



GEBZE - İZMİR MOTORWAY OPERATION & MAINTENANCE

INNOVATING WITH DRONES

IMAGINE
CREATE
ACHIEVE

a sustainable future



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GIIB IN A NUTSHELL.




01.

GIIB IN A NUTSHELL



433 Km	Gebze-Orhangazi-Izmir Motorway (Include the Izmit Bay Suspension Bridge and Access Roads) Build – Operate – Transfer Project		
52,1 Km	Gebze (K1) – Gemlik (K5) Section is opened to operation on June 30, 2016		
18,9 Km	Kemalpasa (K22) – Karasuluk (25) Section is opened to operation on March 8, 2017		
26,5 Km	Gemlik (K5) – Caglayan-Bursa North (K7) Section is opened to operation on March 12, 2017		
102,2 Km	Balikesir North (K13) – Balikesir West (K14) and Akhisar (K18) – Saruhanli (K19) – Kemalpasa (K22) Sections are opened to operation in 2018		
184 Km	Bursa West (K10) – Balikesir North (K13) and Balikesir West (K14) – Akhisar (K18) Section is opened to operation in August 4, 2019		
21	Toll Collection Centres		
25	Intersections		
4	Operation and Maintenance Centres (Altinova, Susurluk, Balikesir West, Turgutlu)		
1	Suspension Bridge [the Osmangazi Bridge] (2907m)		
3	Tunnels	Orhangazi Tunnel Selcukgazi Tunnel Belkahve Tunnel	(3.591m-3.586m) (1.303m-1.192m) (1.556m-1.652m)
33	Motorway Service Areas (in 17 locations)		



DRONES & MOTORWAY O&M: A GAME CHANGER FOR ASSET MANAGEMENT !

Bridge inspection



Osmangazi Suspension Bridge Inspections



Main rope inspection



Elongation measurements of main cable clamp rods

Traffic Management



Traffic Management Control



Traffic jam

Asset Inspection & Monitoring



Reaching inaccessible places



Monitoring of the Right of Way

Monitoring of Maintenance Progress



Monitoring of Maintenance Works



Earthworks working progress monitoring

Strong advantages & benefits



**BETTER
SECURITY**



**FASTER
INTERVENTIONS**



**LOWER
LOGISTICS**



**COST
CONTROL**

Innovation & technology for greater efficiency in asset management !

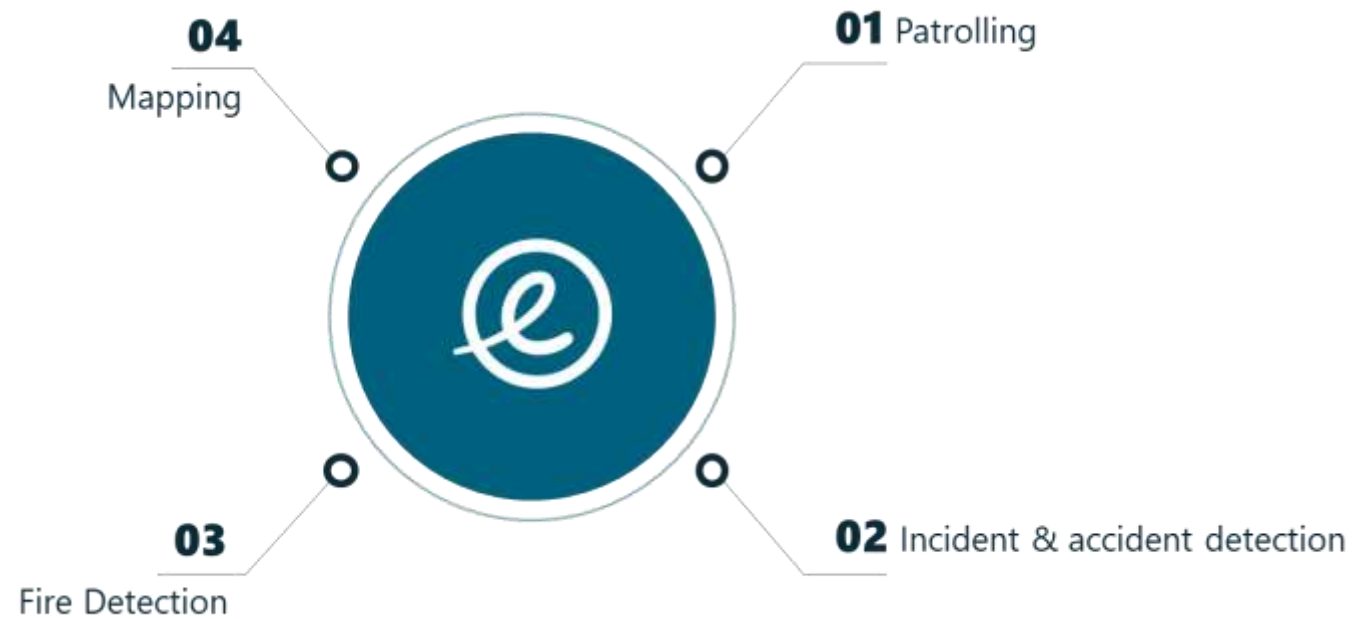


WHAT'S NEXT ?



03.

New applications



Technical Choice



 **2.5 h**
Max flight time

 **80 km**
Max HD video feed transmission

 **Cloud option**
LTE Transmission (3G/4G/5G)

FLIGHT LIMIT

4000 meters (max.)

FLIGHT TIME

180 min. (without payload)
150 min. (with 42MP camera)

SPEED

Operational speed 21 m/s (76 km/h)
Max speed 33 m/s (119 km/h)
Wind resistance



VTOL UAV FOR LONG DISTANCE MISSIONS

 Reinforced ground station with dual screen

 Video streaming with relay antenna:
50 km : Antenna tracker
80 km : Fixed antenna
Cloud Version : Sim required



CHALLENGES.

04.

Challenges



TECHNICAL

- ❖ Flight time and autonomy
- ❖ Real time communication & image transmission
- ❖ Type of drone : helicopter or plane



CONTRACTUAL

- ❖ **Patrolling with drone allowed by Concession Agreement?**
- ❖ Requirements on frequency of patrols



REGULATIONS

- ❖ License and training for the pilots
- ❖ Flight permission over some areas (military)

Challenges can be easily addressed at the beginning of the projects



CONCLUSION.



05.

Conclusion

01

Technology is ready

02

Complementary equipment to current one

03

Pioneering in using drones for motorway O&M

04

Leading to strong efficiency & productivity

05

With more applications to come in the future

DRONE USAGE IS THEREFORE A GREAT OPPORTUNITY FOR ROAD O&M WHILE BEARING IN MIND THAT

Regulations and laws need to be adapted

Concessionaires need to integrate usage of drones in their contracts

Actual operations need to be challenged

Weather conditions, geography and topography can limit drone usage

About Egis

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Egis is an international player active in the consulting, construction engineering and mobility service sectors.

We design and operate intelligent infrastructure and buildings capable of responding to the climate emergency and helping to achieve more balanced, sustainable and resilient territorial development.

With operations in 120 countries, Egis places the expertise of its 18,000 employees at the disposal of its clients and develops cutting-edge innovation accessible to all projects. Through its wide-ranging fields of activity, Egis is a central player in the collective organisation of society and the living environment of citizens all over the world.



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