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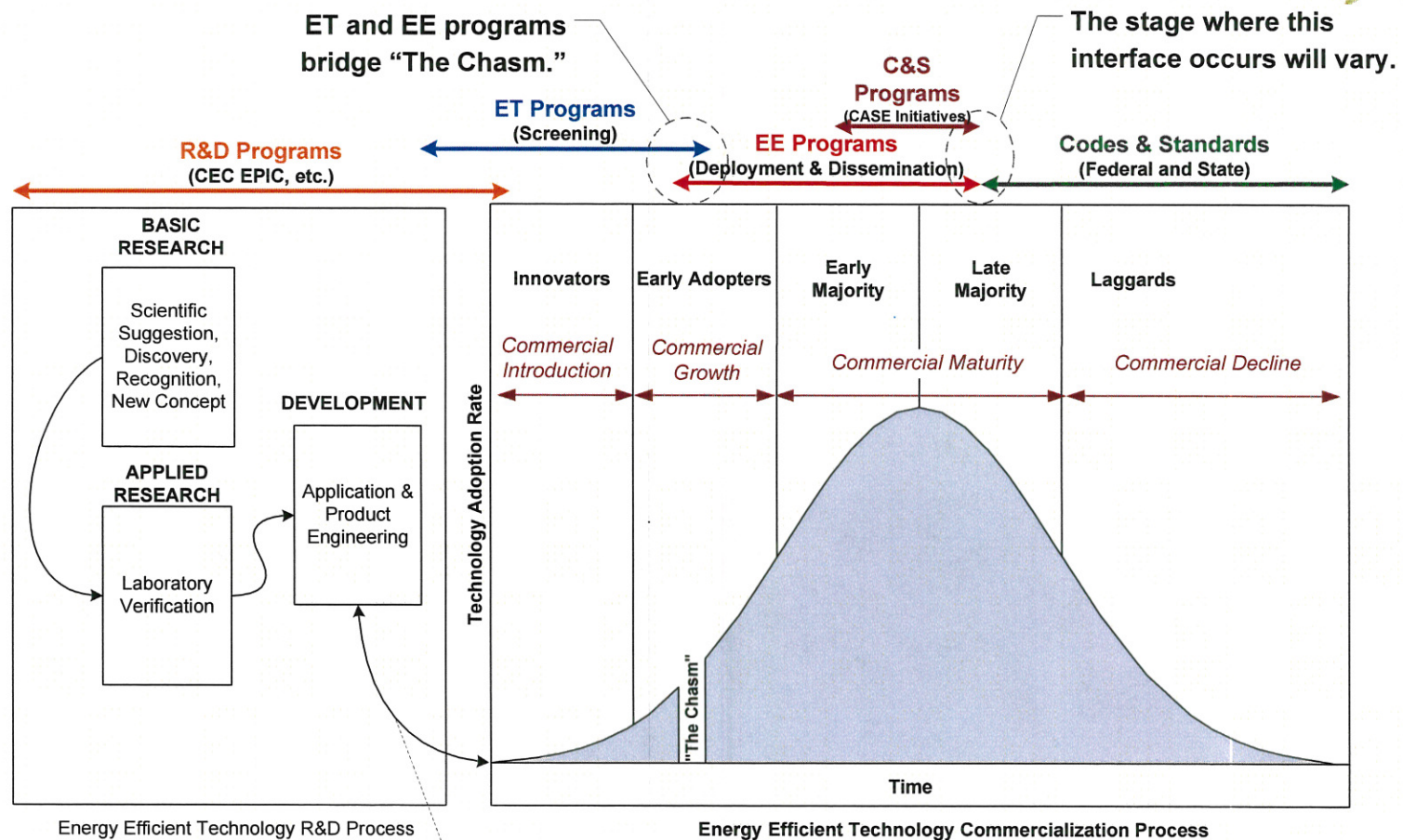


Low Charge Ammonia Systems

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Energy Efficiency and incentives...



New technologies and applications may cycle between Product Engineering and Commercial Introduction several times until the correct mix of features, performance, price, availability, etc. are reached. Degree of failures and risk are high.



Comparison of efficiency (COP)

- Ammonia R-717 8.09
- R-22 7.41
- R-134a 7.2
- R-404A/R-507A 6.77



SCE efforts to understand LCA system performance and benefits...

- SCE PULCA field evaluation – Oxnard, CA
- SCE LCA/CO2 field evaluation – Irvine, CA
- EPRI/CTS lab evaluation of PLCA systems – 20-100 tons refrigeration, HVAC applications
- M&V of PULCA systems – Port of Long Beach – central ammonia plant base case
- M&V of PULCA systems – Southgate, CA – R-22 base case
- EPIC/EPRI/SCE - demand response for PULCA system



Pictures...

Packaged Ultra Low Charge Ammonia – Long Beach, CA

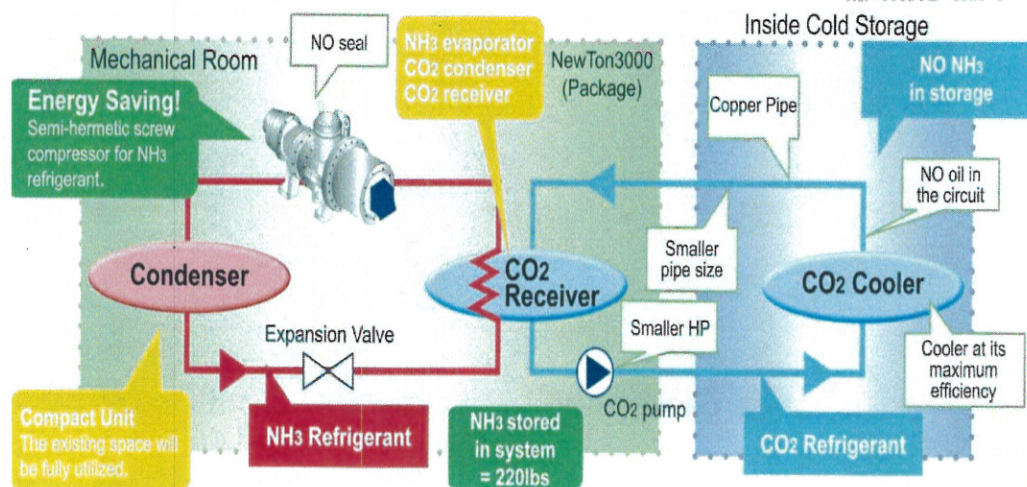


Low Charge Ammonia – CO₂

- NewTon 3000
 - Low charge ammonia primary, CO₂ secondary
 - 2 stage compact screw compressor
 - VFD speed control
 - Double economizer
- First U.S. installation



Source:
Mayekawa



Source:
Mayekawa 6

Packaged Low Charge Ammonia – Dayton, OH

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300 Tons, air cooled, 43'F
output to chilled water loop