



## WATER AUDIT FOR WATER AND ENERGY EFFICIENCY

Management of water and energy use through industrial water efficiency consultation and wastewater treatment solutions

Enhancing water efficiency in utility and production process in various industries is extremely crucial as water plays a significant role in industries' operations. Industries are also challenged with meeting wastewater discharge compliance standards in order to avoid high wastewater discharge tariffs. We possess the expertise to assist through our water audit and industrial wastewater treatment solutions. We are able to help clients improve on water efficiency and resolve daunting industrial wastewater challenges by facilitating in the implementation of cost-efficient treatment methods.

### ALLEVIATING INCREASED PRESSURE ON WATER RESOURCES

Non-domestic —industrial and commercial— water use accounts for up to 60% of total water consumption and is increasing, placing huge pressure on scarce water resources. To alleviate this pressure, the non-domestic sector needs to think of ways to efficiently use the limited water resources as well as to think of new measures to reduce water consumption. These measures can help reduce water consumption from the municipal supply and also reduce impact on the environment.



98% of water consumed in the food manufacturing industry is used during the production process. A water audit can achieve 20% to 30% in water savings annually. © Unicurd Food Company Pte Ltd

### CLIENT

- Refineries and petrochemical plants
- Food and beverage industry
- Biomedical industry
- Laundry industry
- Chemicals industry
- Electronics and semiconductors industry
- Industrial waste treatment industry

### CHALLENGE

- Cost-inefficient water and energy usage
- Compliance with stringent water regulations
- Complexity in hazardous wastewater treatment

### SOLUTION

Providing water audit services for utility and process networks through:

- Water balance diagram mapping
- Cash flow accounting in water balance network
- Recommendation for selection and/or testing of new processes and technology
- Characterisation of wastewater quality through accredited laboratory facilities
- Identification of water reclamation opportunities
- Designing cost-effective wastewater treatment solutions

### VALUE

- Provides methods for cost-efficient water usage
- Facilitates implementation of alternative water sources
- Enables water and energy cost-reductions
- Ensures compliance with stringent water regulations
- Minimises environmental impact in wastewater discharge

Our industrial engineers are equipped with the technological know-how in water treatment so as to assess the feasibility of the solutions to our clients' operations. We work closely with our clients to set realistic goals to achieve water-efficient production targets, maximise energy efficiency and solve challenging wastewater problems. This is done through our specialised water audit and industrial wastewater treatment services.

DHI is a specialist consultant within industrial water. We have the expertise to help increase water and energy efficiency, reduce production costs and reduce industrial production risks through:

- Analysis and efficient allocation of water and energy consumption
- Optimisation of industrial processes
- Management of water risk in supply chain

### OVERCOMING CHALLENGES

The consumption and cost of water can be reduced substantially by improving water management and by optimising utilities and processes. Our systematic and prioritised 6Rs approach ensures that the most cost-efficient solution is selected. The 6Rs are prioritised in the following descending order of priority and can be explained as follows:

- Reduce: Reducing overall water usage
- Renew: Improve inefficient water usage with more efficient technology
- Reuse/Recycle: Re-channeling used water directly to other areas of usage
- Reclamation: Recovery of used water by installation of reclamation technology
- Return: Treating wastewater to meet environmental regulations



Clamp-on flow sensors measure discharge in non-metered pipes to determine flow rate in water consumption and discharge. © DHI

### WATER AUDIT SERVICE

We have extensive experience in assisting various industries to meet and solve their water challenges through water audit projects. These projects involve some or all of the following elements:

- Proposals: Free proposal consultation and no-obligation quotation
- Audits: Analysis of historical water consumption in utility and production processes
- On-site surveys: Planning and execution of measuring, sampling and water quality analysis campaigns
- Water balance diagram: Mapping out a water balance diagram to obtain clearer understanding of water consumption patterns and water quality management
- Cash flow calculation: Mapping out true cost of water within utility and process networks
- 6Rs scenarios: Identification, evaluation and comparisons of scenarios and pairing them with water reclamation technologies to improve management in water and energy consumption



Water audits help analyse water consumption in utility networks such as cooling towers. © Unicurd Food Company Pte Ltd

- Lab-scale testing: Evaluation of solutions using small lab-scale systems
- Pilot-scale testing of technology: Determination of design parameters of practical wastewater treatment processes for improved management of water and energy
- Design cost and energy efficient wastewater treatment processes
- Technical, economic and robustness evaluation of recommended optimisation strategies and water reclamation technologies
- Singapore Water Efficiency Management Plan submission and Water Efficiency Funding (WEF) Application (only applicable for industries located in Singapore)

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