

# AFE Certified Plant Engineer Application Packet



1901 North Fort Myer Drive Suite 500 Arlington, VA 22209

Phone: (571)-395-8777 | Fax: (571)-766-2142 www.AFE.org

# **Frequently Asked Questions**

# What does the exam cover? What is it like?

The exam – which you have up to eight hours to complete –has a total of 100 questions in multiple-choice format. Questions cover the electrical engineering, mechanical engineering, civil engineering, economics/management, environmental engineering, maintenance, OSHA, energy, controls and instrumentation and HVAC. A score of 67% is required to pass.

# Is there an application or exam fee?

Yes. There is an application and exam fee, please see application for pricing. All fees are non-refund- able. If AFE finds you are not eligible for the exam fees will be returned.

# Am I eligible?

There are two ways in which you can qualify for the CPE (1) category A, you are eligible if you have a minimum of 4 yrs in management in plant/facility engineering (or) 6yrs in field overall with a 4-yr degree in engineering architecture or related field. If you do not have a degree you must have a minimum of 6 yrs in management in plant/facility engineering (OR) 8 yrs in field overall. (2) Category B, you are eligible if you have a minimum of 4 yrs experience as a registered professional engineer. Category B applicants are exempt from the module you are licensed in.

# Do I need to show proof of my employment history?

Yes. Included in this packet is an Employment Verification form. This needs to be completed by your employer(s) based on your employment history and eligibility (i.e. if you have been with your current employer for 8 or more years, one form is required. If you have been with several companies with in a 4-year period, a form from each employer is required).

# Do I have to be an AFE member to take the test?

No. However, you must be an AFE member to renew your certification when it expires in three years.

# How can I prepare for the exam?

AFE offers a CPE Review Pak, (please see application for pricing) which covers the 11 topics contained in the exam. If you do not wish to attend a review session you can do self-study and prepare on your own.

# How much time do I have to complete the process of becoming certified?

Once you have submitted your application and it is approved by AFE, you will be notified and you have one year to prepare for and complete the certification examination.

# What happens if I wait longer than one year to take the exam?

If it has been more than a year since you applied for the CPE and you have not taken the exam, you will need to re-apply and submit the necessary fees and required paperwork.

# Where is the exam given?

You can take the CPE exam at either (1) a national review program site or (2) at your workplace, using a proctor from your employer's human resources. If that is not an option, a boss or supervisor may act as your proctor. If you take the exam at your facility you have two options you can take it in either paper-based or on-line format. Test materials are forwarded to the proctor one day in advance of your exam date. Upon completion of the exam, the proctor will return the materials to the certification department for grading.

CPE Application Page 2 of 11

# Frequently Asked Questions (cont.)

# Is the CPE exam broken into modules?

Yes, we give you the choice of either taking the full 100 question exam or you can choose to take it in modules. The modules are broken up into four exams each covering 2-3 sections of the CPE. Each module exam is a 2 hour exam.

# If I fail, can I take the exam again?

Yes, however you are subject to a re-test fee. If you attend a review program and do not pass the exam you will not be subjected to a re-test fee. Please see application for fees.

# If I pass, what happens?

Several things. You will be notified by AFE's certification department and so will your boss. We do this because we think you deserve congratulations and your boss deserves to know what you have achieved to become a more valuable employee. Also, you will receive a CPE certificate.

# Is my certification good for life or does it expire?

You must earn at least eight renewal credits every three years. Three of those credits come simply from being continuously employed in the plant/facilities field. The other credits will come from professional development seminars, workshops etc. When it is time to renew, you will be notified by AFE national and you will be sent the CPE renewal guidelines along with the renewal application.

CPE Application Page 3 of 11

# **Certified Plant Engineer Program**

### **Certification Exam**

AFE's certification exam is a comprehensive multiple choice exam covering mechanical, electrical, civil, and environmental engineering, HVAC, controls, energy, OSHA, economics, management and maintenance. You are permitted to use reference materials common to your on-the-job function.

You may take the exam at an AFE CPE Review program or have the exam scheduled at your place of employment at your convenience.

# **Conducted by Plant Engineers for Plant Engineers**

AFE's Certified Plant Engineer program is conducted by your colleagues in plant engineering and facilities management who serve of AFE's Certification Board and Board of Directors. AFE's Certification Board has the sole authority to approve individual applications, using the policies and procedures approved by AFE's Board of Directors.

### **Exam Review Materials**

A comprehensive booklet outlining all the topics covered on the CPE exam has been developed. Designed to assist individuals in preparing for the CPE exam, the booklet includes sample test questions and can also serve as a desk reference. The prices of the booklet are

\$125 for AFE members, \$150 for non-members.

# **Review Program**

To prepare applicants for the CPE exam, AFE offers national review sessions. This is a four-day review and the exam is offered on the fifth day. Contact AFE at (571) 395-8777 for more information.

# **Exams**

Exams are conducted regularly at live courses, held by AFE or an AFE Chapter. Exams are also available on-line or Exams may be proctored under the supervision of an accredited educational institution (high school, community college, university) or proctored by the human resources department of your employer.

# Recertification

AFE's CPE certification program is currently based on three-year periods. At the end of three years, you must submit a renewal application in order to continue to use the CPE designation. Recertification maintains the integrity of the CPE program by requiring that the Certified Plant Engineer maintains on-going employment in the field and participates in continuing education or professional activities. For details on the kinds of courses and professional activities that qualify for recertification credit, contact AFE.

### Eligibility

There are two categories of certification. Category A requires you to score a passing grade on an examination. Category B enables you to be certified without taking a module you are licensed in. See chart below for specific information.

Plant Engineering/Facilities Management Experience is defined as: experience gained by functioning on a day-to-day basis in engineering, maintenance/operations, and management of industrial, commercial, government, or institutional facilities wherein the individual makes decisions related to the technical aspects of his or her discipline.

Management Level Plant Engineering/Facilities Management Experience is defined as: *experience involving responsibility for* supervisory activities, developing and implementing budgets, making personal decisions, approving designs and purchases, and managing the facilities operations

# **Categories of Certification**

# Category A: Applicants must take CPE Exam

Four year degree in engineering, architecture, or engineering technology, with six years plant engineering / facilities management experience or four years management level plant engineering/facilities management experience.

# OR

Non-technical or no degree with eight years plant engineering / facilities management experience or six years management level plant engineering / facilities management experience.

# <u>Category B: Excluded from Specialized Engineering Profession</u> <u>Module</u>

Registered professional engineers with four years plant engineering / facilities management experience.

CPE Application Page 4 of 11

# **Certified Plant Engineer Program**

The AFE Certification Program has been created to foster the stated objectives of identifying and recognizing plant engineering as a specific discipline within the engineering field. The following information outlines the program and is intended as a guide to those applying for certification

# **Objectives**

- To provide a standard of professional competence in the plant engineering/facilities management field.
- To identify and recognize those individuals who, by passing an examination and/or fulfilling requirements of experience, responsibility and conduct, meet that standard of professional competence.
- To encourage plant engineers/facility managers in a continuing program of professional development
- To stimulate and provide a standard for the development of educational curricula and degree programs for plant engineers/facility managers.
- To enhance the status of plant engineering/facilities management as a unique discipline and profession by demonstrating that a realistic standard of professional competence can be clearly defined.

# **Definition**

Plant engineering / facilities management embraces the installation, operation, maintenance, modification, modernization and protection of physical facilities and equipment used to produce a product or provide a service. It requires the special competency to assume liaison or control responsibility for coordinating multidisciplinary engineering activities such as contractual engineering services, facility design, equipment selection and procurement and construction.

# **Functional Description**

Plant engineering/facilities management requires such education and experience as is necessary to assume responsible charge of various engineering activities within a manufacturing, commercial, institutional and governmental facility, including, but not limited to the following:

- Planning, development and execution of maintenance programs and procedures for optimum economic benefit from physical facilities and equipment.
- b) Selection, installation, operation, maintenance, modification and modernization of all plant utilities including electric power, gas, water, fuel, waste removal systems and communications.
- Planning, selection, installation, operation, maintenance, c) modification and modernization of environmental protection and resource recovery systems.
- Selection, installation, maintenance, modification and modernization of equipment and techniques required to provide a comfortable, safe and healthy working environment.
- Participation in the selection of plant sites and real estate, and the maintenance, modification and modernization of buildings and
- Provision of administrative services, program coordination, longrange planning and budgeting and control of operating and capital expenditures in support of plant engineering.
- Selection, installation, maintenance, modification and modernization of machinery and equipment that is an integral part of the physical plant and is necessary to support the production or service process being performed, including material handling equipment, process heating and cooling systems, illumination and compressed air systems

# **Body of Knowledge**

The practice of plant engineering/facilities management requires a breadth of specialized knowledge that encompasses several engineering technologies as well as business economics and management. However, the subject matter involved does not vary greatly from one physical facility to another whether the facility is industrial, governmental or institutional. To be specific, plant engineering/facilities management at a professional level requires an understanding of, and proficiency in, the following subject areas (asterisks indicate optional subjects that may not apply in every job situation; all other subjects are considered to be of universal applicability):

# **Electrical Systems**

Circuit Planning In-plant Power Distribution Illumination Protective Devices Instrumentation & Control Electrical Machinery Codes & Standards Communications & Alarms Uninterruptible Power Supplies

# **Civil and Structural**

Materials Specification Structural Design & Analysis **Building & Safety Codes** \*Site Selection & Preparation \*Architectural Practices \*Clean Rooms

# Mechanical Systems

**HVAC** Pumps, Compressors, Prime Movers Personnel Development Piping & Plumbing Power Transmission Power Plants Material Handling & Storage Fire Protection Instrumentation & Controls Codes & Standards \*Heat Exchangers

### **Economics**

\*Refrigeration

**Industrial Equipment Selection** Estimating Budgeting **Energy Management** 

# Administration and Supervision

Organization & Manpower Planning **Business Law** Labor Relations Project Administration & Management \*Safety & Security

# **Environmental Management**

Noise Control Air Quality Control Water Quality Control Solid Waste Handling Hazardous Materials Control Codes & Standards \*Resource Recovery

# Maintenance

Preparation & Interpretation of drawings and Specifications Lubrication Maintenance Programs Maintenance Supplies & Stores Buildings & grounds Housekeeping \*Machine Shop Practice \*Tools & Welding

**CPE Application** Page 5 of 11 The CPE exam can be broken into a 4 exam process opposed to the entire 100 questions exam. This process can ease the mind of the test taker by studying several sections of the CPE Review Pak instead of trying to cram it all in at one time. When taking the CPE you need to allot 8 hours out of your day to take the exam .With the modules, each exam is only 2 hours, so this saves time out of your busy work schedule. The modules can be taken in any order at any time. If you do not successfully pass a module, you can either retake it right away or you can take another module and revisit the other exam later. There is a fee of \$25 for module retakes. Below is how the CPE is broken into modules and what information is covered on each exam.

# 1. Mechanical Module

Mechanical Engineering HVAC

# 2. Electrical Module

Electrical Engineering Controls and Instrumentation Energy

# 3. Civil Module

Civil Engineering
Management
Economy

# 4. Environmental Module

Environmental Engineering Maintenance OSHA

CPE Application Page 6 of 11

# **OVERVIEW**

Since 1975, thousands of people have earned AFE's prestigious Certified Plant Engineer credential. They have distinguished themselves by pursuing, achieving, and retaining competence in all the disciplines of the plant/facilities engineering field. As a result, according to research, a CPE earns a higher salary than his or her non-certified counterpart. As times change, so does the program. Areas covered in the CPE training and testing include electrical engineering, mechanical engineering, civil engineering, economics, management, federal safety regulations, HVAC operations, maintenance, controls, and instrumentation. Anyone who successfully completes this program is truly well rounded. CPEs are everywhere. They are employed in various public and private establishments. They serve the U.S. Army, Navy, Air Force and Corps of Engineers, U.S. Departments of State, along with Defense and Energy. The businesses they keep running manufacture everything from food to pharmaceuticals, aluminum, and plastics. Some CPEs are self-employed consultants others are executives.

# **OBJECTIVES OF THE PROGRAM**

- To provide a standard of professional competence in the field of plant/facility supervision.
- To identify and recognize those individuals who, by passing an examination and fulfilling requirements of experience, responsibility and conduct, meet that standard.
- To encourage plant/facility supervisory professionals o those aspiring to promote to supervision in a continuing program of professional development.
- To stimulate and provide a standard for the development of educational curricula and degree programs for plant/facility supervisory professionals.
- To enhance the status of plant/facilities supervision as a unique discipline and profession by demonstrating that a realistic standard of professional competence can be clearly defined.

Each application must meet the following requirements before processing. This application must be filled out completely and signed. The employment verification form needs to be completed by your employer(s) based on your employment history and eligibility. Applications will not be processed until all supporting documentation has been received by AFE. All fees are non-refundable. Mail completed application to: AFE, 1901 N Fort Myer Drive, Suite 500, Arlington, VA 22209 or email to info@afe.org or fax to 571.766.2142

PERSONAL DATA (please type or print	legibly)						
□ Mr. □ Mrs. □ Ms. Name:						DOB:	
Title:				Етр	loyer:		
Employer Address:							
City:	State:			Zip:			
Work Phone:	Fax:						
Home Address:							
City:	State:		Zip:				
Home Phone:	Cell:			Ema	il:		
Preferred Mailing Address:	ome	□ Compan	у	Cour	rse Location:		
FEES (pick self-study OR live instruction)		M	emher			Non-Member	
(pick self-study OR live instruction)	Member ☐ SELF-5						
Application/Exam			\$5 <i>7</i> 5	□ JLLI-		\$760	
Review Material		\$125			\$150		
Total		□ \$700			□ \$910		
*Retake Fee is \$100*							
				□ LIVE INS	TRUCTION		
Early Bird Registration = 45 days prior to course start day		□ \$1390 (early bird registration) □ \$2200		□ <b>\$1600</b> (ear	□ \$2500		
PAYMENT INFORMATION (please :	select one j	payment option)					
□ Credit Card: □ MasterCard		□ American Express □ Discover					
Account #:		Exp. Da	ite:	CV	C:		
Name on Card:		Signatu	ıre:				
□ <i>PO #:</i>							
□ Check							

CPE Application Page 7 of 11

# **EMPLOYMENT DATA**

Please complete the following in reverse chronological order, beginning with your present position. If further space is required to explain job responsibilities or to provide additional work experience, please list this information on a separate sheet of paper and attach it to the application.

From (Mo/Yr):	To (Mo/Yr): Current				
Current Employer's Name and Location:					
Immediate Supervisor's Name and Title:					
Your title:					
Number of Years of Plant Engineering/Management Experience:					
Number of Years of Maintenance Experience:					
Duties and Responsibilities:					
From (Mo/Yr):	To (Mo/Yr):				
Employer's Name and Location:					
Immediate Supervisor's Name and Title:					
Your title:					
Number of Years of Plant Engineering/Mana	agement Experience:				
Number of Years of Maintenance Experience:					
Duties and Responsibilities:					
From (Mo/Yr):	To (Mo/Yr):				
Employer's Name and Location:					
Immediate Supervisor's Name and Title:					
Your title:					
Number of Years of Plant Engineering/Management Experience:					
Number of Years of Maintenance Experience:					
Duties and Responsibilities:					

# AFE Certified Plant Engineer Certificate Affidavit and Pledge:

The applicant acknowledges that the Certification Board of the Association for Facilitates Engineering, by its usual standards and procedures, will investigate and compile a record with respect to all aspects of the applicant's career. The applicant agrees to provide any additional information in connection with the investigation as may be required. In consideration of the services to be rendered by the Certification Board, the applicant hereby releases, discharges and exonerates the Certification Board of the Association for Facilities Engineering, its officers, directors, and agents from any and all liability of every kind and nature arising out of the procedures, information transmitted concerning the application, or action of the Board in approving or disapproving applications.

I hereby attest that the above information and its attachments are true and complete. I understand that the Association for Facilities Engineering certification programs will not discriminate among applicants as to age, sex, race, color, religion, national origin, disability, citizenship status or veteran status. I further pledge to maintain the highest ethical standards of practice in carrying out my assigned duties with regard to this certification.

Signature: Date:

CPE Application Page 8 of 11

# **Request for Verification of Employment**

This form needs to be completed by your employer(s) based on your employment history and eligibility (i.e. if you have been with your current employer for 8 or more years, one form is required. If you have been with several companies within an 8-year period, a form from each employer is required).

Applicant's Address:
Dear
I am applying to the Association for Facilities Engineering to become a Certified Plant
Engineer (CPE). In this regard, I authorize the release of the requested information enclosed
which verifies my employment and duties from the periodto
Please furnish the requested information as completely as possible, and return to the AFE
Certification Board.
The receipt of replies will be reported by AFE, but under no circumstances will the information
be divulged to me, or used for any purpose except to validate my application for Certified Plant
Engineer.
Applicant's Signature

CPE Application Page 9 of 11

# **Request for Verification of Employment**

To Be Completed	Applicant's Name:						
By Applicant	Address:						
	City:	State:	Zip:				
	Letter of Employment Verification						
To Be Completed							
By Employer	The following information verifies the employment and duties of the above applicant for AFE's Certified Plant Engineer Program:						
Employer	Company Name:						
	Address:						
	City:	State:	Zip:				
Employment	The above named applicant was (bas been)	amployed by our comp	any from				
Period	The above named applicant was (has been) employed by our company fromTo He/she has held the following positions:						
		5 .					
	Title:	Dates:					
	Title: Dates:						
	Title:	Dates:					
Job Function	Please describe in full the responsibilities of the applicant and identify those positions which						
	were (are) classified as: (Attach descriptions if necessary to answer fully.)  Plant Engineering/Facilities Management   Management Level Plant Engineering/						
	Experience:	_	nagement Experience:				
	,		,				
	To your knowledge, has action ever been taken against the applicant because of violations of the standards of professional practice, or to the rules and regulations of your firm?						
	☐ Yes ☐ No If yes, please explain:						
	To the book of our loss of a control of						
Affidavit	To the best of my knowledge and our employment records, I hereby attest that the above information is true and correct.						
	Name of person supplying information:						
	Official Title of Respondent:						
	Signature: Date:  Return to: AFE   1901 N Fort Myer Drive, Suite 500, Arlington, VA 22209   Fax (571) 766-2142						

CPE Application Page 10 of 11

ELECTRICAL SYSTEMS	YES	NO	N/A	ADMINISTRATIVE SUPERVISION	YES	NO	N/A
Circuit Planning				Organization/Manpower Planning			
In-plant Power Distribution				Personnel Development			
Illumination				Business Law			
Protective devices				Labor Relations			
Instrumentation & Control				Project Administration/Management			
Electrical Machinery				*Safety and Security			
Codes and Standards							
*Communications & Alarms				ENVIRONMENTAL MANAGEMENT			
*Uninterruptible Power Supply				Noise Control			
				Air Quality Control			
MECHANICAL SYSTEMS				Water Quality Control			
HVAC				Solid Waste Handling			
Pumps, Compressors, Prime				Hazardous Materials Control			
Movers				Codes and Standards			
Piping and Plumbing				*Resource Recovery			
Power Transmission							
Power Plants				CIVIL AND STRUCTURAL			
Material Handling & Storage				Materials Specification			
Fire Protection				Structural Design and Analysis			
Instrumentation & Controls				Building and Safety Codes			
Codes & Standards				Site Selection and Preparation			
Heat Exchangers				*Architectural Practices			
Refrigeration				*Clean Rooms			
MAINTENANCE				ECONOMICS			
Preparation, Interpretation of drawings & Specifications				Industrial Equipment Selection			
Lubrication				Estimating			
Maintenance Programs				Budgeting			
Maintenance Supplies & Stores				Energy Management			
Buildings and grounds					_		
Housekeeping				*(Asterisks indicate optional subjects that may not appl	y in every	/ job situ	ation)
*Machine Shop Practice							
*Tools and Welding							
Affidavit To the best of my knowled  Name of person supplying Official Title of Responder	inform		nployme	nt records, I hereby attest that the above information is true	and cor	rect.	_
Signature:				Date:			-

Return to: AFE  $\,|\,$  1901 N Fort Myer Drive, Suite 500, Arlington, VA 22209  $\,|\,$  Fax (571) 766-2142

CPE Application Page 11 of 11