



# FIORDA

## MEMBERSHIP PROPOSAL

# WHO WE ARE

AmmoniaKnowHow.com was created by a group of industry engineers with the mission to provide a highly effective meeting and communication platform for everyone involved into fertilizers production and constantly looking for the best technical solutions available on the market to solve operational and reliability issues.

FIORDA is the Fertilizer Industry Operational Risk Database, a database for fertilizer manufacturers developed with the mission is to improve safety and reliability performance of fertilizer plants by collecting and exchanging process safety data among the participating companies.

# ABOUT FIORDA

FIORDA ([www.fiorda.eu](http://www.fiorda.eu)) has developed a structured database extracting data from process safety incidents, lesson learned, members projects experience covering a variety of geographic areas, plants, equipment types and operating conditions.

By the end of 2018 FIORDA database is estimated to exceed 1500 documented cases for ammonia and urea plants only.

The necessity of such information database comes from three basic needs:

- Safety in operation
- Plant integrity
- Production availability

Ensuring high level of process safety knowledge and understanding is paramount to safe and reliable operations in fertilizer industry. FIORDA has collected data to determine the causes, the consequence, the type and level of risk, and the likelihood of such failures.

Recommendations for each case are provided to help operators to better understand the path to secure a safe and reliable operation. FIORDA helps operators to better understand the risks within their plants by providing examples from various case studies and reduce operational costs through the application of process know-how and process safety data.

# WHAT YOU\* DO

\* as a Fertilizer Manufacturer and FIORDA member

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- ## 1 **NOMINATE A CONTACT PERSON IN RELATION TO FIORDA**

**WHO:** Ideally this person has a process or mechanical engineering background within the HSE or Engineering / Projects department.

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  - ## 2 **IDENTIFY YOUR OWN PROBLEMS IN AMMONIA, UREA, NITRIC ACID AND METHANOL PLANTS**

**FROM:** computer maintenance management system equipment history, cost and production reports, reliability tools practiced, the operating philosophy, safety statistics, environmental releases, and production strategy. This information is available in many of the departments of your organization and will need to be accessed by your team members.

Excellent sources for identifying how items have perished and been renewed include: technical reports related to the unusual incidents, data acquired by the predictive maintenance tools, operating shift logs and daily reports, production data, equipment log and data sheets, inspection reports, emergency shutdown histories, monthly reports, prior turnaround closing reports, and prior capital spending programs.

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  - ## 3 **ORGANISE DATA IN FIORDA TEMPLATE**

**HOW:** FIORDA will provide a CSV or Excel file with example how the information shall be organized based on: Plant Section, Main Equipment, Sub-Main Equipment, Operation Phase, Medium / Stream, Risk Category, Hazard Type, Failure Cause, Failure Mode, Warning Signs, Event Description, Response Action, Findings, Consequence, Prevention Safeguards, Mitigation Safeguards, Corrective Recommendation etc.

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  - ## 4 **PROCEED TO DE-IDENTIFICATION OF DATA BEFORE SENDING TO FIORDA**

**HOW:** This process involves identifying revealing information and removing it before data is shared. This may be done manually or through automation. Information such as: technology licensor, equipment tag number, equipment proprietary name, plant name, plant location may all be removed before sharing. An event date may also be de-identified setting the date to the first of the month.

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  - ## 5 **SEND DATA TO FIORDA FOR REVIEW**

Proceed to send de-identified data to FIORDA team for review. FIORDA team will review the data and confirm with you to make sure the data comply with following characteristics:

    - Completeness: Data fields are filled with values,
    - Consistency: The manner in which information is recorded by and among respondents,
    - Validity: The degree to which field values adhere to the code tables or range constraints associated with a particular element,
    - Accuracy: The value in a particular field is correct.

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  - ## 6 **FIORDA TEAM UPLOAD DATA IN THE DATABASE**

Once data are checked, confirmed and agreed between FIORDA team and your organization, we proceed to upload the data in FIORDA database. Monthly bulletins are issued to all FIORDA members detailing the latest database updates related with incidents, identified safeguards and available technology to prevent or correct these issues.

# WHAT WE DO

# 1

## IDENTIFY THE PROBLEM IN AMMONIA, NITRIC ACID AND METHANOL PLANTS

**From:** Our own operation experience • Projects execution • Historic incidents • HAZOP Studies recommendations • Risk Registers • FIORDA database • Operators sharing

# 2

## FIND PREVENTIVE AND MITIGATION SOLUTIONS

**For example:** Use of new materials • Use of new equipment • Improve control loop, trip/interlock • Perform studies and analysis • Review procedures and guidelines • Improve inspection process • Implement new plant monitoring system • Improve gas/liquid circulation/distribution • Improve/change stream composition • Others – on a case by case basis.

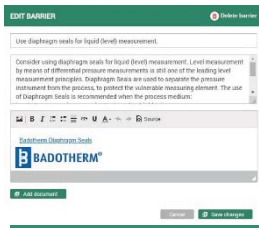
# 3

## DEVELOP A CASE STUDY REPORT

We are looking for the best technical solutions available on the market that can solve the problems identified as per section 1. We develop Case Study reports with the highlight of a technical solution as recommended safeguard to prevent a potential incident, making easy for engineers and operators to select the best option available on the market.

# 4

## UPDATE FERTILIZER INDUSTRY OPERATIONAL RISKS DATABASE ([WWW.FIORDA.EU](http://WWW.FIORDA.EU))



FIORDA is a structured database extracting information from process safety and reliability incidents, lessons learned and projects experience covering a variety of plants, process conditions, equipment, risk categories, hazard types and operating phases.

The database generates reports for each incident describing Warning signs, Cause, Consequences, Prevention and Mitigation safeguard and Corrective Recommendations.

Each report includes a presentation of technical solutions recommended as safeguards for each case, including hyperlinks to manufacturer websites and technical brochures.

# 5

## SHARE THE CASE STUDY WITH INDUSTRY OPERATORS

Using AmmoniaKnowHow.com platform and FIORDA database we share the case studies with fertilizer plant engineers and operators via: AKH publications library, fortnightly newsletters, training courses, AKH discussion board, access to FIORDA database, FIORDA monthly bulletins, FIORDA monthly reports, LinkedIn networking.



# YOUR BENEFITS

- **Identification of emerging safety issues trend**
- **Assess effectiveness of corrective actions**
- **Identify other similar problems**
- **Alerting operators to the occurrence of safety events**
- **Facilitate obtaining information on those problems**
- **Comparing the experience from different operators such as frequency of an event or severity of the outcome**
- **Corrective actions developed by other operators may be less costly than those tried in the absence of this information**
- **For regular maintenance and annual turnaround, FIORDA data improve planning and reduce costs for such activities by sharing previously tested solutions and supplier recommendations**
- **In case of plant trip, shortening downtime by using fast accessible FIORDA data when investigating the root cause and planning repair activities will significantly reduce company profit loss**

# WHAT YOU GET

FIORDA database access

FIORDA Software for Risk Assessment and Action Tracking Register

## **Monthly updates**

FIORDA Report

FIORDA Bulletin

AmmoniaKnowHow.com and UreaKnowHow.com Newsletter

Case Studies reports

Guidance documentation for Design and Engineering Procedures

## **Technical Queries**

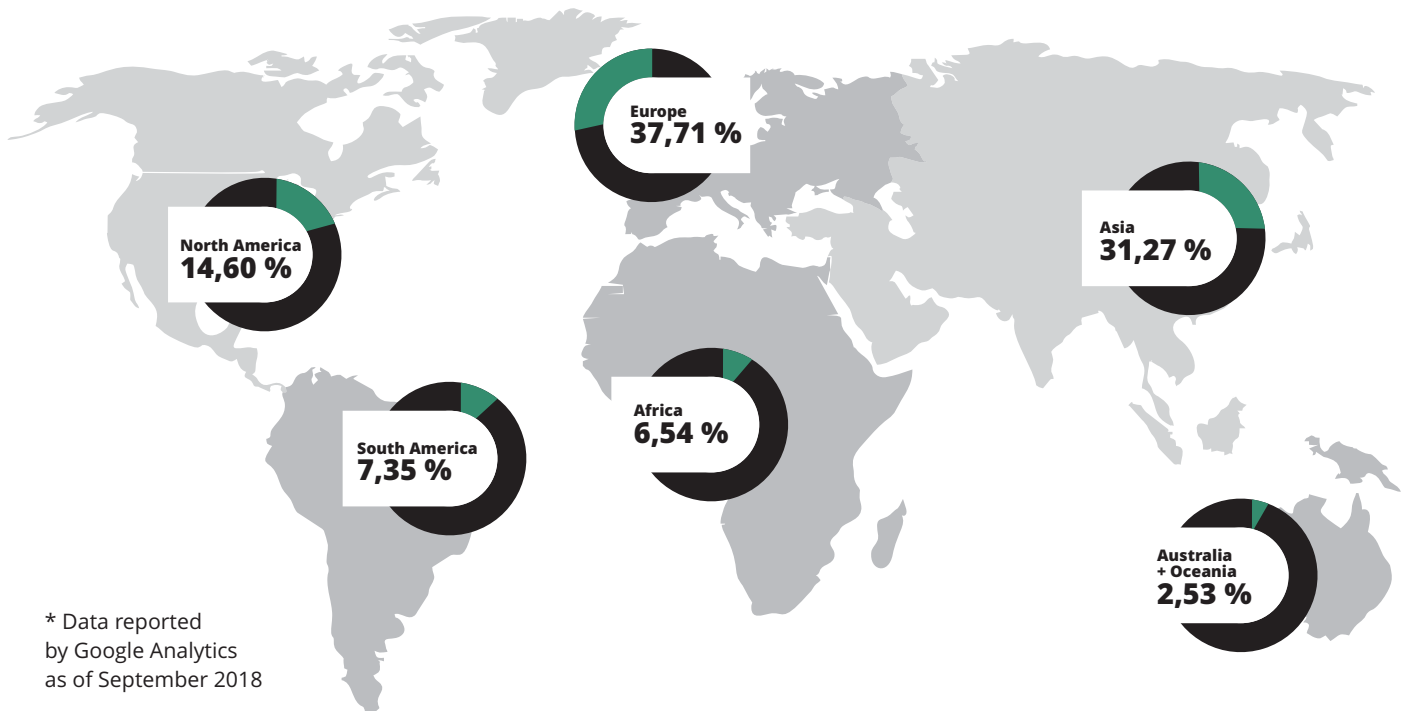
Operators can submit technical queries (TQs) - FIORDA team evaluate the TQ and provides either an answer or a budget cost estimate for a detailed technical answer

## **Process Safety Management support**

If requested, Process Safety Management support can be provided at preferential rates for all FIORDA member companies

# OUR COMMUNITY

## Users of AMMONIAKNOWHOW.COM<sup>(\*)</sup>



### How does FIORDA membership work?

1. FIORDA members provide de-identified safety operational data (anonymously);
2. FIORDA team review data quality and upload information into database;
3. A monthly bulletin is issued to FIORDA members informing about new uploaded data and existing recommendations for similar issues;
4. All FIORDA members have unrestricted access to FIORDA risk registers database.

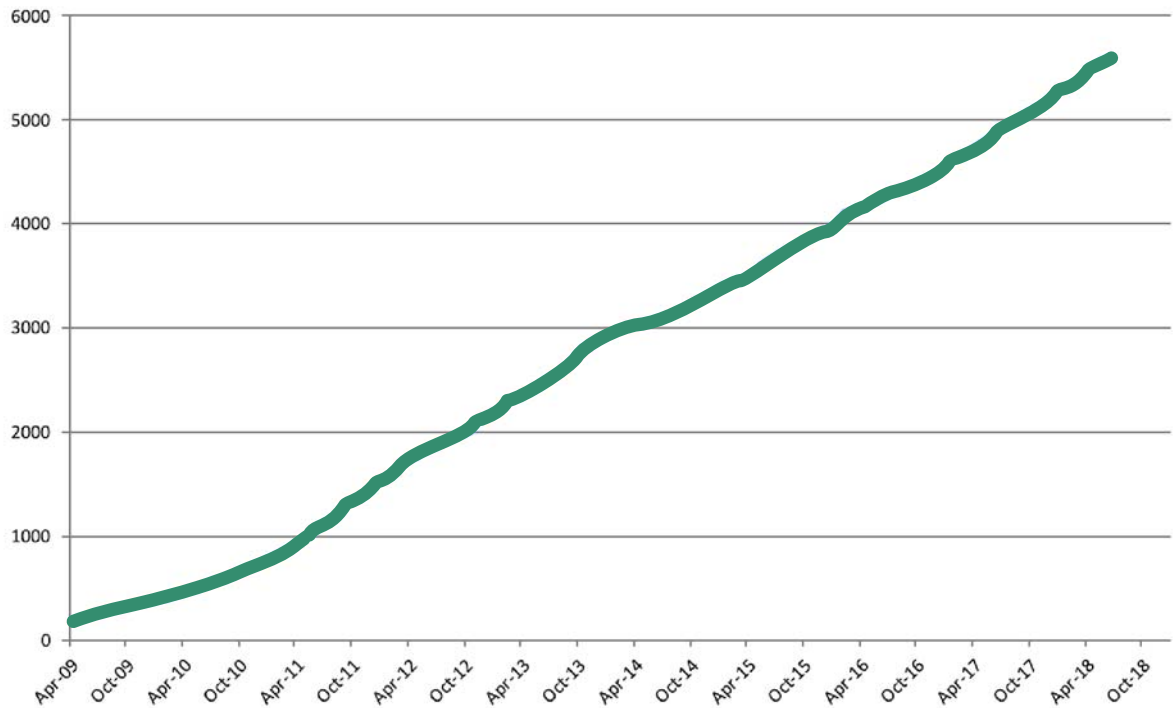
### Confidentiality

To ensure confidentiality, FIORDA member companies and their location are anonymous. Shared information is de-identified at the member company end and FIORDA receives only minimum data required for upload. No association with plant technology, location, or proprietary equipment are deemed to be made. Memorandum of understanding and confidentiality agreements are used to endorse the relation between FIORDA and its members.

FIORDA member companies share only a limited amount of data required by the membership status. It is at members discretion what type of process safety events are willing to share: near misses, process upset and plant trips, loss of containment, fire and explosion etc.

# OUR COMMUNITY

## Members of UREAKNOWHOW.COM



**UREAKNOWHOW.COM growth of members number over time**

Status as per June 15, 2018: 5600 members representing all Nitrogen Fertilizer Plants

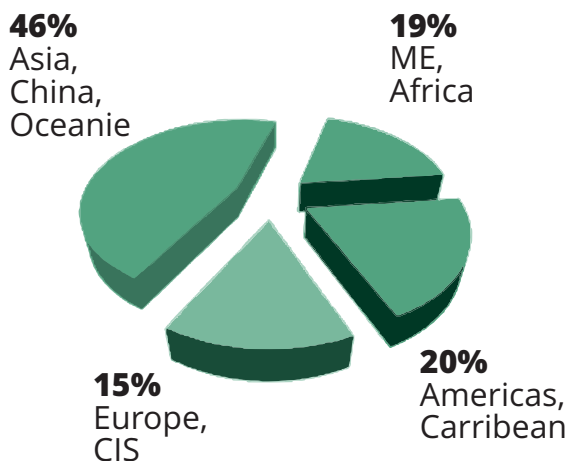
### Who are UreaKnowHow.com >5600 Members ?

As per June 15, 2018, more than 5.600 Members are enlisted at UreaKnowHow.com. Together with the Chinese sister website UreaNet.cn, UreaKnowHow.com network consists of **more than 11.500 Managers and Engineers representing all nitrogen fertilizer plants in the world**. UreaKnowHow is now the largest independent network in the nitrogen fertilizer industry and is still growing as illustrated in the figure above.

Not only representatives from existing nitrogen fertilizer plants are members but also representatives of planned and under construction plants. This means you will be able to contact managers and engineers of planned and under construction nitrogen fertilizer projects directly.

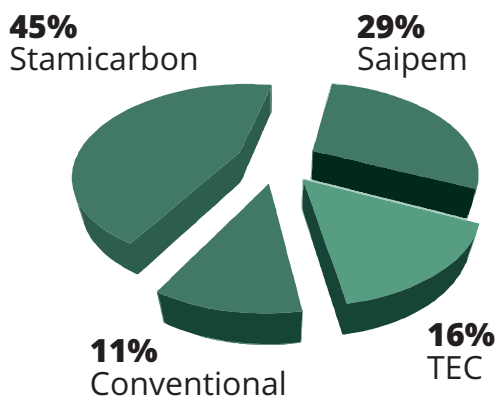
# OUR COMMUNITY

## Members of UREAknowHOW.COM



### The location of the urea plants of UreaKnowHow.com members:

About 45% of UreaKnowHow.com members are from Asia, China and Oceania and 20% from the Americas and Caribbean. Further about 20% are from Middle East and Africa and 15% from Europe, Russia and FSU countries. Many of UreaKnowHow.com members work in associated ammonia, nitric acid and ammonium nitrate plants. UreaKnowHow.com closely co-operate with AmmoniaKnowHow.com and can offer a wide variety of products and services for all kind of nitrogen fertilizer plants.



### UreaKnowHow.com members by urea plants technology

STAMICARBON CO<sub>2</sub> stripping urea plants of which about 10% Urea2000Plus™ Pool Condenser or Pool Reactor technology plants. About 30% work in SAIPEM (Snamprogetti) NH<sub>3</sub> stripping plants and another 11% conventional urea plants. About 15% of our Members work in TEC technology urea plants. Also CASALE has several grass root urea plants under construction.

Further:

Some 75% of UreaKnowHow.com members are engineers while some 25% are managers. 75% are process/chemical engineers while some 20% are mechanical/inspection engineers and some 5% electrical/instrumentation and other disciplines.



# OUR PROPOSAL

## MEMBERSHIP PLANS

### What is the cost involved in becoming FIORDA member company?

The fee will normally consist of both data and cash. Further, each member company is expected to contribute with process safety and reliability data from their operations. The data should have a minimum quality as to informative value.

The membership fee depends on the amount and quality of safety and reliability data contributed by the member company. On request we can also include a certain service package in the membership fee.

LITE	STANDARD	ENTERPRISE
€10,000.00 / year	€25,000.00 / year	€40,000.00 / year
<b>Single Site</b>  Single sites looking for entry-level FIORDA access for Operation and Maintenance teams at a low price point.  <b>30 users</b> €27,78 price per user / month	<b>1-2 Plants / Facilities</b>  One or two plants/facilities, looking for FIORDA access to cover the information need for Operation, Maintenance, HSE and Projects departments.  <b>100 users</b> €20,83 price per user / month	<b>Multiple Facilities</b>  Operators with multiple facilities located on various sites looking for FIORDA access for extensive technical and operational departments.  <b>200 users</b> €16,67 price per user / month

## CONTACT US

We'll welcome your messages at

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