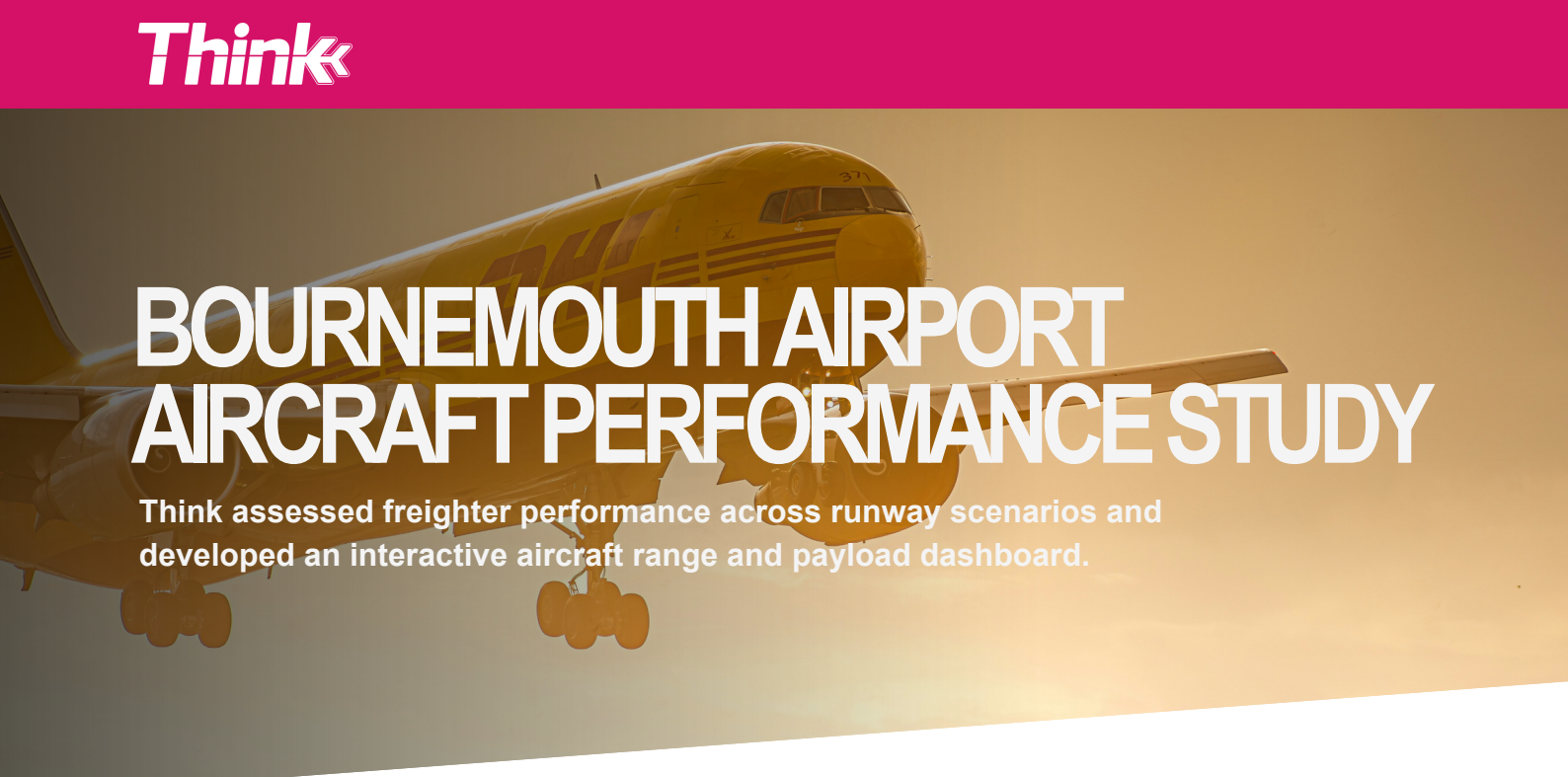


A large freighter aircraft is shown in flight against a bright, hazy sky. The aircraft is white with dark markings on the nose and tail. The title 'BOURNEMOUTH AIRPORT AIRCRAFT PERFORMANCE STUDY' is overlaid in large, white, bold, sans-serif capital letters.

BOURNEMOUTH AIRPORT AIRCRAFT PERFORMANCE STUDY

Think assessed freighter performance across runway scenarios and developed an interactive aircraft range and payload dashboard.

Overview

The study examined how increased landing and take-off distances and grooved runways could affect braking performance, operational range and maximum take-off weight across freighter aircraft commonly operating at Bournemouth Airport. The research concluded with a site visit in April, where the team presented the final report and interactive dashboard.

Challenge

Bournemouth Airport supports cargo operations through its dedicated freight facilities and strategic location, providing an important link for regional and international freight movements. As demand for air cargo increases, the airport sought to understand how runway enhancements could further improve its capability to accommodate larger freighter aircraft with increased payload capacity.

Specific Issues

- **Runway length challenge**

Existing runway length constraints at Bournemouth Airport limit freighter aircraft take-off and landing weights, reducing payload capacity and potential operational range.

- **Runway grooving and weather challenge**

Wet runway conditions can reduce aircraft braking performance, potentially limiting operations. Runway grooving involves cutting shallow, regularly spaced channels into the pavement to improve water drainage, improving braking performance in wet conditions.

Solution

Approach

Manufacturer aircraft planning documents were used to assess how increased landing and take-off distances could affect the maximum take-off and landing weights of different freighter aircraft. Relevant runway length and payload-range data supported the calculations.

The impact of runway grooving was assessed through a literature review and analysis of Bournemouth Airport weather data to determine how often its benefits may apply.

Our Impact

The study found that increasing landing and take-off distances improved the range of some aircraft, with larger widebody models benefiting most. Grooving the runway could also improve drainage and braking performance, supporting more informed airline payload calculations. The client was particularly pleased with the dashboard, which clearly demonstrated the findings and allowed aircraft and runway characteristics to be adjusted.