

Project Report

Overnight Reconstruction with Rapid-Hardening Concrete
Concretum® Q-FLASH 2/20



Istanbul Airport Sabiha Gökçen SAW



Runway

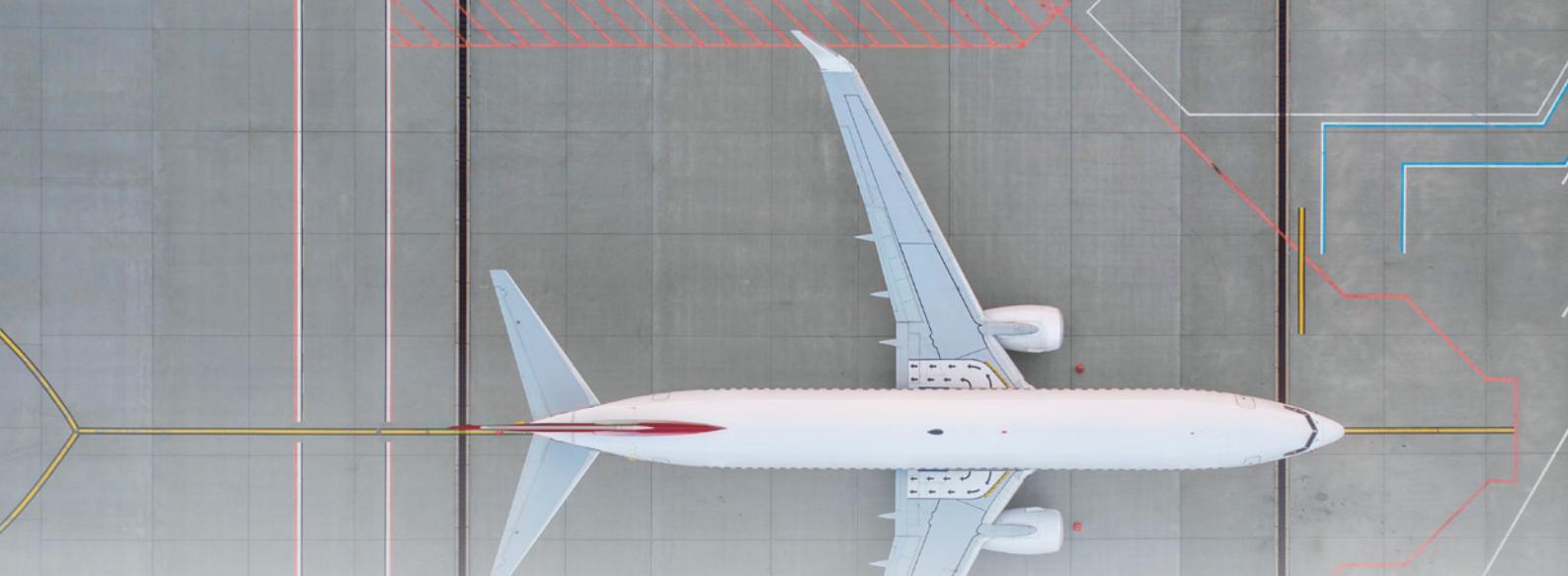


Taxiways



Apron





> 6'000 m³

were utilized using
Concretum® Q-FLASH 2/20

18'000 m²

An area of 18'000 m² was successfully reconstructed within 4 years, with the project being efficiently completed in just 6 months through nightwork.

7 slabs

Nightly, an average of 7 slabs, each measuring 3.75 meters by 5 meters, were systematically replaced, effectively covering an approximate area of 130 m².

Project Overview

Concretum® Q-FLASH 2/20, the latest generation rapid-hardening concrete, was employed for the overnight reconstruction of the runway and taxiways at Istanbul Sabiha Gökçen Airport.

With its comparable production, transportation, and processing methods to conventional concrete, Concretum® Q-FLASH 2/20 offered an efficient repair solution for the severe damages without the need for prolonged closure times.

The exceptional suitability of Concretum® Q-FLASH 2/20 was evident as it achieved the required compressive strength of 20 N/mm², enabling aircraft to land on the newly poured slabs within just 1–2 hour after placement. Leveraging this rapid-hardening characteristic, damaged areas on the runway surface were systematically replaced during brief five-hour overnight closures.



Project film

The project, carried out from 2018 to 2022, successfully replaced a total area of 18'000 m² of the runway without causing any disruption to airport operations. This accomplishment highlights the effectiveness and compatibility of Concretum® Q-FLASH 2/20, ensuring the timely completion of the reconstruction while maintaining seamless airport functionality.

CONCRETE SPECIFICATIONS

Product	Concretum® Q-FLASH 2/20
Exposure class	XC4, XD3, XF4
Strength class	C50/60
Consistency class	Slump: approx. 75–100 mm
Max. aggregate size	approx. 37 mm (crushed)
ASR	resistant

CONCRETE PROPERTIES

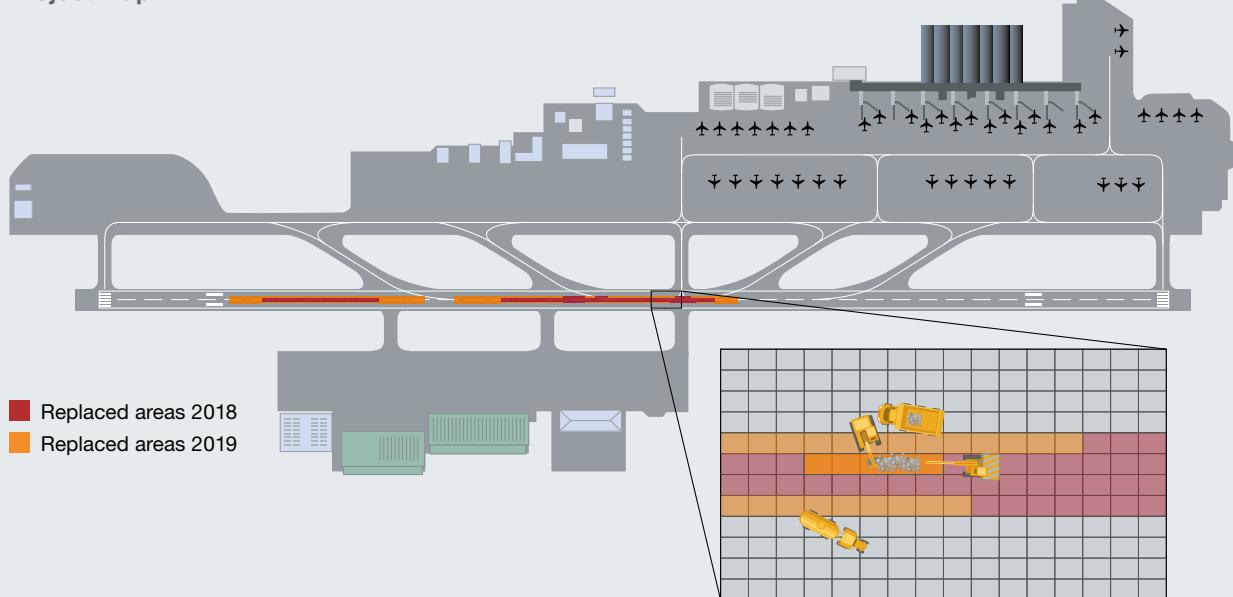
Compressive strength 1 h after setting	18–22 N/mm ²
Compressive strength 2 h after setting	26–30 N/mm ²
Shrinkage ϵ_{SH}	$\leq 0.25\%$
Heat of hydration	210 J/g (equivalent to low heat cement)
Moisture 3 h after setting	$\leq 4\text{ CM-}\%$

Project timeline





Project map



STEP-BY-STEP CONSTRUCTION



Demolishing existing concrete slabs.



Fixing reinforcement, unloading and spreading the concrete evenly.

Schedule	00:00	01:00	02:00	03:00	04:00	05:00	06:00
Preparation	■■■■■						
Runway closure by air traffic control		◆					
Excavation of existing slabs			■■■■■				
Removal and cleaning							
Dowels and reinforcement			■■■■■				
Concrete production			■■■■■				
Concrete placement			■■■■■		■■■■■		
Strength development				■■■■■			
Joint cuts					■■■■■		
Cleaning					■■■■■		
Hand over to air traffic control						◆	
Buffer / Contingency						■■■■■	



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