



**MAESTRO**  
CONSULTANTS

# **RELIEF AND FLARE SYSTEMS**

## **COURSE OUTLINE 2024**

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**TRAINING TITLE**

RELIEF AND FLARE SYSTEMS

**VENUE**

KUALA LUMPUR, MALAYSIA

**DURATION**

5 Days

**DATES**

12 – 16 February 2024

**PRICE**

\$5,750 per attendee including training material/handouts, morning/afternoon coffee breaks, and Lunch buffet.

**TRAINING INTRODUCTION**

Worldwide, final product costs of refinery operations are becoming proportionally more dependent on processing fuel costs, particularly in the current market, where reduced demand results in disruption of the optimum energy network through slack capacity.

Therefore, to achieve the most cost-beneficial plant, the recovery of hydrocarbon gases discharged to the flare relief system is vital. Heaters and steam generation fuel provision by flare gas recovery leaves more in fuel processing and thus yield increment. Advantages are also obtained from reduced flaring pollution and extended tip life. During recent years in Iran, all projects have included the collection of associated gases. Thus, flare gas recovery in oil and gas refineries are going to be neglected

This five day course is intended for Engineers & Technicians from all disciplines to cover different types, operation and design of flares..Emphasis will be given to a practical approach through experience transfer, interactive discussions and case studies.

The delegates will also be encouraged to raise their own questions and share in the development of the right answers using their own analysis and experiences.

**TRAINING OBJECTIVES**

**Upon the successful completion of this course, participants will be able to:-**

- Review the various instrumentation and sensing devices used in flare, blowdown & pressure relief system
- The components and function of the relief systems and be able to know the sizing and installation of the relieving devices
- Identify the types of flares and be able to emphasize their features and application
- Determine the applicable codes, standards and recommended practices for flare, blow down and pressure relief system,
- Function of assisted and non assisted flare system
- Flared gas flow measurement and challenges
- Purge gas and pilot gas requirement and safety
- Basic design of flares and factors involved.
- Liquid carry over, trouble shooting
- In complete combustion , black smoke

### **TRAINING AUDIENCE**

**This course is intended for experienced Operators , Production Supervisors and Engineers working in production and process operations of oil & gas facilities and petrochemical industries.**

#### **Best suited for:**

- Plant Operators Level 1 & 2
- Senior plant Operators
- Control room Operators.
- Production Supervisors
- Maintenance personnel,
- Maintenance Supervisors & Engineers
- Operations Engineers, Process Engineers

### **Prerequisites**

**The delegate must have the following criteria:**

- **2-3 years Working experience in oil & gas or petrochemical industries.**
- **Able to understand and communicate through English language.**
- **Basic knowledge on how to read P& IDs.**

### **TRAINING OUTLINE**

#### **Day-1**

Flare types and functions:

- Introduction

- Entry Test
- Objective of flaring
- Applications
- Flare system types
- Single point flares
- Multi points flares
- Assisted flares
- Non assisted flares
- Ground flares
- Enclosed flares
- Conda flares
- Combination system

## **Day-2**

### Flare System Components:

- HP & LP flare headers
- Sloping of flare headers
- HP & LP flare KO drums and level control
- Liquid seal drum
- Gas seals
- Flare structure
- Flare stack
- Flare front generators
- Flare tip
- Flare pilot and fuel gas.
- Utility injection
- Flare font generators
- Flare monitoring
- Flare control system

## **Day-3**

### Pressure Relief and Flaring

- PSVs- spring loaded and pilot operated.
- PRVs
- Thermal expansion-TRVs
- PCVs open to flare
- Blow down valves
- Unit shutdown

- Emergency shutdown
- ESD valves.
- Temperature changes while blow down
- Hydrate formation
- Orifice sizing to limit rate of blow down
- Monitoring flared gas flow
- Excessive flaring-Identification

## **DAY-4**

### 4.1 Basic flare design & Operation

#### Factors influencing flare design

- Flow rate,
- gas composition,
- gas temperature,
- gas pressure available,
- utility costs and availability,
- safety requirements,
- social requirement

### 4.2 Design considerations

- Reliable burning, hydraulics,
- Liquid removal, our infiltration,
- Flame radiation,
- Smoke suppression
- Noise
- Visible flame,
- Air/gas mixtures
- Flared gas flow measurement.

## **Day-5**

### 5.1 Flare Combustion Products

- Reaction efficiency,
- Definition of destruction and combustion efficiency,
- technical review of industrial flare combustion efficiency,
- hydrogen enrichment,
- dispersion,
- Emissions

## 5.2 Operational safety

- Flare purging- continuous requirement.
- Monitoring of flare pilot ignition status
- Zero flaring concept..
- Action items compiling for follow up in plant
- Concluding sessions
- Post Test & assessment
- Feedback from Attendees
- Certificate distribution
- Photo session.

## **TRAINING CERTIFICATE**

**MAESTRO CONSULTANTS** Certificate of Completion for delegates who attend and complete the training course.

## **METHODOLOGY**

Our courses are highly interactive, typically taking a case study approach that we have found to be an effective method of fostering discussions and transferring knowledge. Participants will learn by active participation during the program through the use of individual exercises, questionnaires, team exercises, training videos and discussions of “real life” issues in their organizations.

The material has been designed to enable delegates to apply all of the material with immediate effect back in the workplace.