

Annex 1. The regulations for the installation of automatic monitoring (video) devices.

I. The terms used in this regulation are defined as follows:

- (1) Automatic monitoring devices: The devices that are able to continuously and automatically sample, analyze and record the data of the inflow or outflow water concentration and flow rate for the wastewater or sewage water treatment facilities, including the Data Acquisition and Handling System (DAHS).
- (2) The connected facilities: The Automatic monitoring devices' document generation programs for the connection between the monitoring data and the competent authority, as well as the computers, programs and telecommunication cables for the implementation of transmission module.
- (3) Full scale of measurement: refers to the minimum and maximum value that can be measured by the Automatic monitoring devices.
- (4) Span: refers to the wastewater or sewage water treatment facilities' inflow or outflow water concentration and the discharge flow rate of actual discharge condition, and the maximum value that can be measured is based on the setting of measurement scale for the standard products.
- (5) Zero: refers to the wastewater or sewage water treatment facilities' inflow or outflow water concentration and the discharge flow rate of actual discharge condition, and the minimum value that can be measured is the zero value of measurement scale for the standard products.
- (6) Standard products: refer to the standard liquid or equipment used for the calibration of Automatic monitoring devices.
- (7) Relative Accuracy Test Audit (RATA): The test audit conducted in accordance with the steps in Attachment 3.
- (8) Daily: it refers to the time between 12:00 A.M. - 23:59 P.M. of every

calendar day.

- (9) Monitoring data: it refers to the measured value of the Automatic monitoring devices.
  - (10) Monitoring data record: refers to the standard condition of the Automatic monitoring devices' monitoring data record after calibration and arithmetic calculation of mean value.
  - (11) Data Acquisition and Processing System (DAHS): refers to the Automatic monitoring devices' data transmission at the back end server, and software and hardware for recording and calculation, including the signal transmission's programmed controller and remote controller.
  - (12) Normally functioned Automatic monitoring devices: Automatic monitoring devices that are calibrated regularly according to Sections (4) and (5) and its relative accuracy in the Relative Accuracy Test Audit (RATA) is within the range stated in Attachment 3.
  - (13) Normal connection and transmission: refers to the percentage of valid monitoring data record of the automatic monitoring device, or the percentage of normal video recording time of the CCTV device that is in accordance with the stipulation of point 7.
- II. Install the industrial or wastewater sewerage system with automatic monitoring device that connects to the competent authority. The monitoring data records for water volume, water temperature, H<sup>+</sup> concentration index and conductivity shall be transmitted once or more in every five minutes; the suspended solids, COD (chemical oxygen demand), ammonia nitrogen and other water quality inspection items designated by the competent authority shall be transmitted at least once every hour. The preceding transmission time of monitoring data record shall be calculated from every hour on the dot.
- III. If some or all of the monitoring data records have not been uploaded in the previous day due to the transmission module or network failure, and the equipment cannot be repaired to complete the upload before 17:00 of

the day, the industrial or wastewater sewerage system shall submit the un-uploaded monitoring data records of the previous day to the competent authority before 17:00 of the day, in the form of e-mail, CD disc or other electronic storage devices.

- IV. The industrial and wastewater sewerage system shall regularly calibrate the automatic water quality monitoring devices based on the specifications of the manufacturer or the instructions specified by the equipment manufacturer. However, the calibration period for the H<sup>+</sup> concentration index and conductivity of automatic monitoring device shall not be more than one month; the calibration period for the suspended solids, COD (chemical oxygen demand) and ammonia nitrogen of automatic monitoring device shall not be more than three months. The relevant records of calibration and maintenance shall be retained for five years. The calibration results and the items specified by the competent authority shall be online reported to the competent authority within seven working days upon the completion of the calibration.

The industrial and wastewater sewerage system shall have less than 20% in the calibrated average error value for COD (chemical oxygen demand), SS (suspended solids) and ammonia nitrogen of the automatic monitoring device.

- V. The specification, installation, calibration, maintenance, data records during the maintenance period and relevant storage stipulation of the automatic monitoring device for water quantity shall be conducted in accordance with the regulations in Article 65 and the first Section of Article 66 regarding the cumulative water measurement facility. The relevant records of calibration and maintenance shall be retained five years for future reference.
- VI. The SS (suspended solids), COD (chemical oxygen demand) and ammonia nitrogen of the automatic monitoring device shall carry out the

Relative Accuracy Test Audit (RATA) once or more in every quarter. However, if the device is not relevant to optical theory, the Relative Accuracy Test Audit (RATA) can be conducted every six months. The industrial and wastewater sewerage system shall report the testing and inspection results to the competent authority within 20 working days upon the completion date of the inspection. The abovementioned implementation time interval shall be starting on the first completion date of the Relative Accuracy Test Audit (RATA), after the installation of the device.

The competent authorities may request the industrial or wastewater sewerage system to increase the frequency of the Relative Accuracy Test Audit (RATA) based on the audit results of monitoring data, however, the audit shall not be conducted more than once a month.

The industrial and wastewater sewerage system shall report the planned implementation period and the name of the inspection and audit institution to the competent authority online or in writing, five days to ten days prior to the implementation of Relative Accuracy Test Audit (RATA). If the inspection and audit operations cannot be performed due to force majeure circumstances in the month such as weather, the when the relative error test shall be performed, the operations can be postponed to the 10th day of the following month. If the testing cannot be completed during the scheduled implementation period, it is required to report the rescheduled implementation period to the competent authorities of the municipality or county (city) by writing, telephone or via the internet. The implementation of the Relative Accuracy Test Audit (RATA) shall be conducted during the office hours of the competent authority. However, this is not limited to the case with approval of the competent authority.

- VII. The industrial or wastewater sewerage system shall monthly maintain the percentage of the valid data records in water temperature, H+

concentration index, conductivity and water volume of the automatic monitoring device, and the percentage of valid video recording time of the CCTV device shall be over 90%. Other automatic monitoring devices' percentage of valid monitoring data records shall be over 80% in a season. The percentage of valid monitoring data records and the percentage of valid video recording time can be calculated by the following formula (the time units are all in minutes):

$$P = \frac{T - t - c - w - (D_u + D_m)}{T - t - c - w} \times 100\%$$

P: The percentage of valid monitoring data records or the percentage of valid video recording time.

T: Total time of the day (month or season).

t: The time during the replacement, modification and repair period of the automatic monitoring (video) device and not using the backup automatic monitoring (video) device.

c: The time during the calibration and maintenance for the (backup) automatic monitoring device (the maximum calibration or maintenance time in a month that can be deducted is 24 hours).

w: The failure time of the device due to natural disasters or other force majeure factors

Du: The valid data or invalid video recording time of the (backup) automatic monitoring (video) device.

Dm: The data lost time or loss of video recording time of the (backup) automatic monitoring (video) device.

VIII. The transmission process of the monitoring data from the automatic monitoring devices shall not pass through any equipment that may affect the original data. The transmitter using analog signal and the control-by-wire coding interface shall avoid being interfered by the strong electric and magnetic interference on the site environment, and the original data error shall not exceed 2% of the span. When using the digital

communication interfaces (such as RS-232, RS-485, USB, LPT, etc.) for the control equipment of monitoring device, the instruction files for the hardware's connection method, connection parameters and all other functions of this interface shall be provided. And it shall cooperate with the competent authority to conduct signal inspection.

IX. For any of the following conditions, the industrial or wastewater sewerage system shall report to the competent authorities of the municipality or county (city) by writing, telephone, fax or via the internet within 24 hours after the occurrence of the incident, including the time of occurrence, the reporter, the recipient's name, job title and the reasons for carrying out the manual sampling and inspection, and the manual sampling and testing shall also be conducted; however, the manual sampling can be exempted due to the natural disasters or other force majeure factors:

- (1) The H<sup>+</sup> concentration index or conductivity of automatic monitoring device cannot be calibrated or maintained within two hours.
- (2) The SS (suspended solids), COD (chemical oxygen demand) and ammonia nitrogen of automatic monitoring device cannot be calibrated or maintained within 12 hours.
- (3) The percentage of valid monitoring data records on the previous day is less than 95% for the water temperature, H<sup>+</sup> concentration index or conductivity of automatic monitoring device.
- (4) The percentage of valid monitoring data records on the previous day is less than 50% for the SS (suspended solids), COD (chemical oxygen demand) and ammonia nitrogen. However, for those that do not pass the relative accuracy test of the Relative Accuracy Test Audit (RATA) shall not be exempted from the manual testing for this item due to natural disasters or force majeure factors.
- (5) During the replacement, modification or repair period of the automatic monitoring (video) device. However, it does not include the

replacement, modification or repair of the automatic monitoring device for water volume or CCTV device.

During the replacement, modification or repair period of the automatic monitoring device for water volume stipulated in the fifth item of the preceding section, the amount of water during the period shall be recorded in a way that is approved by the competent authorities of the municipality or county (city). During the replacement, modification or repair period of the CCTV device, it is required to conduct daily inspection and photo taking at the original installation location of the CCTV device, and the record shall be kept for five years for future review.

For any conditions in the fifth item of the section 1, it is required to report to the competent authorities of the municipality or county (city) by writing, telephone, fax or internet before restarting monitoring (video) process.

- X. For those conducting manual sampling test based on the preceding point, the testing shall be conducted before the expiry of sample storage. The sampling frequency and time are stipulated as follows:
- (1) For the first and second item of the preceding point, it is required to complete the manual sampling within 24 hours after the start of the calibration.
  - (2) For the third and fourth item of the preceding point, it is required to conduct the manual sampling on the same day.
  - (3) For the fifth item of the preceding point, it is required to conduct the manual sampling once a day until the day that the automatic monitoring device is reconnected.

The water quality inspection items and locations of the manual sampling test in the preceding section are restricted to the objects that do not conform to the requirements of this operating regulation.

If the industrial or wastewater sewerage system does not complete

the manual sampling in the scheduled time of the first section, the date may be postponed to seven working days from the expiry of the original scheduled sampling date.

- XI. After the industrial or wastewater sewerage system conducts the manual sampling and testing according to the preceding two points, it is required to online report the test results within 10 working days from the date of sampling. The result of one manual sampling test shall be only for the usage of one declaration.

The industrial or wastewater sewerage system in Penghu, Kinmen and Matsu, the water temperature, H<sup>+</sup> concentration index or conductivity of the manual sampling test can be conducted itself according to standard test method by the industrial or wastewater sewerage system, and the testing result shall be reported online within 24 hours after the test.

If the last online reporting date in the preceding two sections is a holiday, the expiry date will be postponed to the next working day.

- XII. The monitoring data and records of the automatic monitoring devices shall be kept for at least five years. The surveillance video and images of CCTV devices shall be kept for at least 90 days. The industrial or wastewater sewerage system shall not alter the monitoring data, data records and surveillance video and images in any form.

If the Data Acquisition and Processing System (DAHS) is inadequate and proposed by the competent authority, the improvement shall be completed by the designated period of the competent authority. It is also required to report to the competent authority for review and verification.

- XIII. During the replacement, modification and repair period of the automatic monitoring (video) device, the backup automatic monitoring (video) device may be used after the industrial or wastewater sewerage system reporting to the competent authorities of the municipality or county

(city). And the manual sampling test or inspection and photo taking operations can be carried out without following the stipulation in point 9. The industrial or wastewater sewerage system shall follow the stipulation in Annex 1 to use the backup automatic monitoring (video) device.

Those that use the back automatic monitoring device for SS (suspended solids), COD (chemical oxygen demand) and ammonia nitrogen shall provide the Relative Accuracy Test Audit (RATA) qualified report (the issuance date is within three months) of the back automatic monitoring device, to the competent authorities of the municipality or county (city) within three days after reporting to the competent authorities of the municipality or county (city).

The Relative Accuracy Test Audit (RATA) qualified report in the preceding section can be conducted without following the stipulation in section 3 of point 6.

Those that use the back automatic monitoring device for H<sup>+</sup> concentration index, conductivity, SS (suspended solids), COD (chemical oxygen demand) and ammonia nitrogen, the calibration period may not exceed seven days during the period of usage.