



HAC Webinar

What is Hazardous Area Classification?

Area in which an explosive atmosphere is present or can be expected to be present.

IEC 60079-10-1 – Gas, Vapours, Liquids, and Mists

IEC 60079-10-2 – Explosive Dust, Combustible Fibres & Flyings



Hazardous industries

- These include
 - Automotive refueling stations or petrol stations
 - Oil refineries, rigs and processing plants
 - MODU (Mobile and fixed offshore drilling units)
Reference IEC 61892 Series
 - Chemical processing plants
 - Renewable energy sources / fuels (**Hydrogen**, Ammonia etc)
 - Marine ships / vessels using gases or other low-flashpoint fuels (H₂ (Hydrogen), LH₂, LNG, LPG, NH₃ (Ammonia), Methane). Reference IEC 60092 Series
 - Printing industries, paper and textiles
 - Hospital operating theatres
 - Aircraft refuelling and hangars
 - Surface coating industries
 - Underground coalmines
 - Sewerage treatment plants
 - Gas pipelines and distribution centers
 - Grain handling and storage
 - Woodworking areas
 - Sugar refineries
 - Metal surface grinding, especially aluminium dusts and particles



Key Message

Ex areas may be known by different names such as "Hazardous Locations", "Hazardous Areas", "Explosive Atmospheres",

"any place in which an explosive atmosphere may occur in quantities such as to require special precautions to protect the safety of workers"

This means the **HAC** (hazardous area classification) is the first step to determine if there is a **Hazardous Area** or Non-Hazardous Area.

'HAZARDOUS AREA'

References:

IEC 60050 - International Electrotechnical Vocabulary –Part 426: Equipment for explosive atmospheres,

IEC Electropedia <https://www.electropedia.org/iev/iev.nsf/display?openform&ievref=426-03-01>

"an area in which an explosive atmosphere is present, or can be expected to be present, in quantities such that special precautions for the construction, installation and use of equipment are required"

HAC Essentials, Critical for Safety

Basis of any activities related to hazardous area compliance:

1. **HAC** defines all possible dangers of an installations within site and related to required suitable equipment – this we call **EPLs** (Equipment Protection Level).
2. E.g Zone 1 IIB T4 Gb means an installation with II 2G IIB T4 Gb (ATEX) or IIB T4 Gb (IECEX, AEx, etc) can be installed there
3. A **HAC** is always 3D (Top-down, and elevation), and it shall come with documentation aka HAC Study (including details, procedure, material characteristics, sources of release, flammable substances, ventilation assessment, Zones & Extents, and references to other information or standards
4. If any changes occur (eg process or operation), **HAC** shall be immediately updated
5. How can we come to this point, how do we do a hazardous area classification?! – **welcome to our webinar**
6. **ARAGAS** - The Atmosphere Risk Analysis Gas Plus software - AraGasPlus (IEC 60079-10-1: Edition 3.0, 2020-12)
7. **ARADUST** - The Atmosphere Risk Analysis AraDUST software - (IEC 60079-10-2: Edition 2.0, 2015-01)



ARAGAS

- The Atmosphere Risk Analysis Gas Plus software is a tool to implement all necessary measures that the employer must comply with in accordance with ATEX Directive 1999/92/CE "Explosive on the introduction of minimum requirements for improving the safety and health protection of workers exposed to the environment".
- AraGasPlus performs classification and risk analysis in areas where there is a risk of explosion due to the presence of flammable gases, vapors or mists. Issues the explosion protection document (in **Microsoft Word**) as well.
- The program takes into account all the problems that have arisen so far in the classification and analysis of explosion hazards in places (outdoor / indoor) where the presence of flammable gases, vapours or mists is detected.
- The software complies with the following standards and guidelines: Standard IEC 60079-10-1 (Edition 3.0 2020-12): Explosive atmospheres - 10-1. Part: Classification of areas - Explosive gas atmospheres, Guide CEI 31-35, UNI EN 1127-1, UNI CEI 70029, NFPA 497, ATEX Directive 1999/92 / EC , TNO Yellow Book and Industrial Ventilation Manual : Recommended Design Manual, 30th Edition ACGIH®

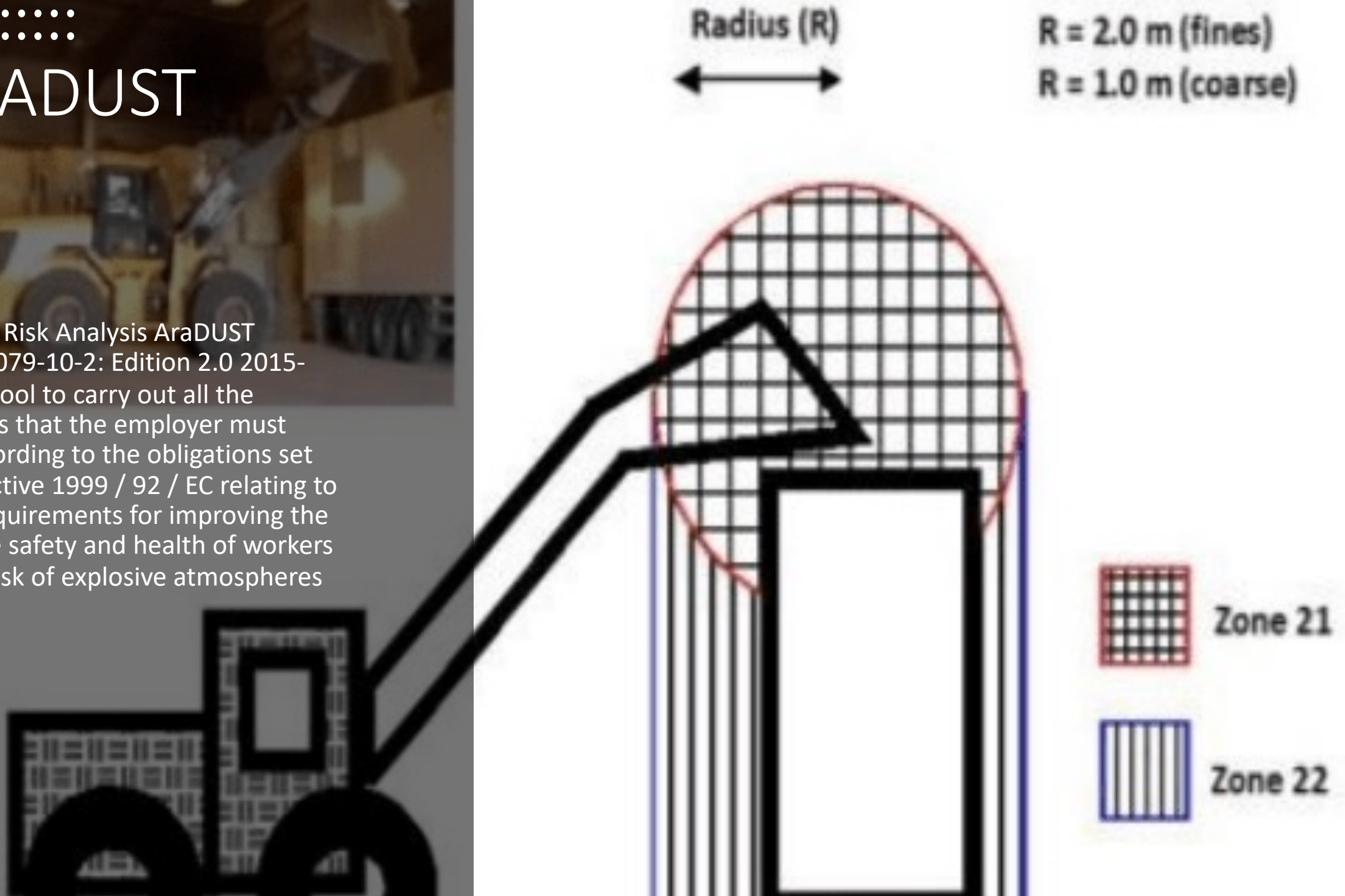
A detailed 3D rendering of an industrial facility, likely a refinery or petrochemical plant. The scene includes several large green storage tanks, tall distillation columns, and a complex network of pipes and structural steel. In the foreground, two trucks are parked on a dirt area: a red one and a white one with a yellow tank. To the right, a large offshore platform with multiple cranes is visible. In the bottom foreground, a large red and black ship with several orange storage tanks on its deck is sailing on blue water. The background is a hazy, light blue sky. The word 'IndEx' is faintly visible in the background.

ARAGAS

Let us go into details

ARADUST

- The Atmosphere Risk Analysis AraDUST software (IEC 60079-10-2: Edition 2.0 2015-01) is a support tool to carry out all the necessary actions that the employer must comply with according to the obligations set out in ATEX Directive 1999 / 92 / EC relating to the minimum requirements for improving the protection of the safety and health of workers exposed to the risk of explosive atmospheres (dust).



Q & A

- 1. If I know the name of the gas, will that be enough get the chemical and physical properties of the gas or should I get the sample to a laboratory and they produce the details and then I input the values?
 - **Most of properties are already listed in AraGas, but there is an option to added manually**
- 2. Once I purchase this software, will there be additional charges for the future updates?.
 - **There is a optional yearly fee, which is for updates and support**
- 3. I'm an End User (Operator / Owner), if I have some modifications to be done on my existing plant, that is already classified.
 - If I use AraGas software to classify a new modification, should I use a third party expert to verify the design?
 - **I would recommend to do so, it depends on your SEP (site Ex policy)**
 - How can I upload my existing design to ARAGAS software
 - **There are options to do so**
- 4. Should an Engineer who is doing classification designing with ARAGAS be certified?

Eg. IECEx CoPC unit 002G

 - **Yes, it is highly recommended. Supplementary training on use of AraGas is also offered.**

Q & A

- 5. What will be notice period for the software support, if I encounter any software issue!.. can he support us online? And will there be any additional charge for that?
 - **There is an annual fee for updates and support**
- 6. I believe there will be training for the software, what is the duration of the training (no. Of days). Are there training videos??
 - **Yes, pls check out homepage**
 - **Training is available on request**
- 7. Do you have a local representative for UAE?
 - **Yes, pls contact aragas@ind-ex.ae**
 - Is there any limitations on the no. Of HACs that can be prepared? Eg. upto say 10 new designs per year!
 - **No limitations**
- 9. Will you be able to reproduce the HAC design that we have currently and store / convert into ARAGAS compatible version.
 - **Yes, there are options to do so**
- 10. Does ARAGAS have limitations on the number of users?
 - **AraGas is limited to 1 computer per licence**
 - **The ARAGAS comes with hardware key, it can be installed on a PC**

Q & A

- 11. Can ARAGAS create Classification Drawings?
 - **No**
- 12. Why do I need ARAGAS if it doesn't do drawings?
 - **To do calculations,**
 - **Create complete HAC Study in the format of IEC 60079-10-1, including**
 - **Table A.1 - Material Characteristics**
 - **Table A.2 - List of Sources of Release, Hole Size, Flammable Substances, Ventilation, Zone Type, Zone Extent, and References to other Standards or Codes**
 - **Audit or inspection other's classifications / findings**
 - **Conduct GAP analysis of during FEED Stage / HAZOP of a project**
 - **Investigate possible operating plant process, design, or operation changes**
- 13. Can ARAGAS be used for Indoor or Outdoor locations?
 - **Yes, it includes a visual representation of openings for a room / building to accurately determine ventilation and classification**
- 14. Can it do ventilation calculations? Natural or Artificial ventilation?
 - **Yes, both**
- 15. Can ARAGAS be used to verify existing Classifications?
 - **Yes, that is what it has been designed to do**
 - **Data must be gathered from the existing classification**

Q & A

- 16. Can ARAGAS be used for offshore installations or ships?
 - **Yes, in conjunction with IEC 60092 or IEC 61892 Series**
- 17. Can ARAGAS be used with CFD ?
 - **Yes, CFDs can be used to support Classification**
- 18. Does having IECEx Training and Certification to Ex 002G help with use of ARAGAS? Is it mandatory?
 - **Yes, It is highly recommended**
- 19. What type of facilities has ARAGAS been used for?
 - **Chemical Plant, FPSO, Ships, Hydrogen Electrolyzer, Packaged Equipment, Oil & Gas, Coal Power Plant, LNG, LPG, Petrol Stations, pharmaceutical, etc**
- 20. Can ARAGAS be used with other standards? Like NFPA 497, EI 15, API RP 505?
 - **Yes, Combination Method of Classification is the most common, and is the safest way to conduct HAC.**
 - **References to other Codes and Standards can easily be made, as AraGas reports are editable as WORD documents**

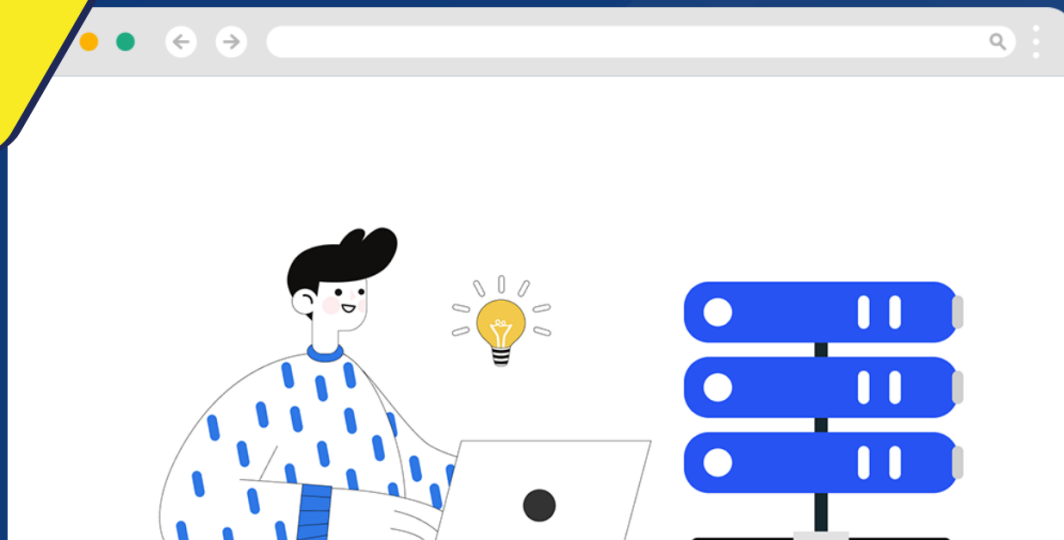
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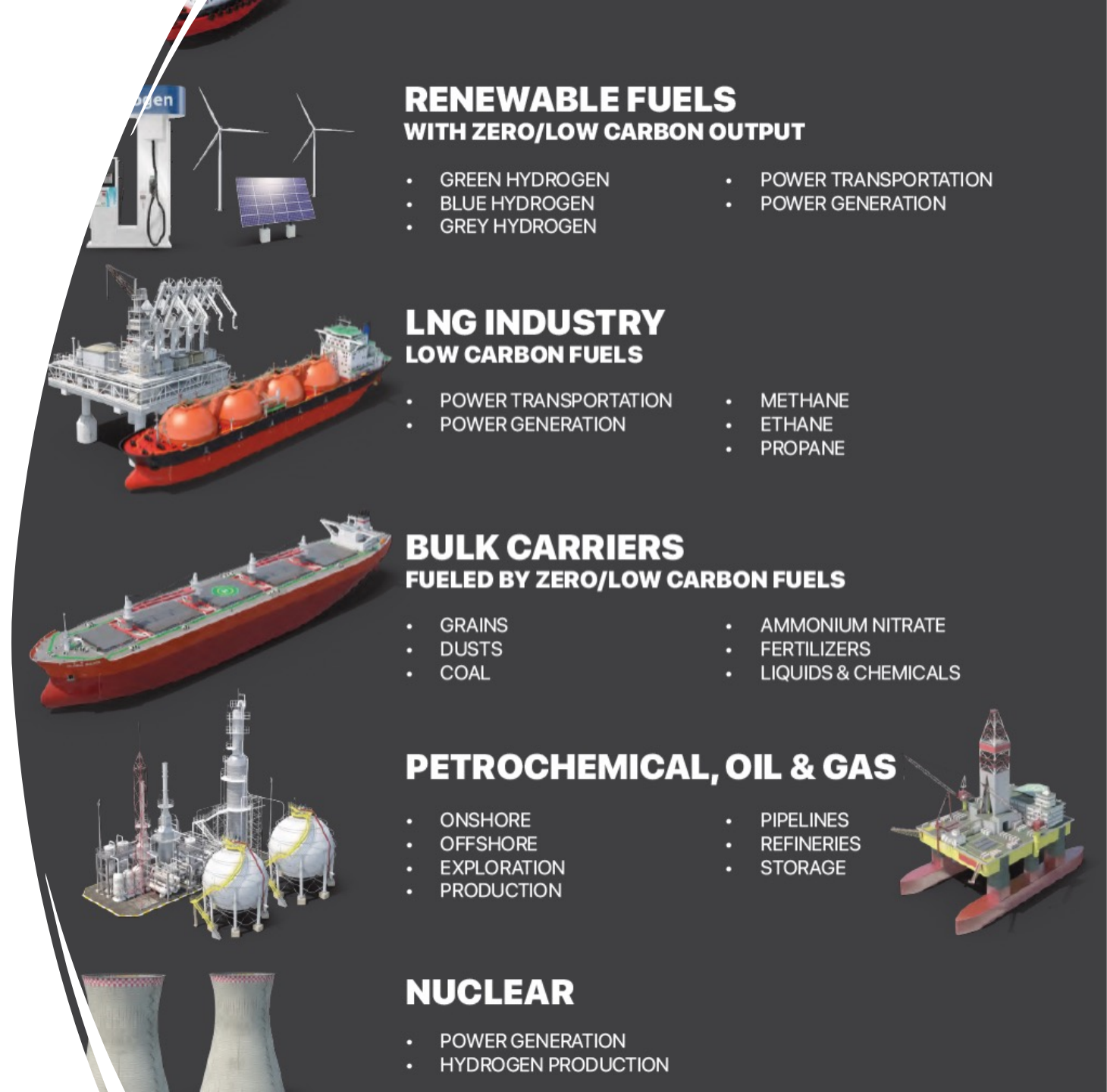
Certificate of Attendance

- Schedule: 16.10 CET
- www.onlinevoc.com (all attendees shall receive a separate link, pls check your mailbox)
- 2 Exams – Operative Level, and Responsible Person Level
- 10 Questions – multiple choice, for each exam
- After successful completion you shall receive the Certificate of Attendance

HAC ARAGAS

Contact details

- IndEx Ex hazardous area professionals
 - aragas@ind-ex.ae



RENEWABLE FUELS WITH ZERO/LOW CARBON OUTPUT

- GREEN HYDROGEN
- BLUE HYDROGEN
- GREY HYDROGEN
- POWER TRANSPORTATION
- POWER GENERATION

LNG INDUSTRY LOW CARBON FUELS

- POWER TRANSPORTATION
- POWER GENERATION
- METHANE
- ETHANE
- PROPANE

BULK CARRIERS FUELED BY ZERO/LOW CARBON FUELS

- GRAINS
- DUSTS
- COAL
- AMMONIUM NITRATE
- FERTILIZERS
- LIQUIDS & CHEMICALS

PETROCHEMICAL, OIL & GAS

- ONSHORE
- OFFSHORE
- EXPLORATION
- PRODUCTION
- PIPELINES
- REFINERIES
- STORAGE

NUCLEAR

- POWER GENERATION
- HYDROGEN PRODUCTION