Installing & Maintaining
Natural Refrigeration Systems

Richard Heath, Source Refrigeration
Illusions of knowledge...

“The greatest obstacle to discovering the shape of the earth, the continents and the ocean was not ignorance but the illusion of knowledge.”

~Daniel J. Boorstin

I believe the same can be said for rapid adoption of Natural Refrigerant Technologies:

If the Technology is **NEW** then Ignorance of Installation & Maintenance is a Given. Any illusion of knowledge without proper training and experience is just that...an illusion.
Minimizing the Unknowns...
Collaboration Between ALL Stakeholders is Critical for Success

“If you cannot describe what you are doing in terms of process, you do not know what you’re doing.”
- W. E. Deming

“Learning is not compulsory, neither is success.”
- W. E. Deming

Technology OEM:
- Define Theory of Operation
- Provide Sequence of Operation
- Provide Set-points and Safeties
- Provide Start-up and FPT
- Provide Maintenance Requirements

Refrigeration EOR:
- Verify System Design & Application
- Develop System Installation SOW
- Develop System Start-up Procedure
- Define Systems Integration requirements
- Code Requirements

Refrigeration Contractor:
- New Skills Assessment
- Special Tools & Equipment
- Objectives-based Training Development
- Develop Best Practices
- Provide Feedback
Installation of New Technologies...

One-offs vs. Sustainable Business Development

Understand the Design, Installation, and Operation Requirements

Acquire the Proper Tools

Develop Required Skills

Develop Best Practices

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- W. E. Deming
Operating & Servicing New Technologies... 

Requires New Contractor & Technician Skills

- Standard DX Systems
- Secondary Glycol/CO2
- Cascade Sub-critical CO2
- Natural Solutions

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“It is necessary for us to learn from others' mistakes. You will not live long enough to make them all yourself.”

- Hyman G. Rickover

“The only source of knowledge is experience.”

- Albert Einstein