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| 1. Title | Design general commercial and industrial flueless gas appliances |
| 2. Code | EMGADE402A |
| 3. Range | Design for customers general commercial and industrial flueless gas appliances and other accessories in a cost-effective way for commercial and industrial premises and different commercial and industrial application environment according to customers' needs as well as the requirements of the gas safety regulation and codes of practice; design the installation of these appliances and accessories according to the commercial and industrial application environment; take the initiative to accomplish the design task independently and brief the engineering personnel or people concerned on the engineering details; and provide special solutions for non-routine engineering environment. |
| 4. Level | 4 |
| 5. Credits | 6 |
| 6. Competency | <p style="text-align: center;"><u>Performance Requirements</u></p> <p>6.1 Knowledge and principles of designing general commercial and industrial flueless gas appliances</p> <ul style="list-style-type: none"> ◆ Calculate the required air volume of the commercial and industrial flue gas appliances ◆ Calculate the heat efficiency and work out solutions ◆ Point out and compare the pros and cons of different combustion methods ◆ Design safety devices such as flame failure safety device, anti-lightback device, overflow and water-low cut-off device, over and under pressure cut-off device, pressure relief device, etc., to ensure that the gas appliance meets the safety requirements ◆ Select correct burner and accessories for the commercial and industrial gas appliance such as air blower, supercharger, check valve, etc. |

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| | | <ul style="list-style-type: none"> ◆ Master the principles and operation of gas analyser to interpret correctly information such as the content of carbon monoxide and carbon dioxide in the exhaust, temperature of the exhaust, etc.; analyze the combustion situation and make improvement accordingly for the gas appliance to achieve the best performance |
| 6.2 | Methods and procedures of designing general commercial and industrial flueless gas appliances | <ul style="list-style-type: none"> ◆ Organize and interpret the requirements of customer's industrial process, and list the required specifications of the gas appliances ◆ Consider and evaluate the characteristics of the work site for installation, and come up with a comprehensive solution for flueless gas appliance installation with reference to customer's industrial process and safety requirements on various aspects ◆ Draw the working drawing and installation drawing of the gas appliances |
| 6.3 | Professional knowledge of designing general commercial and industrial flueless gas appliances | <ul style="list-style-type: none"> ◆ Apply all the provisions in the Gas Safety (Installation and Use) Regulations under the Gas Safety Ordinance, Cap. 51 ◆ Apply all the provisions in the Code of Practice GU06 on [LPG Installations for Catering Purposes in Commercial Premises] ◆ Apply all the provisions in the Gas Utilisation Guidance Note GU12 on [Installation of Mechanical Exhaust System for Gas Appliances] <ul style="list-style-type: none"> • Apply the Waterworks Ordinance • Apply the Fire Services Ordinance • Apply other gas related regulations and codes of practice |

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| 7. Assessment Criteria | <p>The integrated outcome requirement of this unit of competency is:</p> <p>(i) Capable to organize and interpret the requirements of customer' s industrial process, and provide a safe and comprehensive solution for flueless gas appliance installation.</p> |
| 8. Remarks | <p>The credit value of this unit of competency is set on the presumption that the person already possesses the competency of EMGADE101A 【Basic knowledge of gas application】 and EMGAIT302A【Install and commission commercial and industrial gas appliances】 .</p> |