Case Study

Precast Insulated Wall Panels
Ramirent Kungsängen Sweden

AIT MANUFACTURING
A Division of Advanced Infrastructure Technologies

Project Profile

Category:
Commercial/Warehouse

Owner & Developer:
Kilenkrysset

Structural Engineer:
AFG Consulting Engineers

General Contractor:
Kilenkrysset

Precaster:
Kilenkrysset

Completion:
2015

Technical Details

Precast Elements:

Precast Insulated Wall Panels
1 ½" (40mm) outer concrete layer
2 ¼" (60mm) inner concrete layer

Concrete Type:

7250 psi (C50/60)

Composite reinforcement solution:

Basalt MiniBars™ 9.6lbs/yd3
(43mm @ 5.7 Kg/m3)

FRP composite #3 (10mm) bars for strengthening at corners in window and door openings

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Project Description:

Kilenkrysset built a 2-story front office and 3-story warehouse with wall panels that were 50% lighter and a thinner than standard precast panels. This allowed for an increase in the building internal footprint and rentable space. Lighter panels reduce the cost of transportation and smaller cranes to improve efficiency on site and simplify installation. The Welded Wire Reinforcing (WWR) mesh was eliminated by using Basalt MiniBars™, a corrosion-free, high performance structural FRP composite macrofiber. This reduced the need for concrete cover resulting in panels that were 50% lighter. The outer layer was reduced from 3" (80mm) to 1.5" (40mm). The inner layer went from 4.75" (120mm) to 2.25" (60mm). FRP composite rebars were used in the stress concentration points at the corners of windows and door openings. Note that panels were non-prestressed, horizontal one-story high from column to column, and stacked as opposed to the vertically oriented prestressed panels.

AIT Manufacturing

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