This technology has proven effective for healing and prevention of ischemic ulcers and the positioning and stability needed by wheelchair users, and added comfort for extended sitting times.

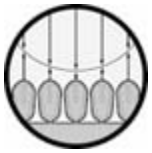
The inventor, Robert H. Graebe, chose to use air as the fluid instead of water because of the weight and potential problems water could cause. Water is affected by gravity, difficult to adjust, hard to regulate by temperature, and requires lengthy set-up and take down times.

Foams and gels don't posses all of the same properties as air and thus are inadequate at providing appropriate pressure distribution without tissue deformation. Foams compress with time, becoming virtually useless, and gels tend to be heavy, coagulate with time, and become softer when hot and harder when cold, due to changes in density from temperature exposure.

The four principles of DRY FLOATATION technology

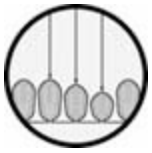
Six Degrees of Freedom

ROHO cushions are constructed of individual cells that move independently, allowing each cell to twist, turn, bend and adapt precisely to the contours and anatomy of the patient.



Low Surface Tension

The unique cellular design allows for immersion into the cushion without deforming tissue, minimizing the chance of skin breakdown.



Constant Restoring Forces

When a patient is immersed in a ROHO DRY FLOATATION product, the forces and pressures pushing back are kept equal at all points. As the body is immersed, greater contact area is achieved for dispersion of pressure. Thus, the pressure on any one area is minimized.

Low Friction and Shear

As a result of the three previous principles, DRY FLOATATION technology provides a low friction and low shear environment. Friction acts to oppose the direction of motion, or impending motion. Shearing occurs when opposite, but parallel, forces meet and the outcome inhibits blood flow. The slick surface of the ROHO cells combined with the independent movement of each cell greatly reduces friction and shear as clients move.

Consider the following example:

We all live in an atmosphere where the pressure around us (ambient) is 760 mmHg, or 14.7 psi. Commercial divers spend up to eight hours at several atmospheres of pressure (we'll use 3 as an example), which would approximate 2280 mmHg, or 44.1 psi. This shows that divers can experience unrelieved interface pressures greater than 32 mmHg for long, uninterrupted periods. This is because of the environment the diver is in, where immersion in water is distributing these pressures so that tissue damage does not occur. ROHO DRY FLOATATION technology works using this exact principle. The immersion depth for DRY FLOATATION cushions is adjustable to provide the lowest possible pressures applied to the individual being supported. The external pressure magnitudes produced by DRY FLOATATION technology range from 20 mmHg to 50 mmHg for emaciated persons, depending on the mass supported

versus the contact area available (bed lying to chair sitting). Thus, DRY FLOATATION cushioning produces external skin pressures which are less (pressure relief) than the level of flow cessation from external pressures for normal blood pressures and in a range which is compatible to facilitate healing.

A Deeper look in the R&D of seating surfaces...
by David Parsons, V.P. of Research and Development, The ROHO Group.
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