Table 3: Coordinates of the sensors on the grid

	x-axis	y-axis	z-axis
Sensor 1	0.0	-2.0	1.5
Sensor 2	-2.0	0.0	1.5
Sensor 3	2.0	0.0	1.5

5. Conclusions

UGLD can be used to detect leakages from pressurized hydrogen tanks in refueling stations. These sensors can effectively detect outdoor H_2 releases since they measure the ultrasound emitted from the high-pressure gas leaks without being affected by the wind, the leak direction, or the hydrogen dilution, like concentration-based detectors. The functioning of these sensors is based on sound propagation instead of mass movement; hence, they have lower response times and increased reliability. In this study, two hydrogen releases from a pressurized storage system have been simulated, considering the extreme cases of a full tank at 700 bar, an almost empty tank at 5 bar, and two different hole sizes. In addition, the positioning of the UGLDs has been optimized through a genetic algorithm that simulated a set of possible sensor locations and determined a spatial configuration which guaranteed the highest coverage area. The results demonstrated that only three sensors, appropriately positioned near the tank, are sufficient to detect compressed gaseous hydrogen releases, offering an additional safety barrier for H_2 refueling stations. Hence, UGDLs can complement existing detection systems in outdoor areas. They can drastically reduce the system's response time, thus enhancing the operational safety of hydrogen refueling stations.

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