



# Commissioning and Retro-Commissioning for Food Retailers

April 27, 2023

# Today's Host



## Annie Kee

Environmental Protection Specialist  
U.S. Environmental Protection Agency (EPA)  
Stratospheric Protection Division  
Email: [kee.annie@epa.gov](mailto:kee.annie@epa.gov)

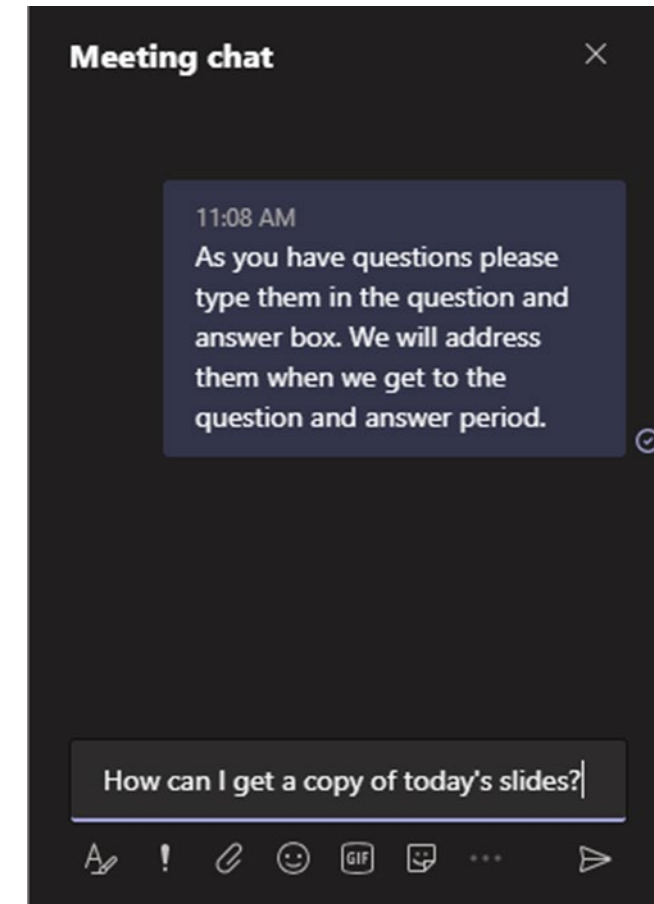


**Annie** is an Environmental Protection Specialist in the Stratospheric Protection Division (SPD) in EPA's Office of Air and Radiation, where she works on rulemakings under the American Innovation and Manufacturing (AIM) Act and partnership programs. Prior to SPD, she also worked on EPA's SmartWay program, which helps companies advance supply chain sustainability by improving freight transportation efficiency.



## Question and Answer (Q&A) Session

- Participants are muted
- Questions will be moderated at the end
- To ask a question, enter your comment into the chat box





## Feedback Form

- We value your input!
- The link to a feedback form will appear in the chat window

## Recording and Slides

- Webinar is being recorded
- Materials will be posted on the GreenChill website under Events and Webinars:  
[www.epa.gov/greenchill](http://www.epa.gov/greenchill)
- To receive notification when materials are posted email:  
[EPA-GreenChill@abtassoc.com](mailto:EPA-GreenChill@abtassoc.com)



# Program Overview



[www.epa.gov/greenchill](http://www.epa.gov/greenchill)

**GreenChill is a voluntary partnership program that works collaboratively with the food retail industry to reduce refrigerant emission and decrease stores' impact on the ozone layer and climate system**

GreenChill works to help food retailers:

- Lower refrigerant charge sizes and eliminate leaks
- Transition to environmentally friendlier refrigerants
- Adopt green refrigeration technologies and best environmental practices

# Become a GreenChill Partner!



**Join your  
Industry Peers!**

*GreenChill is  
Actively Recruiting  
New Food Retail  
Partners*



Request a  
partnership packet



Sign the partnership  
agreement



Meet eligibility  
requirements



Become a GreenChill  
partner!

**The GreenChill Partnership Process**

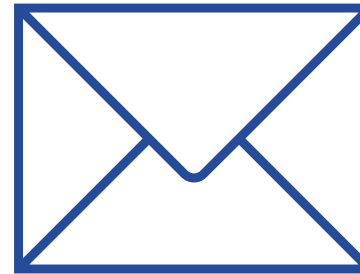
[epa.gov/greenchill/about-greenchill-corporate-emissions-reduction-program](https://epa.gov/greenchill/about-greenchill-corporate-emissions-reduction-program)

# Upcoming GreenChill Webinars



- We are planning GreenChill's 2023 webinar series. Email [GreenChill@epa.gov](mailto:GreenChill@epa.gov) if you have any ideas for a webinar or would like to present.
- To be added to our webinar invitation list, email [EPA-GreenChill@abtassoc.com](mailto:EPA-GreenChill@abtassoc.com)

# Learn More



[www.epa.gov/greenchill](http://www.epa.gov/greenchill)

[GreenChill@epa.gov](mailto:GreenChill@epa.gov)

 [@EPAair](https://twitter.com/EPAair)





**Today's Speaker...**

# Peter Dee



## Peter Dee

Sales & Services Director

Food Retail North America

Phone: 443 425 4740

Email: [deepeter@danfoss.com](mailto:deepeter@danfoss.com)



**Peter Dee** is the Sales & Service Director for Danfoss Food Retail - business segment North America, a \$400 million subsidiary and largest market for the global manufacturer of high-efficiency heating, air-conditioning, refrigeration, and motion systems. He has over 34 years of industry experience. Peter joined Danfoss in 2012 and is responsible for all Food Retail End-users, Original Equipment Manufacturers (OEM) and Large Service Contractors. Peter also sits on the Board of Directors for the North America Sustainable Refrigeration Council (NASRC), a nonprofit organization. NASRC is a powerful network of supermarket industry stakeholders working together to remove the barriers preventing the adoption of climate-friendly refrigerants, where Danfoss is one of the founding members.



# Commissioning and Retro-Commissioning for Food Retailers

# What is Commissioning?



Commissioning is a process – a systematic process of ensuring that a building performs per the design intent, contract documents, and the owner's operational needs. Commissioning is fundamental to the success of the whole-building design process.



**Commissioning is not a single process or task.**



**Commissioning will not correct design flaws but will identify them.**



**Commissioning can allow for improved efficiencies and reduced construction cost by identifying issues and improper equipment selection.**



**Commissioning has long term impacts and cost savings by ensuring not only did you get what you paid for, but also by ensuring everything is operating as designed and expected.**

# New Store Commissioning



## Project Kick Off:

Engineering-Construction plans and design

Statement of work (SOW), manage planned visits

What are the expected outcomes

Identify roles and responsibilities, who is responsible for what

Communication streams, how do you ensure a direct line for communication to efficiently adjust or address items



## Goals

By first ensuring that everything is installed per specification, you must then be sure that the engineering is operating per expectation. Especially with new technologies, did they perform as expected, did they operate as efficiently as designed and expected, etc.



## Expectations

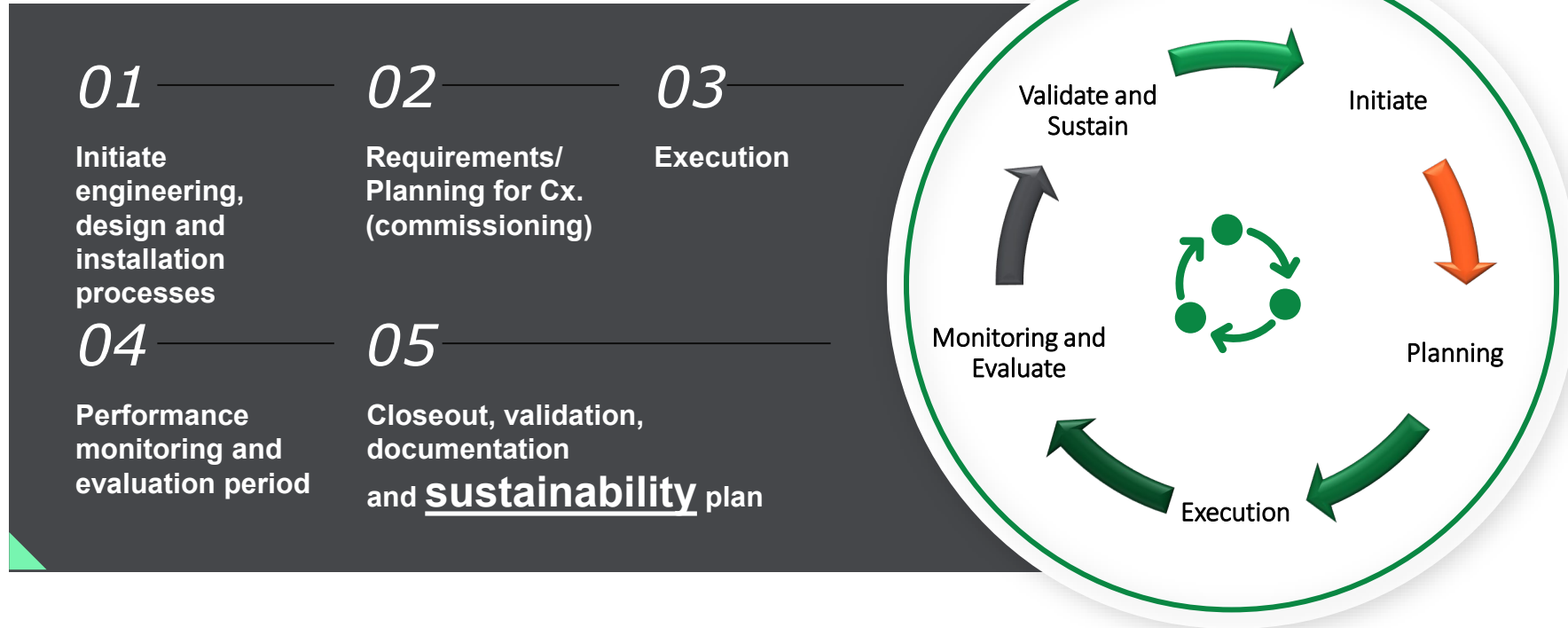
Involvement of Operations and Maintenance personnel in the entire process. Training on how the store is expected to operate, new technology reviews, observations and concerns from the Maintenance teams. Become an active listener to possible and/or consistent issues that can be avoided.



## Flexibility

Revising specifications due to these findings, differentiate between a site specific and/or a minor adjustment or a major engineering change that may be required.

# Steps to Approaching a Quality Commissioning on New Stores



01

Initiate engineering, design and installation processes

04

Performance monitoring and evaluation period

02

Requirements/ Planning for Cx. (commissioning)

05

Closeout, validation, documentation and sustainability plan

03

Execution





# What to Document and Who



## Commissioning Agency

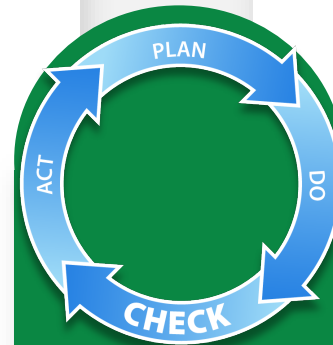
### ❖ Capture Lessons Learned Topics:

#### Project Manager

**Logs:** Project progress and stakeholder communication (set time frame and cadence), single point of contact

Utility Incentives Log: incentives process, goal and achievement progress (constantly monitored in order to adjust and meet goals, also to ensure **product integrity** above all else)

Vendor/Contractor Logs: Safety, Scope of Work, Quality Assurance



## Commissioning Agent/Project Owner

### ❖ Capture Learnings via Report:

Note mistakes being made to avoid repeating them on future commissionings\*

Note observations of events that are likely to happen again and therefore input to Best Practices (replicate problem solving to avoid pitfall)

Note observations that are deviations from assumptions or experiences

Note observations, learning, problem solving to be shared at the beginning of next project execution

\*\*\* Back Office Task

# Proper Documentation



Proper documentation is required to ensure a successful commissioning project.



## End User Project Requirements

Purpose and use of the building



## The Basis for the Building Design

How is the design expected to operate, parameters and expectations of the building envelope and all systems within it?



## The Commissioning Plan

What are the overall goals? How and what are you trying to achieve is the intended outcome based on the Commissioning Program.



## Functional Test Set

Is this design new or is it a proven design? Can anything be improved? Does a particular system or piece of equipment need to be reevaluated?



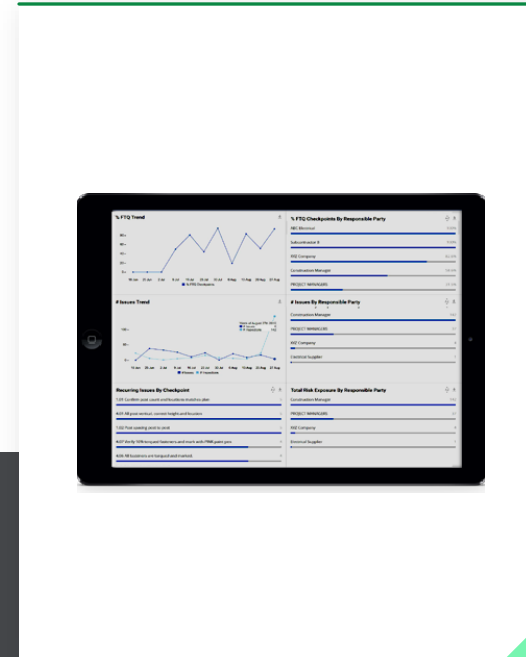
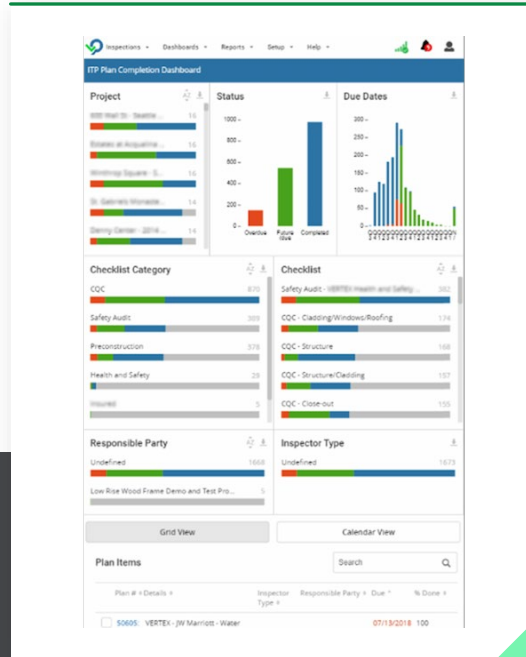
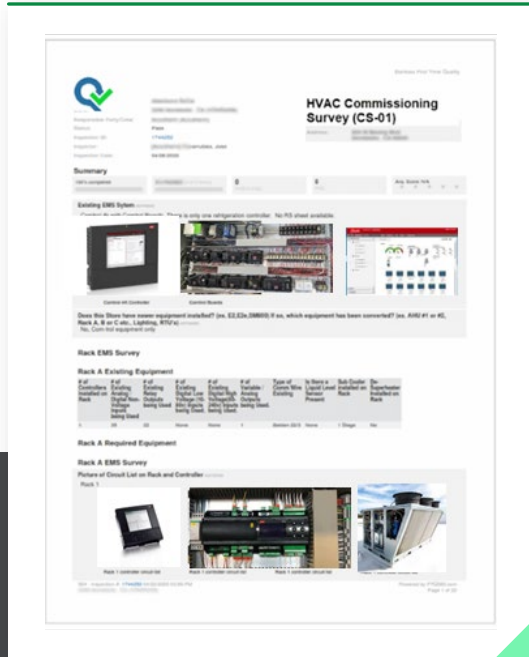
## Training and Documentation

Necessity for both Operations and Maintenance Teams



## The Final Commissioning Report

Lessons learned, valuable insight into areas needing review, equipment selections, design flaws and achievements, etc.



# ACCOUNTABILITY FOR COMPLIANCE

Project compliance demands definitive proof.

# Summary of Some of the Benefits



Maintenance reduction



Extended product shelf life



Tools – first time quality (FTQ), Project manager etc.

**Sustainability** - Build a valuable plan to sustain efficiency and savings



Construction cost reductions



Always remember success and level of achievement is dependent on location and current conditions.



Pictures “are worth a thousand words,” reporting, documenting etc.





# Re-Commissioning

# Industry Terms



01

## Retro-Commissioning

**Commissioning** is the process of planning, documenting, scheduling, testing, adjusting, verifying, and training to provide a new facility that operates as per the owner's project requirements (OPR).

**Retro-Commissioning is the application of the commissioning process to existing operating facilities not previously commissioned.**

02

## Re-Commissioning

Re-Commissioning is the process of commissioning a site or system that has previously been commissioned based on the **current**, owner's requirements.

03

## Continuous Commissioning

Program developed during or after any of the three processes to ensure benefits gained are maintained.



# Retro-Commissioning Planning



01 —————

**Define goals**

**A**

**Energy savings**

---

**B**

**Maintenance cost reduction**

---

**C**

**Adjustments due to change in OPR**

# Retro-Commissioning Planning



02

Sites to  
Focus on

01

Compare kilowatt hours (kwh), maintenance costs, shrink numbers to industry averages to identify sites and formulate high level anticipated reduction potential

02

Match and compare similar sites

A | Square footage B | Geographic area C | Store format

# Retro-Commissioning Planning



03. —————

**Define plan for benchmarking**

**A**

**Same standard before and after**

---

**B**

**Sub-metering**

---

**C**

**Bill data**

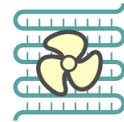
# Retro-Commissioning Planning



04.

Systems to focus on

- |    |   |    |               |    |                  |
|----|---|----|---------------|----|------------------|
| 01 | Heating, ventilation, and air conditioning (HVAC) | 02 | Refrigeration | 03 | Lighting         |
| 04 | Gas   | 05 | Water         | 06 | All of the above |



# Retro-Commissioning – Stakeholders



## Preparing the project

01

Identify  
your  
customers

02

Operations

03

Maintenance

04

Contractors

05

Learn to  
speak their  
language

## 03.

### Create an environment of collaboration not finger pointing



01

You will find maintenance deficiencies

02

You will find operational deficiencies

03

Secure funds and have a plan to aid in the resolution of issues

04

Get people excited about the opportunities resulting from the project

05

Make it clear that the get out of jail free card has an expiration date



# Retro-Commissioning



## The benefits



**Energy savings**



**Maintenance savings**



**Product quality**



**Cost avoidance**



# Retro-Commissioning



Present supporting data in language your customer understands

## Savings



Seven shoppers added per hour in equivalent sales



Energy to power six households for one year



Four cars per hour off the road



# Retro-Commissioning



01.

Language of Pictures



# Retro-Commissioning Project Kick Off



## 01 • Communication, communication, communication

01

Who, what, where,  
when

02

Make sure  
pre-work is  
completed

03

Re-emphasize goals  
and expectations

04

Go through scope  
and documentation  
procedure

05

If software tools are  
used, ensure  
everyone knows  
how to use them

06

Outline procedures to  
address any issue  
that may arise

# Retro-Commissioning Project Wrap Up



## 01. Communication, communication, communication

01

Communicate results

02

Create common space for documentation

03

Set verification process for unresolved issues

04

Communicate sustainability plan (Continuous Commissioning)

05

Be able to clearly explain successes

# Continuous Commissioning/ Sustainability



## ❖ Training

- › This should start in the beginning
- › Clear communication about reasons, benefits, goals, expectations
- › Equipment-specific if needed

## ❖ Accountability

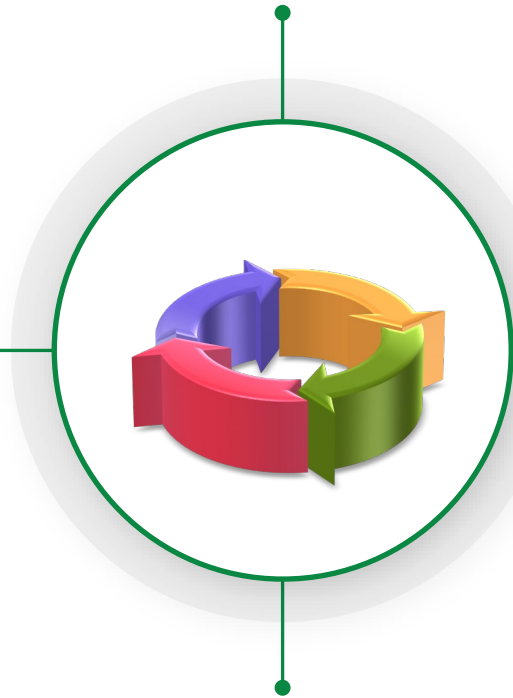
- › Should start with assistance
- › Benchmarking
- › Make success part of evaluations
- › Recognition or rewards for success
- › Penalties for noncompliance

## ❖ Automation

- › Receive reports of significant changes in programming
- › React to significant changes quickly

## ❖ Automation

- › Automate the verification process
- › Install monitoring peripherals on critical equipment
- › Alarm on deviations







Thank you!



## Speaker

- Peter Dee, Danfoss  
[deepeter@danfoss.com](mailto:deepeter@danfoss.com)

## GreenChill

- Annie Kee, U.S. EPA  
[kee.annie@epa.gov](mailto:kee.annie@epa.gov)

### Webinar Materials Posted!

The slides from the April 12<sup>th</sup> GreenChill webinar have been posted the Events and Webinars page:

[www.epa.gov/greenchill/events-and-webinars](http://www.epa.gov/greenchill/events-and-webinars)

Join our webinar invitation list or request today's slides: [EPA-GreenChill@abtassoc.com](mailto:EPA-GreenChill@abtassoc.com)  
Access past webinar slides and recordings: [www.epa.gov/greenchill/events-and-webinars](http://www.epa.gov/greenchill/events-and-webinars)