



# PATKOL

Public Company Limited

SINCE 1965

## Ammonia Refrigeration system





## Today Trend in **Thailand**

The majority of refrigeration plant in Thailand is the Ammonia based Plant and it is still continuously expanded.

***Why is ammonia widely used as refrigerant in food processing and large cold storage room ?***

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# Ammonia Refrigeration System



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## Advantages

1. Natural Refrigeration, Having zero GWP and ODP
2. High Efficiency in Refrigerant Performance per Kilowatt of Refrigeration
3. Continuously Technology Development
4. Low Pressure Operation
5. Worthwhile in term of investment and operation cost



ISO 14001  
Environmental  
Management  
System



OHSAS 18001  
Occupational  
Health and Safety  
Management

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# Ammonia Refrigeration System



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## Advantages

6. High heat transfer efficient in equipment
7. High efficient compressor operation
8. Low refrigerant cost
9. Sustainable
10. Self-alarmed

# Ammonia Refrigeration System



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Point of Concerns

**Toxic**

Moderate risk of toxicity  
at raised concentrations



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# Solution



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“The system should be designed based on global standard”



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# Solution



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“Installation should be done correctly and safely with highly concern in Zero Leakage”





# Solution

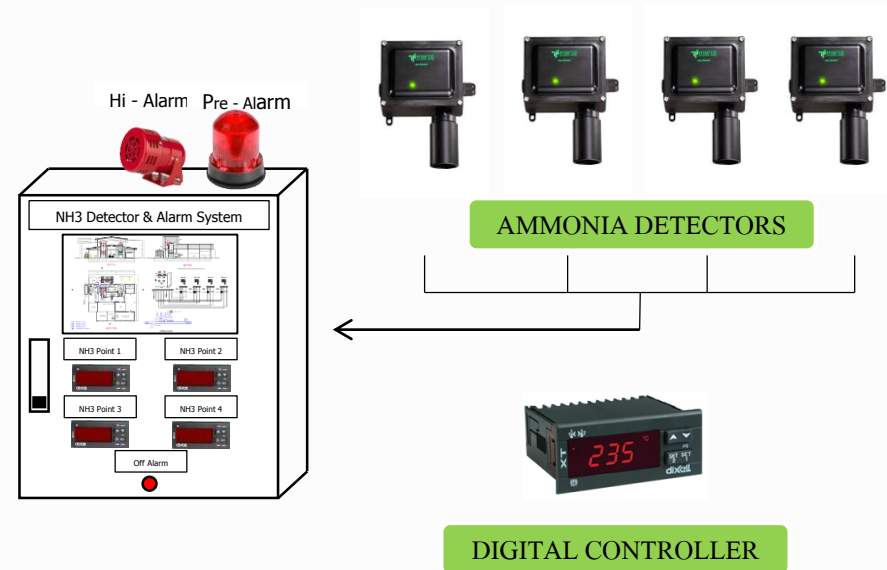
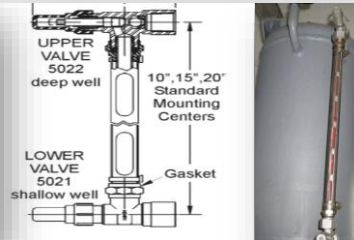


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“**Safety Device** and system Installation dual pressure relief, self- closing drain valve, ammonia detector, system alarm, ammonia trap water tank, personal Protective Equipment.”



ISO 14001  
Environmental  
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# Solution



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“Operation by knowledgeable staff, all the operation staffs have to be trained specially to operate the system.”



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# Solution



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## “Evacuation Plan in case of Over Pressure Situation”





# Solution



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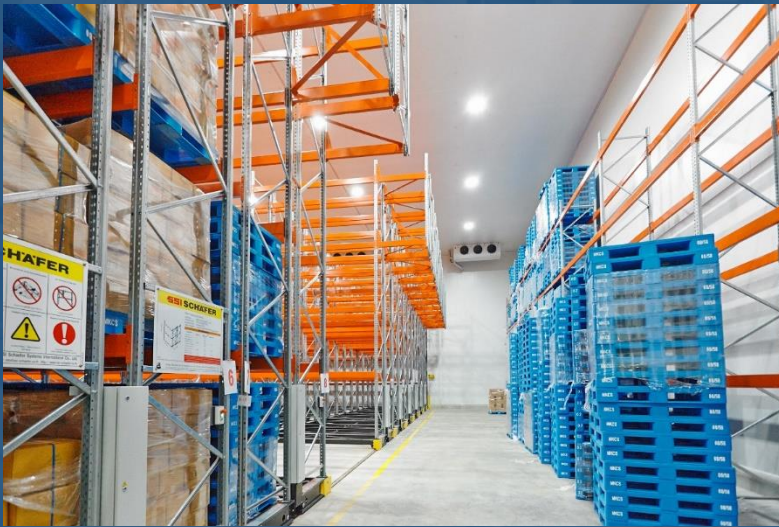


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# Information



## High Efficiency

in Refrigerant Performance per Kilowatt  
of Refrigeration

# Ammonia Refrigeration System



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**Low Charge  
Ammonia Chiller**



ISO 14001  
Environmental  
Management  
System



OHSAS 18001  
Occupational  
Health and Safety  
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# Ammonia Refrigeration System



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## Ammonia Chiller Package



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Management  
System



OHSAS 18001  
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# Ammonia Refrigeration System



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## Conclusions

1. Ammonia have used in refrigeration for more than 150 years
2. Ammonia has been the main refrigerant in the industrial food sector
3. Must be concern of safety issues
4. As low GDP and ODP refrigerants continue to be induced, ammonia applications are expanding

# Ammonia Refrigeration System



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**Food industries experience in Thailand.**



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## Thank you

