

## MONITORING CYCLE OF THE THIRD BRIDGE ON BOSPHORUS Yavuz Sultan Selim Bridge



**Owner :**  
Republic of Turkey

**Dealership :**  
Consortium İçtaş-Astaldi

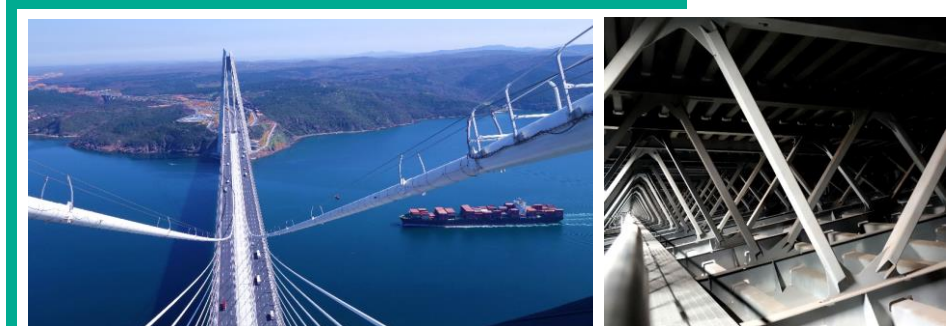
**Managing Service :**  
IC İçtaş Egis

**Companies :**  
Conception : T-engénierie (Jean-François KLEIN) and Michel VIRLOGEUX  
Technical studies : Greisch, Lombardi, ENVICO, CSTB, GRID and Temelsu.  
Construction : Hyundai et SK Engineering & Construction  
Instrumentation : SIXENS

**Dates :**  
Construction : from May 2013 to August 2016

**Key features :**  
Approach spans : prestressed concrete box girders  
Main span : Orthotropic steel slab  
Length : 2 164 m  
Main span : 1408 m  
Height of the pylons : 322 m  
Height of the deck : 5,50 m  
Width of the deck : 59 m  
Number of stiffening cables : 176  
Number of hangers : 68

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### Context

The Yavuz Sultan Selim Bridge is the 3<sup>rd</sup> bridge built on the Bosphorus Strait in Istanbul, Turkey. The hybrid bridge deck supports two lanes of railroad tracks encased by an 8-lane highway (4 on each side). It is the widest and longest span cable-stayed bridge in the world. It also holds the world records for the longest railway bridge and the suspension bridge with the highest pylons (322 m).

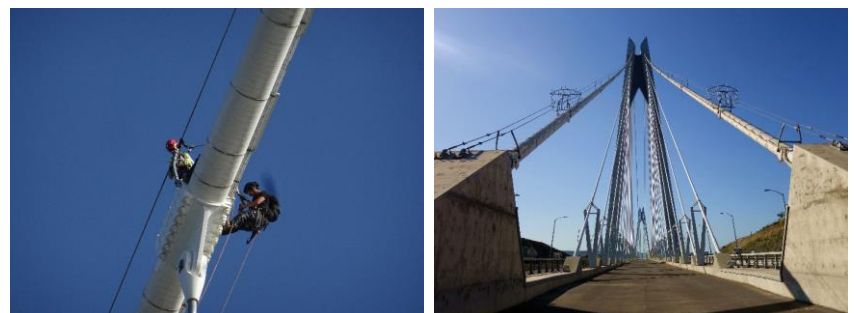
As such, this exceptional structure requires very rigorous monitoring, which is carried out by Diadès through a complete monitoring cycle spread over several years.

### DIADES' mission

Our mission is an intellectual service mission carried out with the framework of the multi-year follow-up of the bridge. It consists in carrying out the initial inspection of the sensitive elements, the annual inspections and the general inspections of the structure.

Inspections cover the entire structure, in particular the 68 hangers, the deck bracing, the specific support devices installed in the seismic zone and all the particular devices fitted to this type of hybrid structure.

Monthly monitoring of the instrumentation with reporting and behavioural analysis of the structure is also carried out thanks to the data transmitted by the multiple sensors fitted to the structure.



### The specifics of the mission

To carry out the various scheduled inspections, Diadès implements and/or manages multidisciplinary teams. Furthermore, experienced Diadès inspectors are secured by rope access technicians for access to the upper anchors of the hangers and a mobile walkway is used to access the lower anchors of the hangers and the underside of the bridge.