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GUIDANCE DOCUMENT ON COMPETENCY PROGRAM FOR AIR POLLUTION CONTROL SYSTEMS CONSULTANT



**Environment Institute of Malaysia (E/MAS)
Department of Environment Malaysia**

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**ENVIRONMENT INSTITUTE OF MALAYSIA (EIMAS)
DEPARTMENT OF ENVIRONMENT**



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GUIDANCE DOCUMENT ON COMPETENCY PROGRAM FOR APCS CONSULTANT (CAPCSC)

1. PURPOSE OF GUIDANCE DOCUMENT

The purpose of this document is to introduce and explain the new certification program for Air Pollution Control System Consultant (CAPCSC) administered by the Department of Environment (DOE) Malaysia through the Environment Institute of Malaysia (EIMAS)

This certification scheme is designed to improve the standard of professionalism among APCS design personnel by ensuring that they have the minimum qualifications and skills required to conduct any activities related to air pollution control system and submission of related documents to DOE

2. APCS DESIGN COMPETENT PERSON

The APCS Consultant under this certification program include the followings:

- (i) The APCS Consultants who take on **design assignments and projects** and are involved in preparing APCS design calculations, design drawings and other documents required for submission to DOE in compliance with Regulation 7 of the Environmental Quality (Clean Air) Regulation 2014 (CAR2014) under the Environmental Quality Act, 1974;
- (ii) The APCS Consultants who have been engaged by the industries to **conduct any engineering studies or undertake any engineering projects** on APCS that require submission of documents to the DOE; and
- (iii) The APCS Consultants who have been engaged by the industries to **study their noncompliance problems, and to suggest and undertake corrective measures** to solve the problems, in response to a directive by the DOE.



3. REGULATORY FRAMEWORK

Section 49A of the Environmental Quality Act, 1974 requires that only those who have been certified by the DOE as **Competent Persons** (CPs) can carry out the **DOE-regulated functions** which include the conduct of studies of air pollution, preparation and submission of APCS reports, design calculations, engineering drawings and other documents related to APCS which are meant for submission to the DOE. The extract of section 49A is reproduced in **Appendix A**.

4. CERTIFICATION PROCESS

The certification process comprises the following:

- (i) Application for registration
- (ii) Self learning
- (iii) Passing the comprehensive examination
- (iv) Submission of Technical Experience Report (TER)
- (v) Professional Interview
- (vi) Maintaining Continuous Professional Development (CPD)

Details of the above requirements are explained in the relevant sections below.

5. APPLICATION FOR REGISTRATION

- i. Registration is open for individuals Malaysian or non Malaysian. Applicant may apply for any registration category appropriate to their skills and experience. Each applicant may select up to four areas of expertise from the list provided in **Appendix B**. Application can be made online using online registration form.
- ii. Registration requirements
 - a) Bachelor degree or higher in Science or Engineering
 - b) minimum of 2 years of experience in air pollution control engineering and be actively involved in giving consultations related to APCS and system installation works.



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- c) Highly technical knowledge and research methodology on air pollution control
 - d) have a good understanding on the requirement of Written Notification Procedure by the department and any other local regulations concerning on environmental matters especially those that related to air pollution control.
- iii. Portfolio of Work
- Applicant must submit a Portfolio of Work which highlight the requirement as mention in 5(ii). Applicant must highlight the chosen areas of expertise in a Portfolio of Work.
- iv. Related Fees
- Processing fee of RM XXX will be required upon registration. The processing fee will not be refunded if the candidate fails to meet the criteria for a particular category.**
- v. Appeal
- In cases where applications are not approved, the applicants are entitled to appeal in writing. The appeal must be received by the Secretariat within one (1) month from the date of rejection letter issued by DOE.

6. SELF LEARNING

- i. The applicant are required to self learning all the syllabus and reference given. The examination will focus on the understanding of applicants in the related guidance, legal requirement and area of expertise selected.
- ii. References and syllabus are given in the **Appendix C**

7. EXAMINATION

- (i) The objectives of the examination are to test the understanding, knowledge and familiarity of the candidates on the followings:



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- a) The **environmental regulatory provisions** enforced by the DOE, which are relevant to the control of air pollution;
 - b) The **specifications specified in the guidance documents** which are related to APCS design, performance monitoring and engineering approach to addressing noncompliance problems; and
 - c) The basic concepts of air pollution engineering, the APCS design criteria; the APCS design formulas and calculations, the APCS performance monitoring, conduct of stack sampling, the engineering approach to addressing APCS non compliance problems and the APCS reporting requirements.
- (ii) There will be a **3 hour exam** comprising of **two parts**, which are explained below.

	PART I	PART II
COMPONENTS	APCS Fundamentals Part	Specialty Tract Part
CATEGORIES OF QUESTIONS	Objective questions	Subjective questions
NUMBER OF QUESTIONS	100 Answer all questions	6 Answer only four (4) questions
DURATION	2 hour	1 hour
FOCUS AREAS	Refer to reference and syllabus in Appendix C	Each question will be provided with different basic design conditions and scenarios. Assumptions should be made wherever needed

8. TECHNICAL EXPERIENCE REPORT (TER)

- (i) A candidate who passes the Examination is eligible to submit a **Technical Experience Report (TER)** to EIMAS. The TER shall demonstrate that the



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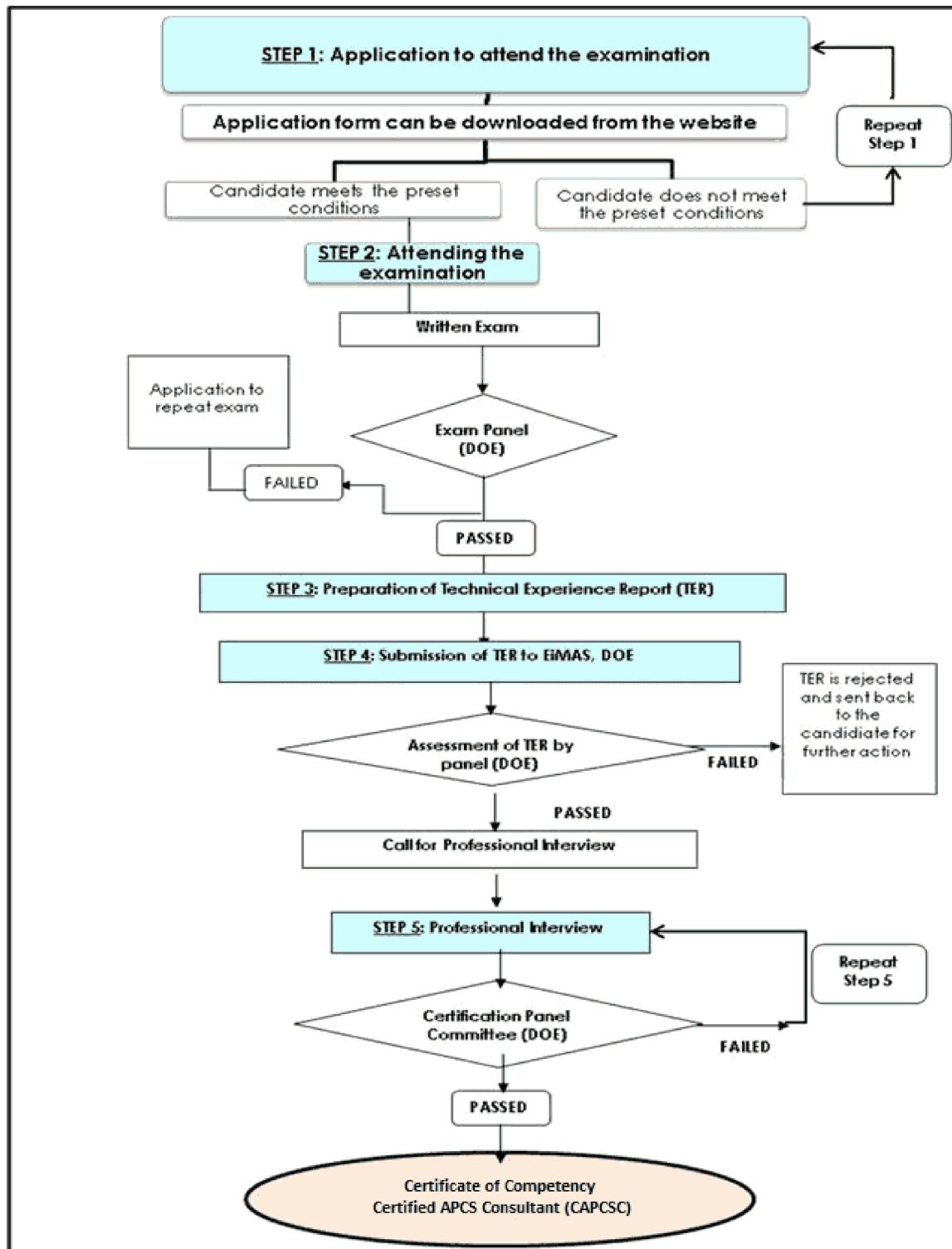
candidate has attained the engineering knowledge, understanding, and application in the area of air pollution engineering at the level necessary to underpin the technical competencies required for a CAPCSC.

- (ii) TER contains **brief explanations of the one (1) APCS project** (based on selection on area of expertise) that has been involved in the last two (2) years before the date of submission of the TER to EiMAS. The candidate must submit a **complete APCS notification documents** consisting of flowcharts and design calculations of all pollution control systems units and the associated components, equipment, instruments, and engineering drawings.
- (iii) The TER should be comprehensive, clear and concise; enough to give sufficient evidence of the candidate's personal technical contribution to the engineering work(s) or project(s).
- (iv) The TER must be submitted **within three (3) months** from the date of announcement of examination results

9. PROFESSIONAL INTERVIEW

- (i) The objective of the interview session is to provide an opportunity to the interview panel to clarify those points which to them, are not adequately discussed in the TER. At the same time, the session also provides an opportunity to the CAPCS candidates to further explain their technical contributions in the APCS design projects that they have handled in a verbal fashion. The presentation skills of the candidates are also evaluated through the interview process.
- (ii) The interview will be conducted by a panel consisting of at least two members. The candidates are required to present their selected APCS projects and answer questions from the panel, related to the projects.

10. PROCESS FLOW ON HOW TO BECOME A CAPCSC



11. CONTINUOUS PROFESSIONAL DEVELOPMENT (CPD)



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- i. Registered CAPCS individuals should develop their personal attributes and skills by:
 - a) Ensuring that their knowledge of APCS and designing is current best practice;
 - b) Ensuring that their knowledge of environmental laws, regulations and procedures is current;
 - c) Undertaking refresher training where necessary;
 - d) Ensuring that their experience in the execution of relevant APCS works are current and maintained
- ii. Some of the activities that qualify for CPD are:
 - a) Participation in APCS engineering projects
 - b) Related workshop
 - c) Related training
 - d) Resource person for related seminar or training
 - e) Technical meetings related to environmental management, planning or consultants

12. CODE OF CONDUCT

- i. All applicants must sign and agree to abide by the Code of Conduct, which is designed to ensure that registered individuals act in an ethical and professional manner.
- ii. All registered individuals shall:
 - a) Act professionally, accurately and in an unbiased manner;
 - b) Strive to increase the competence and prestige of the APCS consultant profession;
 - c) Assist those under my supervision (if relevant) in developing their management, professional and APCS consulting skills;
 - d) Not to undertake any job that I am not competent to perform;
 - e) Not to represent conflicting or competing interests and to disclose to any client or employer any relationship that may influence my judgment;
 - f) Not to accept any inducement, commission, gift or any other benefit from any interested party or knowingly allow colleagues to do so;
 - g) Not to intentionally communicate false or misleading information that may compromise the integrity of any APCS study; and



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- h) Not to act in any way that would prejudice the reputation of the APCS Consultants Registration Scheme or the environmental consultants registration process and to co-operate fully with any inquiry in the event of any illegal breach of this code.

13. CONTINUOUS EVALUATION PROCESS

- i. Continuous Evaluation Process is introduced with the objective to provide constant evaluation on the CAPCSC performance.
- ii. DOE officers (DOE States) will be carry out the evaluation using a set of criteria and guidelines. All comments will be channeled to the Secretariat, and will be used for renewal purpose.

14. DEREGISTRATION AND SUSPENSION

- i. Registered individuals can be deregistered or suspended if they fail to comply with the Code of Conduct or fail to fulfill the minimum requirements of CPD and not qualifying in continuous evaluation process or other reasonable grounds
- ii. The committee set up under this Registration Scheme will make the final decision.

15. CONFIDENTIALITY

All information and material submitted to DOE/EiMAS Secretariat is confidential. However, for the purpose of ensuring the provision of correct information to potential users, such as project proponents (industries), the DOE may publish relevant information on the registration scheme website.

16. CONTACT PERSON



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For further inquiries on the CAPCSC program, please contact:

Mr. Nor A'zman Bin Rosli

Principal Assistant Director

Control and Monitoring of Water Centre

Email: na@doe.gov.my

Mr. Noor Suffianhadi Bin Ramly

Senior Assistant Director

Control and Monitoring of Air Centre

Email: nsr@doe.gov.my

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APPENDIX A

“Competent person

49A. (1) An owner or occupier of a premise shall employ a person who has been certified by the Director General as a competent person to conduct all or any of the following activities:

- (a) the operation of a control equipment;
- (b) the management of scheduled wastes;
- (c) the conduct of studies;
- (d) the preparation and submission of reports, plans, proposals, engineering drawings or other documents relating to environmental matters.

(2) The reports, plans, proposals, engineering drawings or other documents relating to environmental matters referred to in paragraph (1)(d) shall be prepared and submitted by the competent person to the Director General.



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APPENDIX B

AREAS OF EXPERTISE FOR AIR POLLUTION CONTROL SYSTEM

Types of Pollution Control System

1. Bag Filter : Pulse Jet, Reverse Air , Shaker
2. Mechanical Separator : Multicyclone, Rotocyclone, Single Cyclone
3. Gas Scrubber : Orifice, Packed Column, Venturi, Spray Dryer/ Dry Scrubber, Plate Tower
4. Incineration System : After Burners, Thermal Oxidizer
5. Dust Scrubber : Wet, Dry
6. Electrostatic Precipitator : Dry, Wet
7. Biofilters
8. Catalytic Converters : Oxidation, Reduction
9. Adsorbers : Carbon Adsorption, Others

Note :

Specific information on the field of expertise can be further clarified in the Application Form. For example, you may indicate APCS that you are familiar with; as well as your sectoral experience.



APPENDIX C

REFERENCES

(i) Regulatory Framework in Malaysia

- a) Environmental Quality Act, 1974;
- b) Environmental Quality (Clean Air) Regulation 2014; and

(ii) Applicable Technical Reference Documents

- a) Guidance Document For Fuel Burning Equipments And Air Pollution Control Systems, published by Department of Environment Malaysia;
- b) Guideline for The Installation & Maintenance of Continuous Emission Monitoring Systems (CEMS) For Industrial Premises/Facilities (Volume 1), published by Department of Environment Malaysia;
- c) Guideline for The Continuous Emission Monitoring Systems Data Interface System (CEM-DIS) For Industrial Premises/Facilities (Volume 2), published by Department of Environment Malaysia;
- d) Best Available Techniques (BAT) Documents, published by Department of Environment Malaysia;
 - (i) Best Available Techniques Guidance Document On Iron & Steel Industry
 - (ii) Best Available Techniques Guidance Document On Non-Ferrous Metal Industry
 - (iii) Best Available Techniques Guidance Document On Non-Metallic Mineral Industry
 - (iv) Best Available Techniques Guidance Document On Oil And Gas Industry
 - (v) Best Available Techniques Guidance Document On Power Generation
 - (vi) Best Available Techniques Guidance Document On Production Of Petrochemicals
 - (vii) Best Available Techniques Guidance Document On Pulp And Paper Industry
 - (viii) Best Available Techniques Guidance Document On Storage And Handling Of Petroleum Products



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- (ix) Best Available Techniques Guidance Document On Waste Incinerator
- e) Technical Guidance On Performance Monitoring Of Air Pollution Control Systems, published by Department of Environment Malaysia;
- f) Malaysian Standard MS1596:2003 Determination Of Concentration And Mass Flow Of Particulate Matter In flue Gas For Stationary Source Emissions, published by Department of Standards Malaysia
- g) Guidance Document On Implementation Of Self Regulation Initiative In Industrial Manufacturing Premises – Environmental Mainstreaming Tools, published by Department of Standards Malaysia
- h) Industry Application Form - related to air pollution control

(iii) Other Related Document Reference

- a) Chimney Heights : Third Edition of 1956 Clean Air Act Memorandum, published by Department of the Environment Scottish Development Department Welsh Office
- b) Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document For The Stack Height Regulations), published by United States Environment Protection Agency (USEPA)
- c) Industrial Ventilation A Manual of Recommended Practice, published by American Conference of Governmental Hygienists

SYLLABUS

The candidates should have sound knowledge of the following topics

i. Air Pollution Regulatory Framework in Malaysia

- Environmental Quality Act
- Clean Air Regulation 2014
- Applicable Emission Standards as stated in CAR 2014



ii. Applicable Technical Reference Documents & Forms

- Refer to 6 (ii)

iii. Nature of Air Pollution Problems

- Criteria of air pollutants
- Physical and chemical fundamentals
- Hazardous air pollutants
- Acid deposition
- Sources of air pollution

iv. Treatment Technologies (Application)

- Particle control device
- Absorption for gaseous pollutant control
- Control of stationary source
- Design and performance equation for each air pollution control equipment
- Performance monitoring for each air pollution control equipment
- Operation and maintenance and improving performance problem for each air pollution control equipment
- Dilution by stack
- Air quality modeling
- Sources of air pollution