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Meyer Sound Helps Mythbusters Master Flame in April 11 Episode

IMAGES



Can sound waves extinguish a flame? If anyone can answer that question, it would be the Mythbusters. One of the Discovery Channel's most popular and entertaining shows, "Mythbusters" features five special effects and science experts taking turns debunking (and sometimes proving) common and, often, silly urban legends.

Based in San Francisco, the show has, for several previous episodes turned to the audio experts at Berkeley-based Meyer Sound, just across San Francisco Bay, for authoritative help in researching sound-related myths. The resulting partnership has produced fascinating, if sometimes predictable, results. Previous "Mythbusters" shows involving Meyer Sound have explored myths such as the assertion that a duck's quack does not echo (debunked), the existence of a so-called "brown note" that can cause a person to lose bowel control (thankfully debunked), and whether a human voice can shatter glass (confirmed).

When the Mythbusters set out to apply their zany method to one more myth requiring sound expertise, they naturally enlisted Meyer Sound's accommodating audio mavens to provide know-how and equipment.

"This story started with the myth that deceased Californian naturalist and vaudeville performer Charles Kellogg could extinguish fires using only his voice, and expanded into an investigation into the viability of fighting fires with sound," explains Alice Dallow, producer for the show, of the latest myth to be tested.

Sound waves were used recently as part of the "Prometheus Project," where a group of graduate students at the University of West Georgia manipulated a candle-sized flame in a low gravity environment. The technology obviously has practical use in applications related to the space program (where traditional fire extinguisher foams will not work due to the lack of gravity), but also in commercial applications where extinguisher chemicals may cause equipment damage. So the question facing the Mythbusters was two-fold: would the same experiment work in normal gravity, given the differing behavior of a flame under those conditions; and, if it did work, could sound waves extinguish anything larger than a candle?

For the first stage of the test, Meyer Sound Staff Scientist Roger Schwenke (a Ph.D. acoustician and participant in every previous "Mythbusters"/Meyer Sound collaboration) and other technicians from the company used a UPJ-1P Compact VariO loudspeaker and an M1D-Sub ultracompact subwoofer. Testing with a larger flame required the added punch of four M3D-Sub directional subwoofers. Frequencies considered optimal for extinguishing fire were pinpointed with the help of a SIM 3 audio analyzer. "We had a lot of fun with this one," says Schwenke, "using the loudspeakers and subs to bombard the flame with appropriate frequencies, making it 'dance,' and figuring out just what frequencies would manipulate it."

"Mythbusters" and Meyer Sound both enjoy their excellent working relationship. Says Dallow, "By now, Roger Schwenke is an honorary Mythbuster. Meyer Sound's participation in the 'voice flame extinguisher' experiment was invaluable, and resulted in another 'Mythbusters' world first."

"It takes methodical measurement and analysis to truly understand the behavior and effects of sound, and we have a good time bringing those things to the Mythbusters' exploits," says company president/CEO, John Meyer. "We've done some amusing experiments with them, but the practical uses and implications of this experiment made it particularly interesting."

This episode first aired on the Discovery Channel on April 11.

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- Alice Dallow
Producer, Mythbusters

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