X-Hedgehog: Enhanced Safety for Firefighters Through Avoiding the Entrance of Dangerous Areas

Heinemann, Jan (School: Bertha von Suttner Gymnasium Andernach)

When fighting fires, firefighters still must expose themselves to great danger and enter hazardous areas such as burning industrial halls risking their own health. A self-designed and built prototype was equipped with various nozzles. The nozzle type and positions were examined in a wide variety of tests on solid fuel fired fire training systems and in the open air. At the same time, feedback from firefighters was evaluated and thus handling, attachment to the ladder and expandability were improved. Additionally, the design was simplified to facilitate production. The X-hedgehog is a spray chamber with nozzles. It is attached to extension ladders and can be pushed over the ground into a hazardous area using rollers. The nozzles produce a fine spray mist, which has an increased cooling effect and enables the precipitation of gases and aerosols while using less water. The simplified design allows operation by one person and stowage in fire trucks. The invention is based on existing material, so the initial cost for fire departments is lower than for common solutions and less space is used. The invention allows firefighters to avoid entering hazardous areas. Due to its compact design and low cost, the X-hedgehog can be placed on many fire trucks and thus quickly reach the scene of the fire. The main area of application is industrial, forest or tunnel fires, but the X-hedgehog can also be used for container cooling or for the precipitation of toxic gases and aerosols.

Awards Won:

Fourth Award of $500