



2<sup>ND</sup> INTERNATIONAL WORKSHOP

ADDITIVE MANUFACTURING  
AND SUSTAINABILITY

BOOK OF ABSTRACTS

**IWAM 24**



OCTOBER 4<sup>TH</sup>, 2024

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## Effects of extensive green roofs on rainwater drainage from a metalworking industry building

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This study examines how extensive green roofs impact the sizing of the rainwater drainage system for a metalworking building in northeastern Portugal. If the roof, measuring approximately 4,700 m<sup>2</sup>, is constructed of sheet metal, the calculated flow rate that must be drained is 5,860.51 L/min. In contrast, if the roof is green and extensive, the calculated flow rate drops to 3,255.84 L/min. This represents a 44.44% retention of rainwater, which necessitates changes in the components of the drainage system. Additionally, the green roof delays the release of unretained water into the urban drainage system, thereby contributing to sustainable urban drainage and helping to mitigate urban flooding.

**Keywords:** Rainwater drainage systems; Green roofs; Portuguese regulations; Sustainability; Urban flooding mitigation.