CHILLVENTA

CONNECTING EXPERTS.

How can you use digitalization in industrial refrigeration to reduce carbonization and the total cost of ownership?

Lars Pasgaard
Product Manager for controls
Industrial Refrigeration, Johnson Controls

Jorge de la Torre
Global Director of Digitalization
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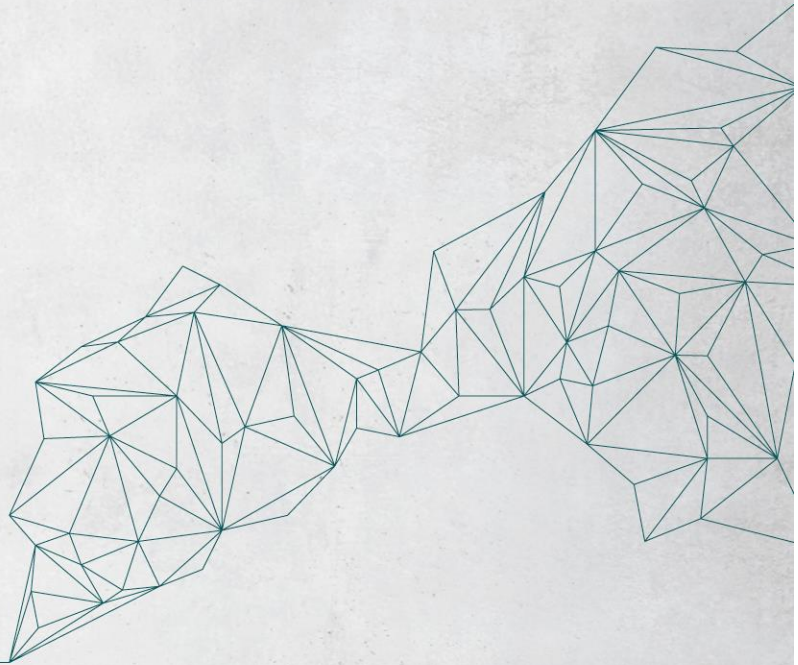

There’s a big and complex industrial world out there…


So how do you even know where to start?
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Johnson Controls


SABROE
We strongly believe that digitalization is the tool that can help Ops. teams know best their IR/H plants
Johnson Controls

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However,…

we live in a big analog world…

<u>The challenge</u> is how to find digital solutions that are:

- **Highly secured & robust**
- **Cost-effective**
- **Easily scalable**

SABROE

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Digitalization starts by

Having great controls at the edge!

The right technology partner!

But what does great controls at the edge mean?

Controls that:

- Secures the operation (up-time)
- Secures the yield accuracy
- Ensures the highest possible energy efficiency
- Ensures the longest possible service intervals
- Provides great UX for ops teams on the ground.
- That can be easily fitted into legacy units, protecting investments already made
- That is open to the future… not just supporting open communication protocols and allowing easy integrations, but also that can easily connect to forward-looking cloud-enabled technologies, such as OpenBlue.

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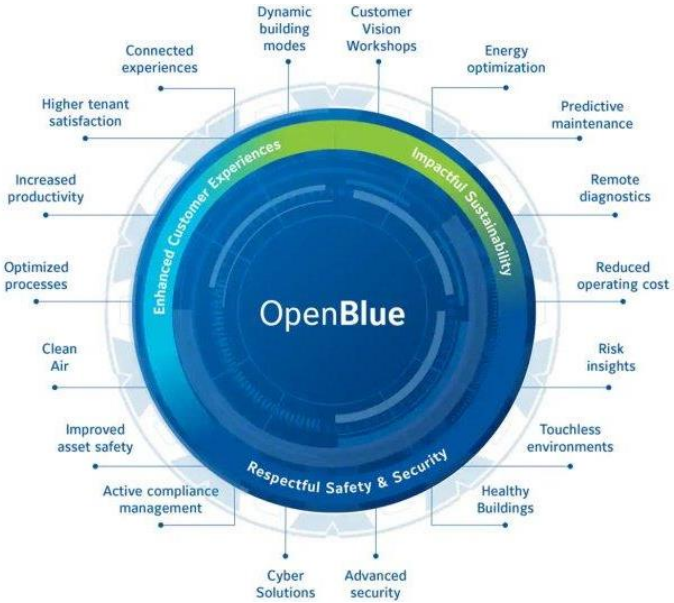
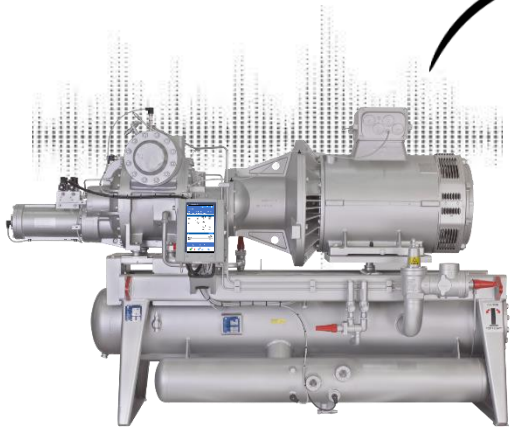
What makes a great technology partner?

A partner that:

- Is assertive and transparent all the time
- Has a track record implementing IoT solutions
- Has experience with the physical assets/equipment you are trying to connect
- Knows how to listen
- Whose technology stack is scalable, not custom-made, or requires complex & custom integrations each time.
- Technology that is meant to be user-friendly.



Case 1: Reducing the cost of ownership with condition-based service



OpenBlue

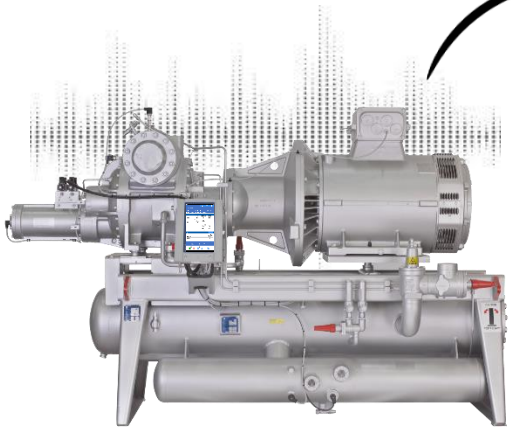
In the cloud / OpenBlue
- Big Data benchmarks
- Identifying patterns
- Accurate bearing lifetime predictions
- Report out

Minimizes cost of ownership
- Asset protection
- Maximum uptime
- Enables service planning combined with the longest possible service intervals

UniSAB 4

At the edge
- Vibration level monitoring
  - Early warning
  - Critical level shutdown
  - 1X rotational speed monitoring

Case 2: Tuning settings to minimize energy consumption and service cost



OpenBlue

In the cloud / OpenBlue
- Big Data benchmarks – prediction models
- Identifying patterns
- Analyzing system settings and virtual tests
- Integration with external services for local weather prediction & grid integration
- Report out proposals for settings updates

Minimizes cost of ownership
- Reduce energy consumption
- Reduce wear (start/stop/running hours)
- Maximises uptime

UniSAB 4

At the edge
- Tuning settings
  - Adapting control accuracy and speed of control to load profile
  - Adapting sequence/transfer/take-over to load profile

Stanford ENERGY SYSTEM INNOVATIONS

"The highest priority for the Stanford Central Energy Facility (CEF) is ensuring that the hospitals have sufficient chilled water for their operations."

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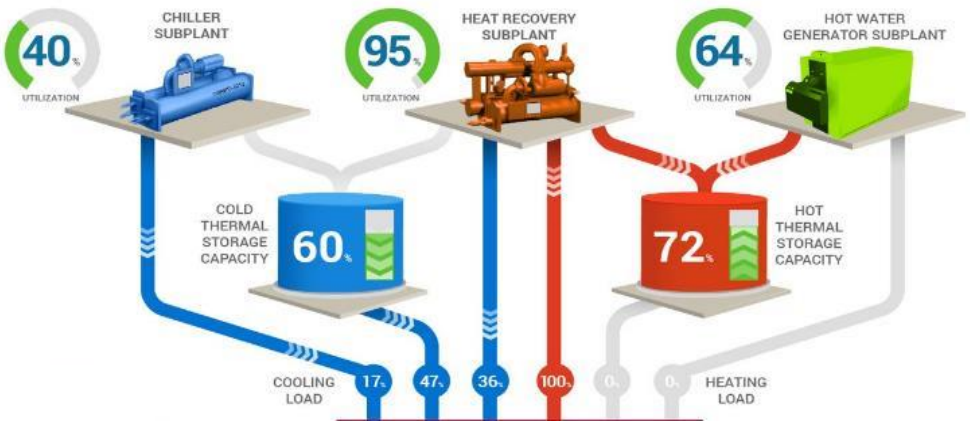

- Plant serves 360 buildings totaling 12 million square feet, including **Stanford University Medical Center**
- **Cooling load:** 75 million ton-hr/year, peak 25,000 tons
- **Heating load:** 2.2 million MMBtu/year, peak 300 MMBtu/hr
- 7,500 ton heat pumps + 12,000 tons centrifugal chillers + 490MWh thermal storage

Impactful Results

- 7.3MW (17%) reduction in peak demand
- **$500,000/year cost savings**
- 102% average efficiency over 2016-2017

Johnson Controls

Link to International District Energy Association Paper (IDEA)
https://sustainable.stanford.edu/sites/default/files/IDEA_Stagner_Stanford_fourth_Gen_DistrictEnergy.pdf

Wrap up

Let’s Talk! - Booth 329 Hall 7

Great controls at the edge combined with the right technology partner can:

- Significantly reduce the cost of ownership
- Secure the operation
- Significantly reduce the carbon footprint

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Chillventa Specialist Forums 2022
Chillventa Fachforen 2022

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