

# NATIONAL ASSOCIATIONS

## THE REFRIGERANT TRANSITION

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# THREE SECTORS

1. HVAC
2. Commercial refrigeration
3. Industrial refrigeration



# HVAC

# THE REFRIGERANT TRANSITION

HVAC (PLUG IN/SPLIT/MULTI/VRF/VRV)

## - *THE MARKET FOLLOWS (DEPENDS ON) THE MANUFACTURER*

*R410A(2080)*

-> *R290(3)*

-> *R32(675)*

-> *?R466A(733/A1)*

\* *NATIONAL PRACTICE DIRECTIVE (NPR 7600) IS REVISED -> TRAINING*

# THE REFRIGERANT TRANSITION

## HVAC (CHILLERS)

### - THE MARKET FOLLOWS THE MANUFACTURER

*POSSIBLE CHOICES OF  
REFRIGERANT*

-> R134A(1430)

-> R1234ZE(<1)

-> R290(3)

-> NH<sub>3</sub>(0)

*\* KNOWLEDGE OF NPR 7600 AND PGS 13 -> **TRAINING***



# COMMERCIAL REF

# THE REFRIGERANT TRANSITION COMMERCIAL REF

*STILL LOOKING FOR A CLEAR SIMPLE SOLUTION*

- **SMALL CAPACITIES**

*R134A(1430)/R449A(1397)/R448A(1387)/ R290(3)/R513A(573)/R452A(2140)*

- **MEDIUM CAPACITIES**

*R134A(1430)/R449A(1397)/R448A(1387)/R290(3)/CO2(1)/R513A(573)/R452(2140)*

- **BIGGER CAPACITIES**

*R134A(1430)/R449A(1397)/R448A(1387)/NH<sub>3</sub>(0)/R290(3)/CO2(1)*

\* **KNOWLEDGE -> TRAINING**



# INDUSTRIAL REF



# THE REFRIGERANT TRANSITION INDUSTRIAL REF

*A CLEAR DIRECTION FOR A LONGER TIME*

***$NH_3(0)/R290(3)/CO_2(1)$***

*\* KNOWLEDGE PARTLY AVAILABLE (BUT DISAPPEARING)-> **REPLACEMENT***

# WHAT IS THE REAL CHALLENGE?

# WHAT IS NOT THE CHALLENGE

- ✓ *SUFFICIENT ALTERNATIVE REFRIGERANTS*
- ✓ *TECHNICAL SOLUTIONS ENOUGH*
- ✓ *TECHNICAL CHALLENGES CAN AND WILL BE OVERCOME*
- ✓ *AVAILABILITY OF COMPONENTS AND REFRIGERANTS*
- ✓ *TRAINING AND TRAINING CENTRES*

# WHAT IS THE REAL CHALLENGE

- ***INSUFFICIENT PROFESSIONALS***
- ***INSUFFICIENTLY EXPERIENCED PROFESSIONALS***
- ***THE EXIT AND ENTRY OF PROFESSIONALS IS OUT OF BALANCE***
- ***THE REAL EXPERTISE EVAPORATES***
- ***NO TIME AND KNOWLEDGE TO ADJUST THE BUSINESS MODEL***
- ***WANING GOVERNMENTS***
- ***TOO LITTLE DECISIVENESS TO CHANGE THE COMPANY TOWARDS NATURAL REFRIGERANTS***

# SOME EMERGING SOLUTIONS

- *COOPERATION BETWEEN NON-RIVAL COMPANIES*
- *MORE STANDARD VERSIONS ALSO IN INDUSTRIAL UNITS*
- *MORE ATTENTION FOR REMOTE MONITORING*
- *INCREASING REDUNDANCY IN CRITICAL INSTALLATIONS*
- *RAPID INCREASE IN ELECTRONICS AND POSSIBILITIES OF DATA ANALYSIS AND CORRECTION ALGORITHMS IN INSTALLATIONS*

**THANK YOU FOR YOUR ATTENTION**