5D: MOVIES UNDER WATER

Audience members immersed in a flooded theater.

The New 5D Movie Experience.

Going to the movies in a bikini or swim trunks? A flooded theater and you’re immersed, so to say? Imagine you’re sitting at the seaside. A light breeze blows through your hair. It smells of fresh ocean air. You’re gazing into the distance, the tide is coming in, and suddenly you are sitting in the water. Reality or illusion?

This could be the new 5D movie experience, made possible by pneumatics. The new form of theater experience involves the audience in the story being shown with powerful illusionistic effects. 5D theaters work with special seats with various integrated effects, featuring smells, air or water jets, just like in a flight simulator. The audience becomes part of the story, with all five senses.

Future development: world firsts  The “wet theater” format was developed in collaboration between Markus Beyr and Markus Achleitner from Bad Schallerbach thermal spa in 2009 and the concept has been refined ever since. But to date, only very few 4D-5D theaters with real water effects have been built, something that is set to change soon. Abu Dhabi’s Yas Waterworld water park is home to the first water park theater with flooding and other special effects. A unique movie experience of being right in the middle of a theater that is suddenly flooded with water, where moviegoers are immersed in warm water up to their belly buttons, is becoming a reality. Water rises from below, flooding the theater matching what is happening in the film. Wave machines perfect the illusions, rounded off with waterfalls that flow to the left and right of the screen. The first water park theater opened this spring in Abu Dhabi. Attraktion! GmbH will realize a second project of this type in Guangzhou, China, in the fall of 2018. Here, pneumatic components from AVENTICS will also be used.

In Europe, 5D theaters have been established for some time. Now, experience theater is being taken to the next level: In Abu Dhabi, the world’s first water park theater opened in spring 2018. This 5D theater not only floods, but also enables movement simulation in the water. For around five years, Austrian company Attraktion! has focused on system integration for multimedia theme parks that are also suitable for water.

“We needed a solution that functions precisely with a fixed installation and that scores with a long service life,” explains Max Wieland, engineer and head of system planning & engineering at Attraktion!.

“We knew that pneumatics were the only solution. The excellent references and constructive consultation convinced us that AVENTICS was the right partner to have at our side,” continues Wieland.

The first water park theater opened in Abu Dhabi. Pneumatics from AVENTICS allows movement simulation in the water.

The 5D motion seats from Attraktion! Are equipped with AVENTICS pneumatic components. They feature MU1-RGS series pressure regulators and EDD2 series electro-pneumatic proportional valves.
Pneumatics key to the 5D experience
At the heart of the design is the 5D motion seat base, a row of seats consisting of four spaces that move in tandem with the movie. Different settings maneuvering the seat back and forth, from side to side, and even up and down enable uncountable movement combinations. The theater seat moves according to what is happening in the film, in sync with image and sound.

The ED02 series electronically actuated proportional valves from AVENTICS pneumatically control the MU1-RGS series pressure regulators.

Pneumatic components play a key role in the technology behind it all. AVENTICS valves control seat movement in sync with the theater controller signals. To deliver this performance, each theater is equipped with a compressed air system consisting of a compressor and air tanks. Compressed air is forwarded to the ED02 series electro-pneumatic proportional valve system, combined with the MU1-RGS series pressure regulators. This is necessary to control the seats. The ED02 valves control the MU1-RGS regulators, which supply the pressure to the system. The theater controller sends motion signals (0-10 V) programmed in sync with the film to the ED02 valve, which transforms the modulation into 0 to 6 bars and forwards it to the MU1 valve. There, the resulting system pressure is passed on to the bellows cylinders in the motion seats according to the control signal.

A simple solution for a grandiose theater experience
Thanks to collaboration with AVENTICS, Attraktion! has managed to develop a cost-effective solution that can be implemented for the long term. While an initial technical implementation required three proportional valves and three pressure regulators per row, the current, revised variant has cut material costs significantly since three proportional valves now supply nine pressure regulators.

“AVENTICS quickly identified the need for optimizations and assisted us with expert advice. The result: A simple technical solution that is more energy-efficient and cost-efficient. Thanks to the competent consultation from our partner, we will benefit for the long term – even in new projects,” explains Max Wieland. “And movie fans can look forward to truly unique theater experiences.”