Abstract
Unit-load (UL) warehouses are among the most diffuse solutions to store items stocked in pallets, while class-based storage (CBS) assignment is an effective strategy balancing the storage space need and the UL traceability. Traditional UL warehouses have parallel storage racks with aisles accessed from the pickup and delivery (P&D) point through rectilinear orthogonal paths. A design strategy to reduce the access time under UL-CBS system deals with the inclusion of additional diagonal aisles crossing the racks and the parallel aisles accessing the storage bays.

This paper proposes the analytic models to compute the average access time for one diagonal-cross aisle warehouses with 2- and 3-CBS system. The models compute the average time saving per cycle respect to traditional parallel aisle warehouses. Its application to an industrial storage system for a company operating within the food sector shows the possibility to reduce the average access time of about 33%.