AMMONIA

# COMPRESSOR PACKS

# ACP

IIAR Nashville March 25, 2014

Presented by :
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# Designed for Industrial Refrigeration

## BITZER The Heart of Freshness

- Founded in 1934 – Privately held
- Employees: > 3,200
- Number of subsidiaries worldwide: 40
- Number of manufacturing facilities: 14
- Manufacture 500,000 units / year
  - 450,000 Compressors
  - 50,000 Pressure Vessels / Other

# Designed for Industrial Refrigeration

## BITZER US Locations


Flowery Branch, GA

Production of Recips
(including Ammonia and $CO_2$)


Oakwood, GA

Production ACP and
Pressure Vessels

Syracuse, NY

Production of Scrolls

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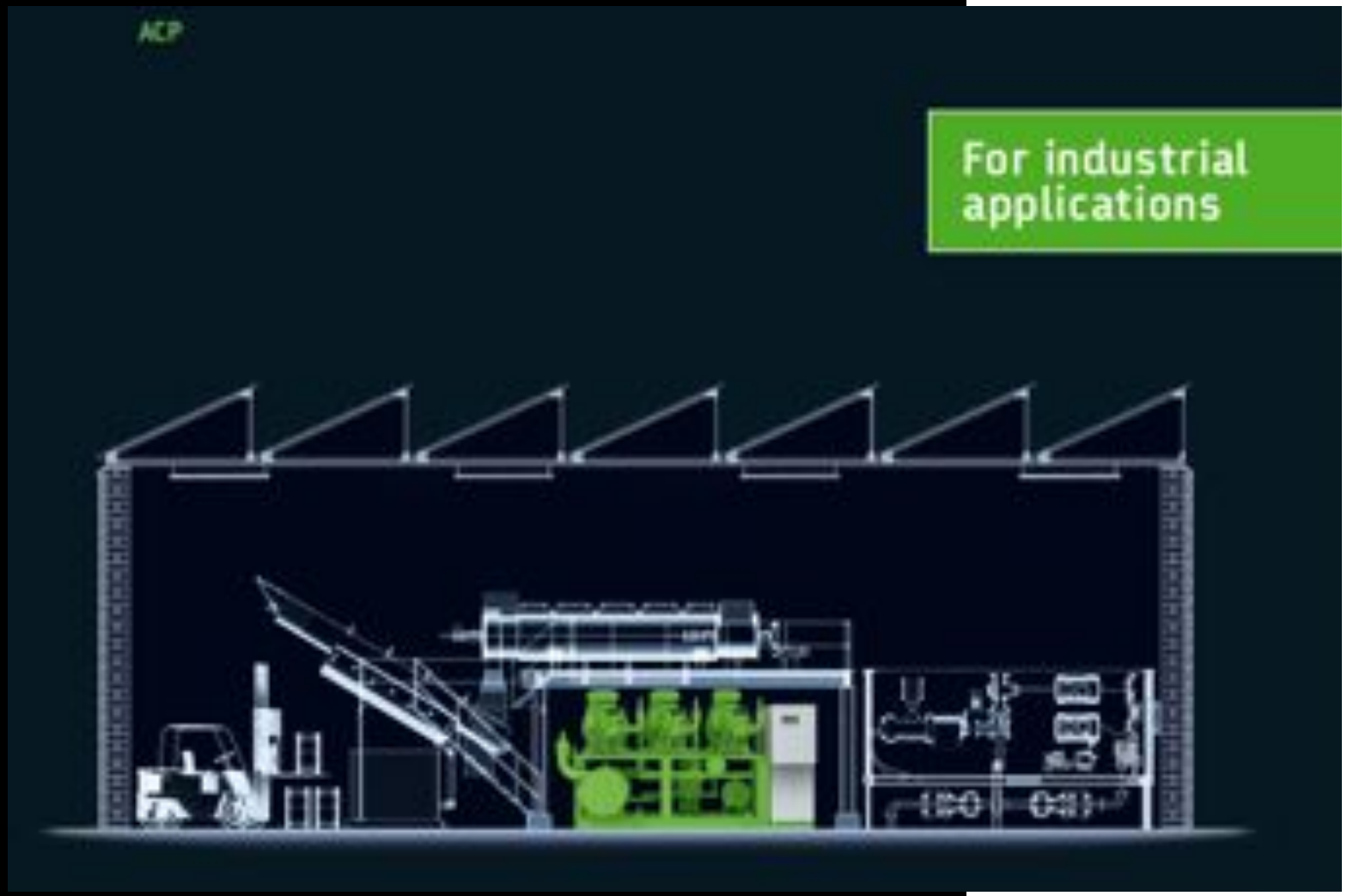


# Designed for Industrial Refrigeration

## Ambition

/ Supply industrial Ammonia Compressor Packs

/ Develop larger equipment to meet our customer's demand

/ Create new solutions with our customer for the future Ammonia market

/ Deliver the support, service and maintenance for safe operation

/ Increase the efficiency and operational reliability of Ammonia systems

**BITZER is the largest independent compressor manufacturer in the world with 25 years of Ammonia compressor production and application**

# Designed for Industrial Refrigeration

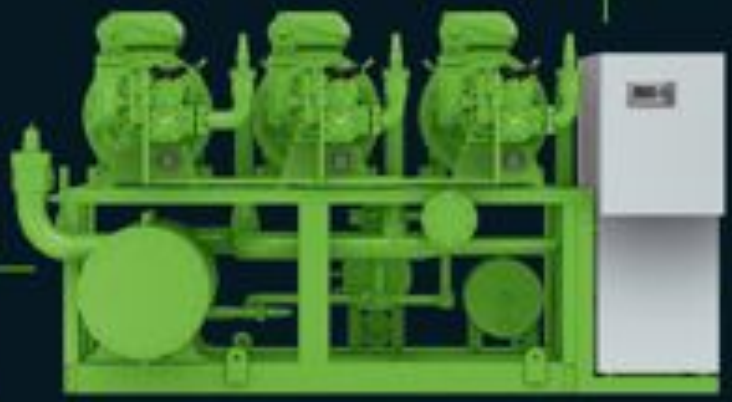
## Compressor Pack Design

### MODULAR INDUSTRIAL DESIGN

// Sturdy design with industrial components
// 2 or 3 compressors – 1 with VSD
// Large versatile range of capacities

### BITZER PACK CONTROLLER

// Optimized part-load features for up to 9 compressors
// Easy menu structure
// Multiple external communication opportunities (USB, RS485, TCP/IP web server, etc.)
// Designed for global use



### BITZER ADVANCED OIL MANAGEMENT SYSTEMS

// Optimized oil separator 6-10ppm (liquid drops)
// Compact oil cooler, multiple cooling options
// 2-stage oil filter
// Low differential pressure operation

### OPTIONAL BITZER ECONOMIZER SYSTEM

// Complete with liquid control and pipings
// Compact design

### MAXIMUM REDUNDANCY

// Multiple compressors
// Multiple drivelines & starters
// Backup controller CPU and sensors
// Dual oil filters

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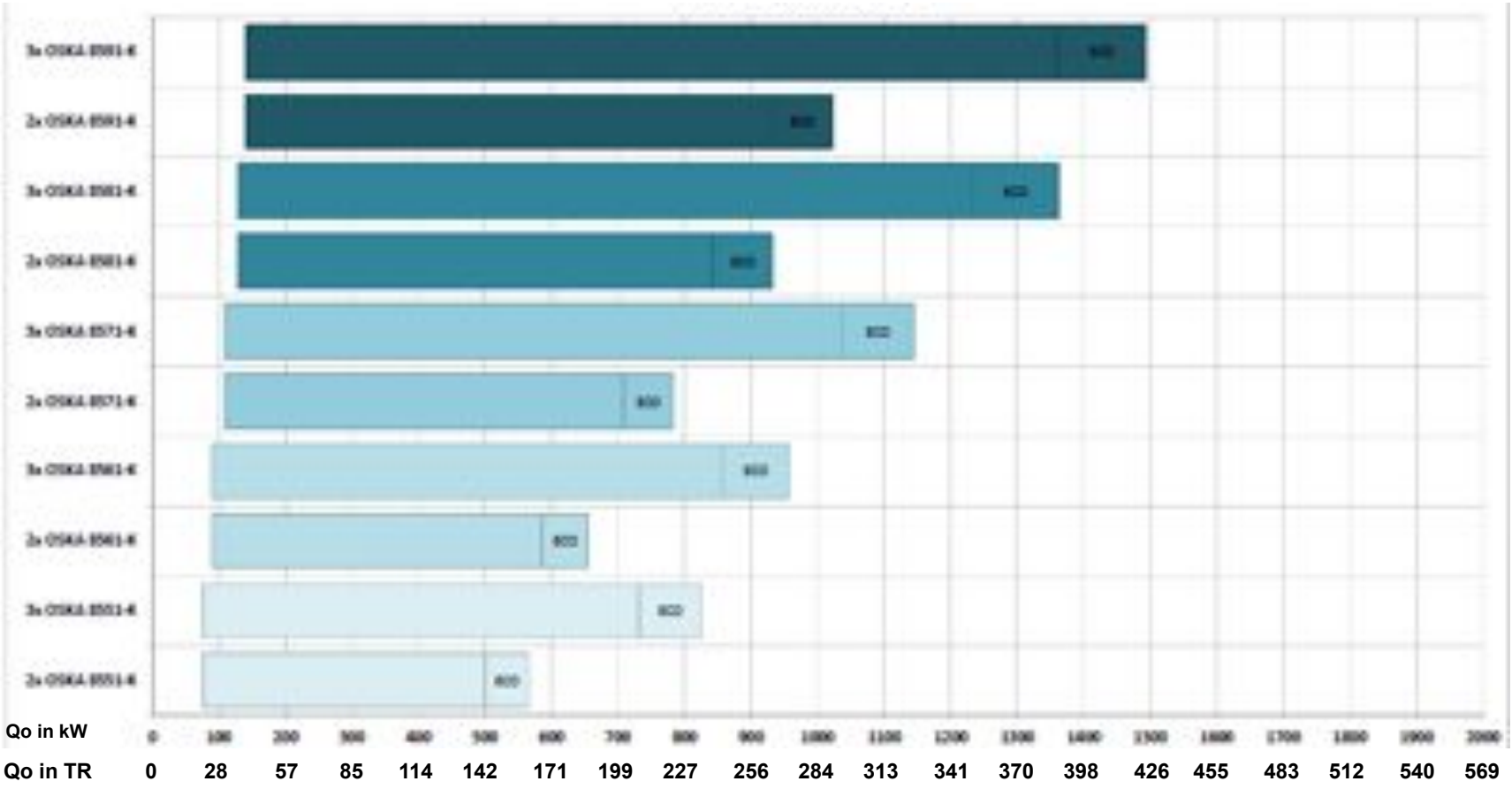
## Cooling capacities

### Medium Temperature Applications : 20 °F / 95 °F



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## Advantages

- Multiple Compressors are More Efficient
  - Best System Part Load Efficiency
  - Smaller VSD - Uses Less Power
  - Lower Starting Current per Motor
- Redundant Compressors and Controls
- Superior Load Matching – Down to ~5%
- Shared System Components
- Allow Flexible Design & Control Strategies
- Low Charge Economizing Option

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## BITZER ACP Controller

- Complete Monitoring and Control of up to 3 ACPs  (9 Compressors)
- Automatic Switchover to Redundant CPU and Sensors
- Application Envelope Protection with Separate Warning, Alarm and Shutdown Limits
- Optional Remote Color Touch Display

Keep ACP in a Reliable, Non-stop and Trouble-free Operation

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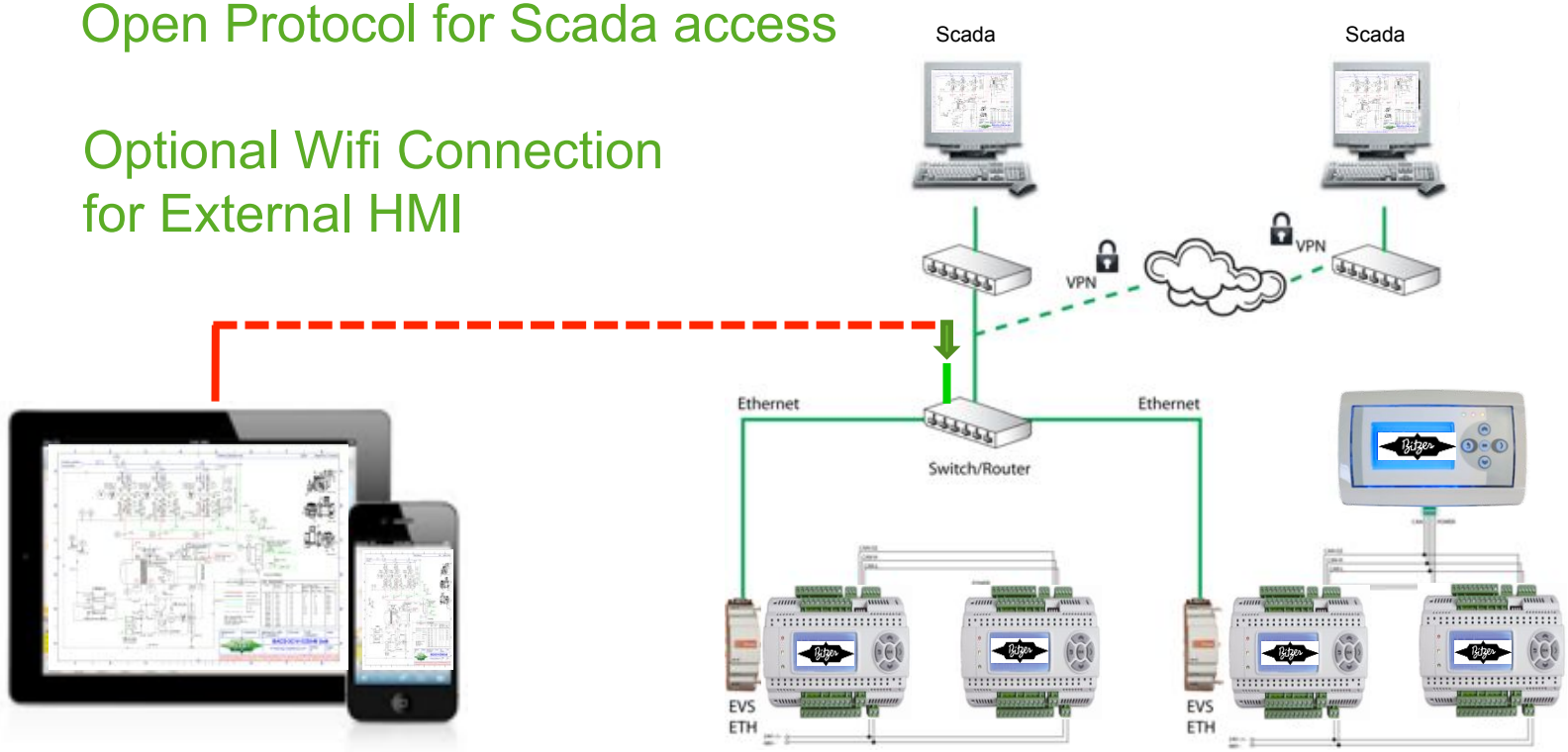
## Controller Communication Features

Open Protocol for Scada access

Optional Wifi Connection
for External HMI



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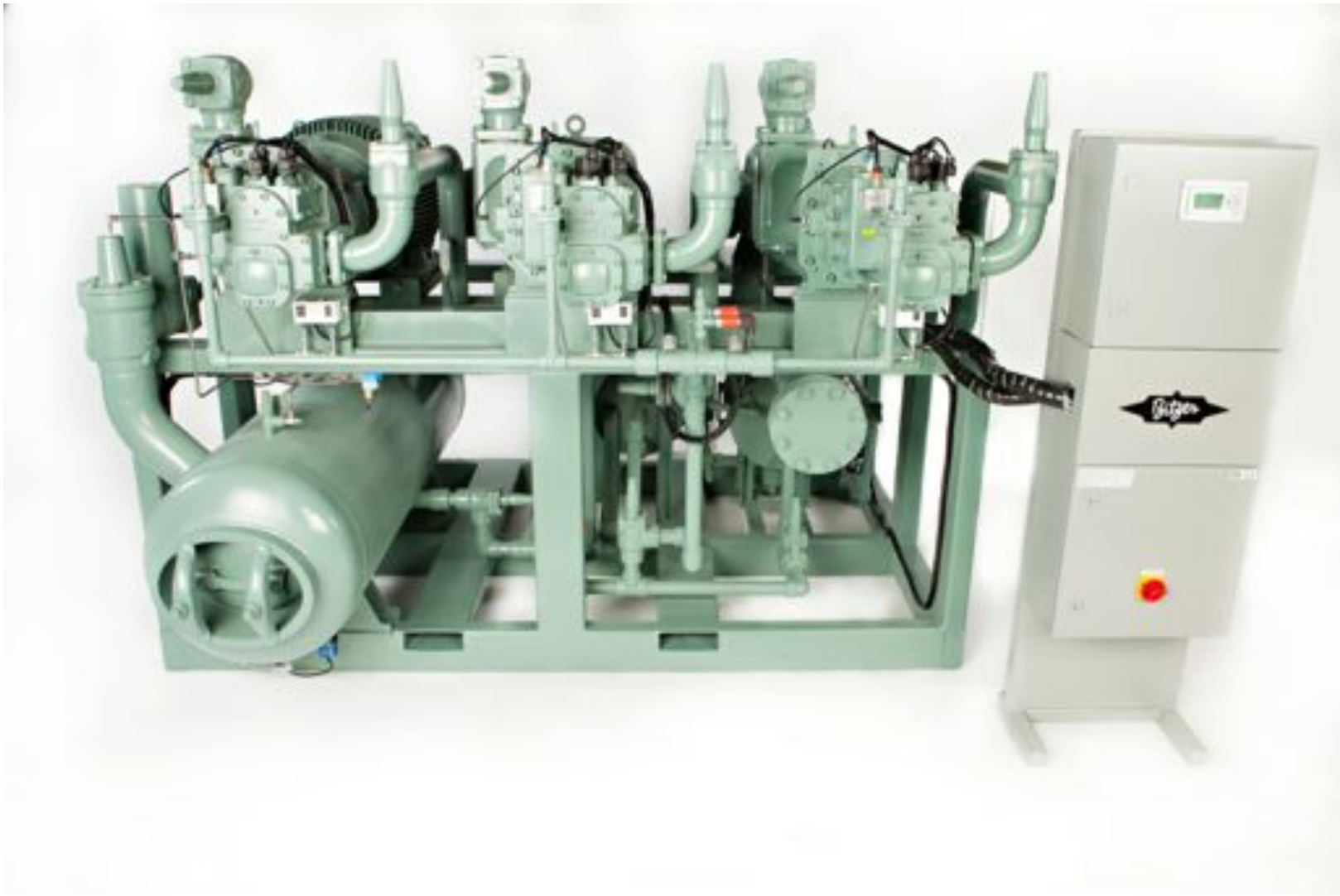
## BITZER Pack design



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## BITZER Pack design

# Designed for Industrial Refrigeration

## Prototype / test unit in operation

1550 kW @ 4°C / 30°C – 70/60/60Hz

Cooling capacity: 440 TR @ 40°F / 86°F (70/60/60Hz)
Refrigerant charge : 185 pounds (85kg)

In operation since December 2013

# Designed for Industrial Refrigeration

## BITZER training sessions and support

Seminars

Lab Training

Globally

On-Site Support


Web Support/Software

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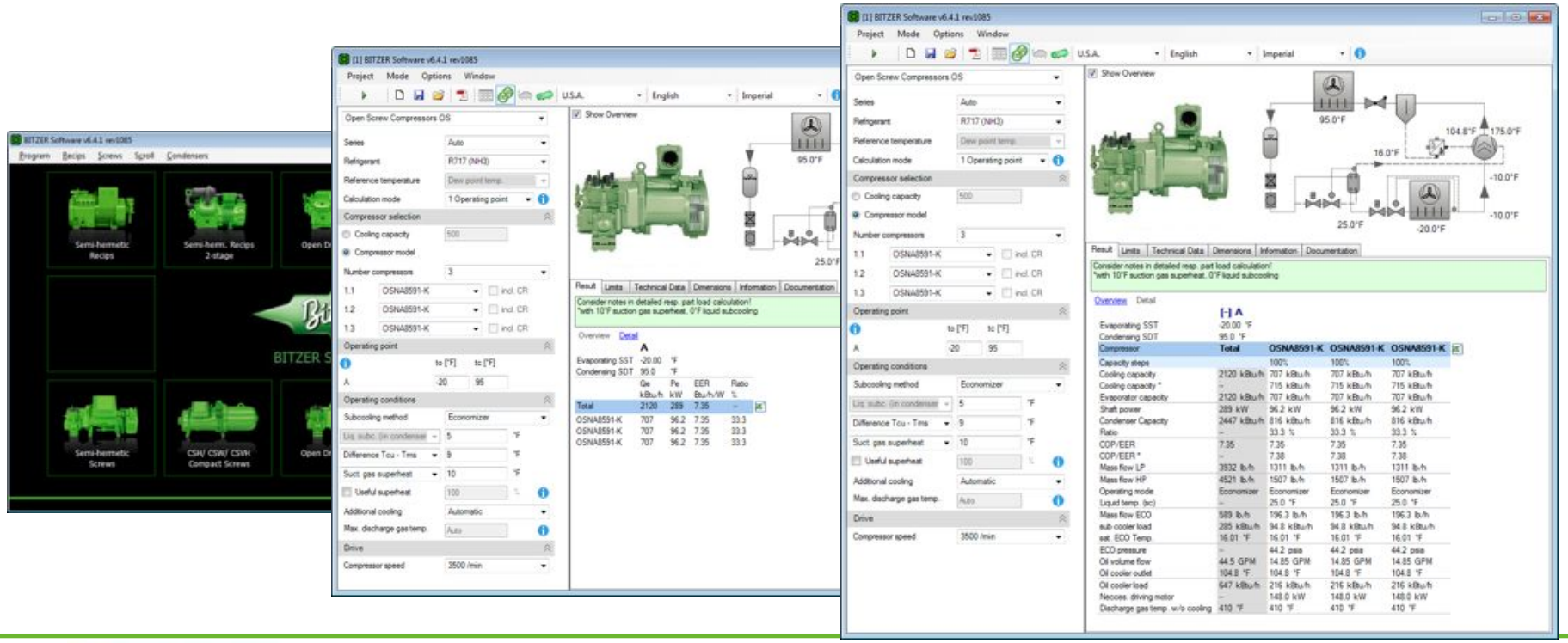
## BITZER Software - ongoing development

Optimized BITZER software for calculation of all ACP modules

Calculation of compressors and heat exchangers

Calculations of part load like ESEER / IPLV, etc.



Many thanks for your attention.


More at Booth 202