

Wastewater Sampling at High Ambient Temperatures

Doha, Qatar
Case Study



Expertise in Sampling

Benefits of the 6712FR automatic refrigerated sampler:

- Double-walled, with thick insulation
- Active temperature regulation (-29°C – 49°C)
- Environmentally sealed controller (IP67) with data logging.
- Powerful and separate peristaltic pump (8.5m lift).
- Non-contact liquid detector ensures accurate sample volume.
- Plug-in modules for flow, pH and other parameters (analog input).
- SDI-12 and rain gauge connection and logging.
- Versatile programming for unique applications.
- Remote access via GSM.
- MCERTS

The Model 6712FR automatic refrigerated sampler from Teledyne Isco, Inc. is used for water quality monitoring in challenging site conditions with high ambient temperatures in Qatar.



The Public Works Authority “Ashghal” is an autonomous body that oversees all infrastructure-related projects in the State of Qatar. Wastewater treatment plants in Qatar are mostly operated by private companies, supervised by Ashghal. It is the responsibility of Ashghal to control that the plants run according to regulations. Monitoring programs are developed to assess the efficiency of the treatment plants and control the water quality of the discharge.

Challenging Site Conditions

The state of Qatar occupies the small Qatar Peninsula on the northeasterly coast of the much larger Arabian Peninsula. The Arabian Peninsula is known to have among the hottest and most humid weather conditions found anywhere in the world. Daily average maximum temperatures in Qatar can reach up to 42 °C in summer months, with peak temperatures as high as 50 °C. During the same period, the humidity is on average around 70%. Violent sand and dust storms can occur throughout the year.

Temperature Effect on Wastewater Samples

Important wastewater quality parameters are COD, BOD, TSS and N. These parameters can change in time as a consequence of microbial degradation. Microbial activity rises with higher temperatures, increasing the degradation of the water sample. At temperatures of 0-4°C, the microbial activity is at its lowest. Consequently, the best way to conserve a water sample in high ambient temperatures is to quickly cool it down to 4°C, and to maintain this temperature during the entire sampling program.



"Your Source for Samplers!"



Doha South WWTP, Qatar



6712FR sampler controller

System Options:

- Stationary or portable
- Pacing by:
 - Time
 - Non uniform time
 - Flow
 - Event
- Large selection of bottle configurations in glass and PE (from 1 x 20 liters to 24 x 1 liter)
- Communication:
 - GSM
 - Analog output (4-20 mA)
 - ASCII data output
 - 3 x I/O ports
 - Dialout alarms
- Flowlink 5.1 software:
 - Data analysis
 - Diagnostics
 - Graphs/ tables
 - Editing
- Optional kit for sampling from pressurized pipes (10 – 300 psi)



Avalanche portable refrigerated sampler

Refrigerated Sampler Requirements

Most of the measuring points used by Ashghal would be located outside without any weather protection. In some locations, there could be present corrosive gasses or salts. It was therefore crucial to find a robust sampler that could withstand the high ambient temperatures and dust/corrosion materials. A compact solution would be preferred, where the system should be able to take water samples (24 bottles), measure flow rate and water quality with multiparameter sondes, and store the data. The system should have GSM communication capabilities, or easy data download with a flash memory device. It was important to log the refrigeration compartment temperature in order to verify that the samples had been stored and maintained at the right temperature.

Teledyne Isco 6712FR Sampler

Teledyne Isco recommended the Isco 6712FR refrigerated sampler for such a harsh environment. This robust and easy-to-use sampler is specifically designed for outdoor applications where rugged, corrosion-resistant construction is required. It features a corrosion-proof and UV-resistant refrigerator cabinet and thick, foamed-in-place insulation to keep samples preserved. Compartment temperature (4°C) can be optionally logged, and is actively regulated by three different temperature sensors. The sampler has a large operational temperature span (-29°C to 49°C) to cope with tough weather conditions. All refrigerator components are protected against corrosion. The high performance peristaltic pump is able to deliver required line velocity (0.5 m/s) at head heights up to 8.5 meters, making the sampler suitable for all monitoring locations.



Convenient Data Transfer

Ashghal has connected multiparameter sondes to the 6712FR samplers for direct measurement of water quality and data logging. GSM modems are used for remote download of data from each sampler.

Customer Feedback:

“Isco 6712FR refrigerated sampler is a great tool for monitoring and control of waste water discharge in Qatar.”

Dr. Ghazy El Sherif, Environmental Expert, PWA, Qatar

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