

Description of Additional Supplementary Files

Supplementary Movie 1: **Visualization of damage detection and localization using MIDAS.** In the top row, the first animation illustrates the structure in 2D and the damage progression. The second animation depicts the damage development over time. The third references the corresponding FEA analysis, highlighting stress concentration near the crack. In the bottom row, the left animation presents a histogram used for damage detection, where discrepancies between the damaged and undamaged cases indicate the presence of damage. The final animation displays the damaged localization map.