

Making Waves

How to make waves

When it comes to making waves, operators usually have two options from which to choose: hydraulic and pneumatic generators.

Regardless of which type of generator is used, wave pools are designed to mimic a shoreline: The floor slopes up and fans out to a zero-depth level, and down several feet deep.

Waves created with a hydraulic system tend to be larger. In this system, water is pumped into large tanks located above the surface level of the pool and then forced out. Pneumatic waves are made with the use of fans and wave chambers, also known as caissons.

With pneumatic generators, caissons are situated at the back (the non-beach end) of the pool. Each caisson is equipped with a pneumatic valve and a relief valve, situated on opposite corners. The number of caissons determines the number of wave types that can be generated.

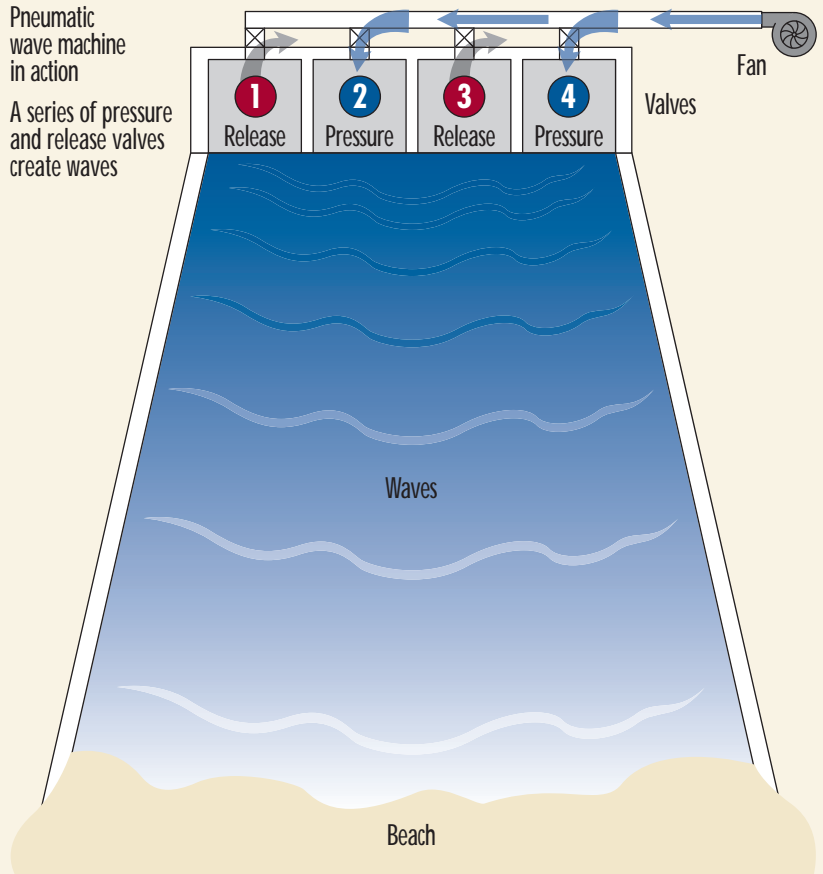
At rest, water inside and outside the chambers is at equal levels. To start the wave pool, a large fan blows air into the chamber via the pneumatic valve, and pushes water out through the relief valve on the opposite end of the chamber. This forms a resonating effect of moving water, which then travels out to the pool and onto the beach entry.

A computerized system can determine which type of wave patterns to generate along with different heights and frequencies, including a diamond-shape; a large wave followed by a small one; and a barrel wave.

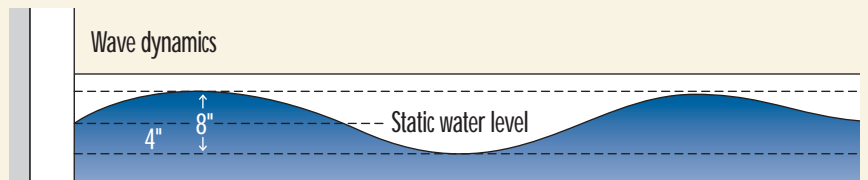
Manufacturers are constantly improving on their products, coming up with more energy-efficient machines with smaller horsepower fans. One manufacturer has even eliminated the fan altogether, using a rhythmic pulsation along the floor to create surface waves instead. Another uses compressed air to force water out of the caissons.

Pneumatic wave machine in action

A series of pressure and release valves create waves



Wave dynamics



Cross section of pneumatic wave machine

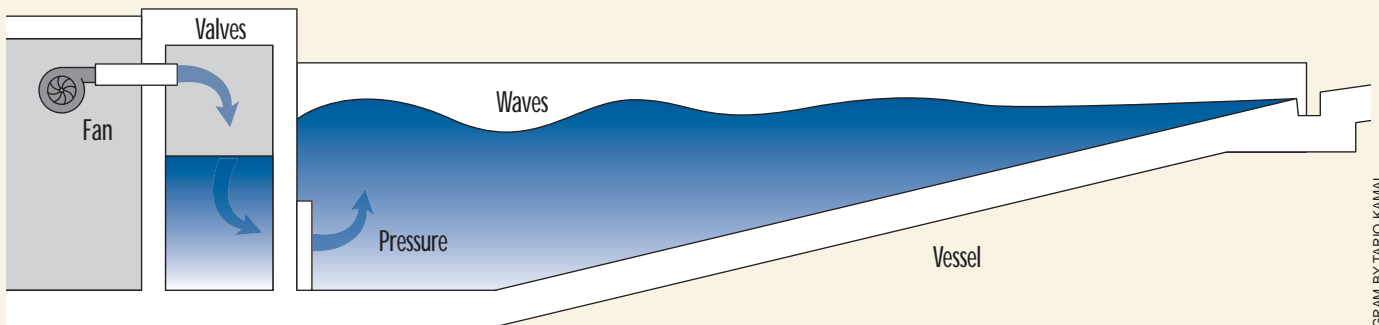


DIAGRAM BY TARIQ KAMAL