Al GURM RESORT,
ABU DHABI, UAE

Client: Abu Dhabi Sewerage Services Company (ADSSC)

Country: United Arab Emirates

Length of Pipe: 5.2 km

No. of Valves: 69 + 10 valve chamber extension in 2019

Volume of Flow: 15 litres/second

Specialist Feature: The vacuum sewer pipes are suspended by brackets on the underside of the road network connecting the villas. Also, large bridge crossing utilising a carefully designed ladder of lifts in the vacuum sewer pipe.

The Al Gurm Resort is a residential and tourist development nestled among the mangrove forests of Abu Dhabi. The area is home to many unique plant and bird species, making it one of the UAE's top choices for luxurious and tranquil living arrangements.

The project was realised in partnership with Iseki's official Abu Dhabi distributor Metco and comprises a vacuum collection system with a single vacuum station centrally located between the land villas.

Effluent is collected by gravity from individual villas to dedicated valve chambers sited in the vicinity of the villas. The effluent enters the vacuum sewer network through a vacuum interface valve installed within each valve chamber.

The sewer network is constantly under vacuum and as the interface valve opens, the differential pressure forces the effluent into the sewer network which is suspended on the underside of the road network positioned on column within the mangrove forest.

The effluent is transported onwards to a vacuum vessel located at the vacuum station on the mainland. The vessel acts as a vacuum receiver and storage facility for the effluent prior to discharge.

Vacuum Pipework

The polyethylene pipework used for the vacuum sewer network around the resort ranges in size from 90mm to 160mm diameter with use of electro-fusion fitting throughout**.**

Vacuum Station Equipment

3 No rotary vane vacuum pumps each rated at 500 cubic metres/Hr (Busch) acting in duty/assist/assist configuration.

2 No dry well discharge pumps each rated at 15 l/s (Hidrostal) duty/standby. The effluent is pumped through a 180mm diameter rising main to a gravity sewer located approximately 950 meters to the East.

Vacuum collection vessel volume - 10 cubic metre fully protected with epoxy coating and tested to Lloyds certification

Motor Control Centre - fully automatic with programmable PLC. All pumps start in rotation and all operating conditions are monitored via station telemetry.

Bespoke valve monitoring system which monitors the open / closed mode of each interface valve located around the site.

Vacuum pump exhaust gases are filtered by passing through a biofiltration system located on the vacuum station roof. The unit has a sun shade and irrigation system to ensure correct operation.

Summary

Vacuum technology proved the ideal solution for this prestigious resort due to the sensitivities of the surrounding areas and the topography. The vacuum sewer pipes are housed in the deck of a bridge crossing situated through the mangroves and continues on to connect all the residential villas. This ensures that the development preserves the ecological balance of the surrounding nature.

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