

1. Title	Cleaning and pre-treatment of water-consumed industrial system equipment	
2. Code	EMPEOM414A	
3. Range	Perform cleaning and pre-treatment of water-consumed industrial system equipment in general industrial plants, power plants or other places.	
4. Level	4	
5. Credits	6	
6. Competency	<p style="text-align: center;"><u>Performance Requirements</u></p> <p>6.1 Structure of industrial system that needs water treatment and the principle of pre-treatment chemicals and detergents</p> <ul style="list-style-type: none"> <li>◆ Know about basic structure and working principles of typical industrial system that needs water treatment, including: <ul style="list-style-type: none"> <li>• boiler system</li> <li>• Closed refrigeration system</li> <li>• Open cooling system</li> </ul> </li> <li>◆ Know about the principles of dust proof, rust removal and anti-corrosion</li> <li>◆ Know about the theory and applications of pre-treatment chemicals such as sediment control agents, corrosion inhibitor, microbial control agents, cohesion agent, oxygen scavenger and defoamer</li> <li>◆ Know about the theory and applications of dispersing agents, organic and inorganic cleaning agents</li> </ul> <p>6.2 Procedures and methods for cleaning and pre-treatment of water-consumed industrial system</p> <ul style="list-style-type: none"> <li>◆ Perform chemical cleaning by using weak acid, organic agents and dispersing agents, etc., and install temporary dosing equipment when necessary</li> <li>◆ Perform physical cleaning by using high-pressure water guns, high-pressure air guns, recoil method, etc.</li> <li>◆ Perform pre-treatment and metal passivation procedures</li> </ul> <p>6.3 Professionalism in industrial system water cleaning and pre-treatment of</p> <ul style="list-style-type: none"> <li>◆ Follow detergent manufacturer's practical guidelines and code of safety to use and add the above-mentioned chemicals correctly</li> <li>◆ Know about methods of handling chemicals and the use of personal protection equipment</li> <li>◆ Use handheld chemical testing instruments correctly, ensuring that: <ul style="list-style-type: none"> <li>• System's water quality, during pre-treatment or cleaning, meets the standard set by the manufacturer of the chemical</li> <li>• System's water quality, after pre-treatment or cleaning, meets the standard set by the manufacturer of the chemical</li> </ul> </li> </ul>	

7. Assessment Criteria	<p>The integrated outcome requirements of this unit of competency are:</p> <ul style="list-style-type: none"> <li>(i) Capable to use correct dose of cleaning and pre-treatment chemicals to perform cleaning and pre-treatment procedures, including monitoring and recording system's water quality;</li> <li>(ii) Capable to correctly collect and keep the water samples for testing; and</li> <li>(iii) Capable to compile operational records and reports, and report the water quality standard after treatment.</li> </ul>
8. Remarks	<p>The credit value of this unit of competency is set on the presumption that the person already possesses basic knowledge of general mechanical and chemical environmental protection.</p>