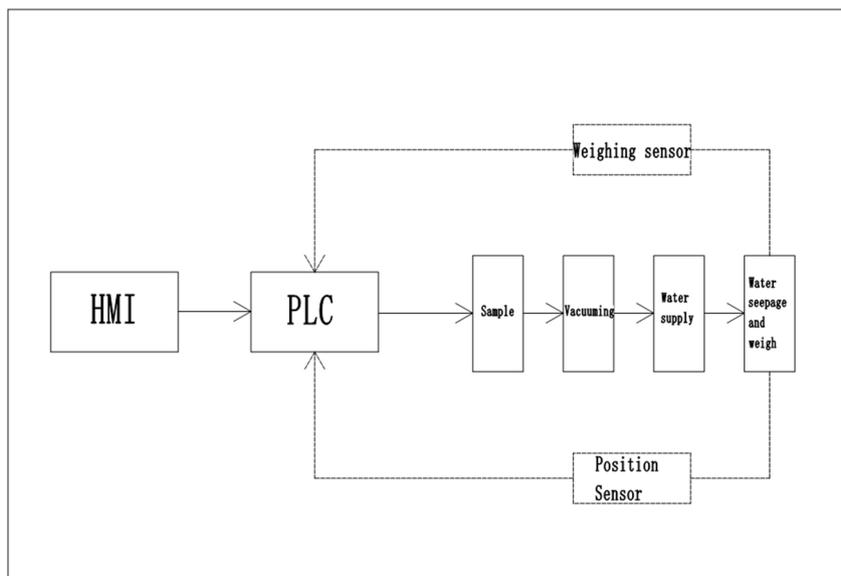


Fig 5. The principle of analysis

4 The process of working

Touch screen is controlled by PLC system prototype sample cutting diameter phi 75 mm thickness with

the thickness of the product sample 3 pieces. The sample of sealed with a sealing material or other way around, and make it not leak, the water only from the top and bottom surface of the sample. Sealing

material after curing, put the sample in a vacuum, vacuum-90 kpa plus or minus 1 kpa, and maintain a 30 min. While maintaining the vacuum, add enough water to cover sample and make the water level higher than that of sample 10 cm, to stop pumping air into vacuum state, for 20 min, removed, load the permeable coefficient test device, seal sample with porous cylinder link. Into the overflow tank[4], it has opened the water valve, make the airless water into the container, such as the overflow tank overflow hole on the water out, adjust the water inflow, keep the porous cylinder certain water level (150 mm), for the overflow tank overflow mouth and the overflow of the porous cylinder hole water stabilized, with weighing tank from the outlet of water, the water flow in five minutes. Measured three times, averaged[5].

5 conclusion

Never before seen a permeable brick permeable coefficient of overall equipment, test equipment to achieve from the sample preparation, the whole process of pumping air into vacuum state, water supply, water weighing, as shown in figure 1. It has developed considering the fundamental solution to this problem: achieve comprehensive detection, permeable coefficient of the whole process of a device that can completely solve the various steps while doing the experiment fault discontinuity problems.

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