

# Airport authorities warm to hightech runway materials

Clients and contractors working in the airports sector are beginning to recognise the benefits of specifying asphalt containing polymer modified bitumen binders.

**R**esurfacing of runway at Exeter airport using asphalt containing a polymer modified binder represents a promising departure from standard use for a premium material developed by Nynas Bitumen. The company's Nypol TS bitumen binder was designed for use in asphalt for highway applications but its recent first airport use at Exeter could open up a whole new market for the product.

Asphalt containing the Nypol TS binder remains workable for longer and demonstrates added durability once laid. Both these factors are certainly an advantage when specifying asphalt on motorways or trunk roads but become absolutely crucial when working on airfields.

Surfacing materials that cool and become unworkable too soon could lead to costly delays for an airport operator with many airlines to satisfy, according to Nynas Bitumen's product application manager for performance asphalts Jukka Laitinen. He says that the ability of the Nypol TS binder to remain workable for longer lies in its chemical composition.

"Properties contained within the bitumen cause it to become thixotropic when not under sheer loading, which helps to prevent it from draining from the stone when asphalt is being delivered to site. When mechanical action is applied during the paving process, the binder becomes less viscous to make the asphalt more workable."

Asphalt material containing the Nypol TS binder can also be compacted soon after it is laid, which helps surfacing crews who are working within a restricted timescale. "The contractor at Exeter airport faced stiff financial penalties if the runway resurfacing had over run," adds Laitinen.

"We made up to four deliveries of bitumen each night to a nearby asphalt production facility to help ensure that enough asphalt material would be delivered to site in time."

Nypol TS is designed to give good adhesion and cohesion with aggregate and the addition of cellulose fibres helps improve the asphalt mix's durability. This allows the asphalt to better withstand aircraft loads. A fully laden Airbus A310 passenger aircraft can, for instance, weigh as much as 123t and exerts considerable forces onto an airport runway when the wheels of the plane touch down.

**"The Exeter contract represents the first time Nypol TS has been specified as part of an airport runway resurfacing,"** Jukka Laitinen

"The binder has good elastomeric properties," adds Laitinen. "The high level of adhesion provided by the binder means that the bitumen tightly holds onto the stone and the cohesive qualities of the binder helps to hold the asphalt mixture firmly together when the surface is compacted."

Asphalt containing the Nypol TS binder remained workable for longer, helping surfacing crews to complete their works within a restricted timescale





(Above and below) Resurfacing of runway at Exeter Airport took place during two weekend night time possessions

Runway resurfacing at Exeter was carried out during two weekend night time possessions last autumn and works had to finish by 4am each Sunday morning to allow for the surface to cool. The runway was then carefully swept and line markings reinstated by the contractor ahead of aircraft being allowed to use the runway two hours later.

The surfacing material specified for the runway was developed by Bardon Aggregates and is known as Super AirMat. Resurfacing took place on a 660m long section of the runway which measured 20m across and works were carried out following a successful trial of the material on part of a disused runway at the airport.

Resurfacing began with the planing out of 50mm of existing Marshall Asphalt surfacing, which was taken away to a tip on

site for later reuse. A polymer modified bitumen bond coat was applied onto the base before the surfacing material was laid to a depth of 50mm.

The asphalt contained a very high polished stone value to provide the surfacing with an exemplary level of grip. Laying of the asphalt took place in one pass. Two pavers worked in echelon to minimise the number of longitudinal joints in the material and once laid, the material did not have to be grooved as would have been the case with Marshall Asphalt.

Bitumen and aggregate were mixed together for the Exeter airport contract at two dedicated asphalt production plants close to the M5 less than 13 miles away. A total of 1500t of asphalt was supplied to site during the two weekend surfacing operations.



“The Exeter contract represents the first time Nypol TS has been specified as part of an airport runway resurfacing,” says Jukka Laitinen. “The contractor had previously found asphalt containing the Nynas binder to be very workable and reliable when used on local roads.”

## HIGH PERFORMANCE BITUMEN BINDERS

First use of Nypol TS on an airport runway at Exeter followed application of another high performance bitumen binder as part of an airfield resurfacing contract at Bristol airport.

Nynas Bitumen’s fuel resisting binder Nyguard was specified on taxiways, aprons and parking areas for light aircraft following its successful use in asphalt laid on motorway service areas and bus depots where there is a high potential for fuel spillage.

Asphalt containing the Nyguard binder can withstand enormous point loads exerted by aircraft tyres and provides excellent deformation resistance.