Attention:
Trevor Foster
Director of Operations
Save On Foods Memorial Arena

Prepared by:
Karl Barnett
Account Manager
Karl.barnett@trane.com
778-227-8826

Report Summary
During a service call, the Trane technician determined the dehumidifiers are inoperable due to their desiccant wheels reaching their end of life. Continuing to run the dehumidifiers in their fault condition may cause harm to the surrounding equipment, workers and spectators. Running the air conditioning system without the dehumidifiers will strain air conditioning equipment, reduce air conditioning capabilities and damage moisture sensitive equipment – leading to dissatisfied occupants, poor ice conditions, revenue loss, increased repair costs and premature equipment failure. Trane recommends replacing the desiccant wheels in both dehumidifiers.
System Summary – How your system functions

Four (4) air handler units (AHU-401 to 404) and two (2) dehumidifiers (DH-1 and 2) condition the rink and spectator area. DH-1 & 2 pull moist air from the arena, remove moisture using a rotating desiccant wheel and supply dry air. AHU-401 to 404 temper the air using return air from the arena, outdoor air, indirect gas fired heat and DX cooling. Together the dehumidifiers and air handlers condition the air – removing moisture and adjusting the temperature. Figure 1.0 shows the rink and spectator arena system. AHU-401 to 404 and DH-1/2 supply air to a main duct loop which distributes conditioned air.

Running the system without dehumidifiers will strain the compressors for AHU-401 to 404 and may cause premature compressor failure. AHU-401 to 404 have the capability to remove some moisture from the arena air. However, this will cause strain on the compressor due to the additional work to remove moisture. Furthermore, the air handlers do not have the capability to remove enough moisture to satisfy the arena.

Dehumidifier Current State

Currently the dehumidifiers lock out on pilot flame failure. The desiccant wheels are inhibiting flow and causing this failure. The Trane technician attempted to clean the wheels using manufacturer recommended techniques. Unfortunately, the desiccant wheels are too brittle – disintegrating during the process. Due to their age and condition, the desiccant wheels require replacement. Please refer to the attached Field Inspection Reports for more information.
Continuing to run the dehumidifier in its current state is a fire hazard. Resetting the dehumidifier in low airflow conditions will increase heating section temperatures. Eventually the dehumidifiers will operate outside its safe conditions and become a fire hazard. This could harm the surrounding equipment, workers and spectators.

**Business Impact**
High humidity levels cause occupant discomfort, poor indoor air quality, poor ice quality, corrosion, equipment failure, and mold issues. This will increase operating costs and may result in revenue loss.

People add moisture to the air. Spectators enjoying a hockey game, concert or event will increase the humidity levels. Without proper dehumidification the humidity levels may cause fogging on the ice or dripping from the ceiling. Mold and mildew may begin to form—affecting air quality. Pipes and equipment will begin to corrode and require maintenance. Electronics, sensitive to humidity levels, may begin to fail.

**Recommendation**
Replacing the desiccant media extends the dehumidifier life, prevents equipment failure, and provides occupants with a comfortable setting—leading to revenue increases and reducing energy costs. It is recommended to replace the dehumidifiers silica gel desiccant rotor to increase revenue and reduce operating costs.
FIELD REPORT

Location Name: Save On Foods Memorial Arena
Service Call: 19-8228498
Date: 10-01-2019
Scope Description: TM BOTH DEHUMIDIFIERS ARE IN ALARM
Scope Complete?: No
Sales Follow-up Required?: No
Reason:

WORK PERFORMED
Mod#/Ser#/Mfg/Tag#
VFB-150-G, TBD1, UNKNOWN, DH-1

Technician: Daniel Holland
Quality Task Code: Date: 10-01-2019
Sample Taken: No

Work Activity:

Work Performed Details:
Found both units locked out on pilot flame failure. Connected gas pressure gauge to pilot line and display for safety. Started burner and noticed very little flame signal. Removed filter and repeated. Flame fired no problem. Pressure was -1.6 with no call....-0.9 with call for only pilot and -0.8 with main flame. Noticed the magnehelic gauges all pinned. Suspect the heat exchange may be causing extra resistance. Also want to look into the material being used for the filters. Pics attached. Both units again operating. Will recheck once back on site. Annually should be done on both units.

Tasks Performed:

PARTS MATERIALS

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BAS ONLY: Was a backup copy made for the customer? Yes
REFRIGERANT ACTIVITY: Did Refrigerant Activity occur? No

SURCHARGES

Date:

EXPENSES

Date:

LABOR

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Customer Name: Cody
Customer PO: Cody
Signature Available: No

Technician Name: Holland, Daniel
Reason: Customer Not Available

Link to your Trane service information

Services described were performed as a part of the terms of this document.
FIELD REPORT

Location Name: Save On Foods Memorial Arena
Service Call: 19-8228498
Date: 10-21-2019

Technician Name: Holland, Daniel
Account Manager: Karl Barnett

Contact/Phone: -
Call Type: T&M

Scope Description: TM BOTH DEHUMIDIFIERS ARE IN ALARM
Scope Complete? No
Sales Follow-up Required? No
Reason:

WORK PERFORMED
Mod#/Ser#/Mfg/Tag#
VFB-150-G, TBD1, UNKNOWN, DH-1

Technician: Daniel Holland
Quality Task Code: Date: 10-21-2019
Sample Taken: No

Work Activity:

Work Performed Details:
Shut down and locked out unit. Disassembled access panels. Inspected heat wheel and tried to blow down with compressed air as recommended by the manufacture. Found the cartridge to be too brittle to properly clean. Static pressure drop across wheel is > 2 inches on the process side and > 3 inches on the react side. Advised to replace the wheel with new. Left message with the manufacture to inquire if there was another remedy for the wheel. Checked belts, bearings and sheaves. Greased bearings were required. Removed filters on the react air side and replaced with regular media. Found MERV 10 installed and not allowing proper air/gas mixture on the burner causing the unit to trip on pilot failure. Advised to replace media with the same kind next inspection. Checked DDC system and reset alarms caused by service. Uploaded the site and graphics to laptop. Will continue inspection weather permitting on DH-2.

Tasks Performed:

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Customer Name: Codie
Customer PO: Cody
Signature Available: No

Technician Name: Holland, Daniel
Reason: Customer Not Available

Link to your Trane service information

Services described were performed as a part of the terms of this document.
FIELD REPORT

Location Name
Save On Foods Memorial Arena
1925 BLANSHARD
VICTORIA, BC V8T 4J2

Service Call
19-8228498

Technician Name
Holland, Daniel

Date
10-25-2019

Date
10-25-2019

Account Manager
Karl Barnett

Call Type: T&M

Scope Description
TM BOTH DEHUMIDIFIERS ARE IN ALARM

Scope Complete? Yes

Sales Follow-up Required? No

Reason:

WORK PERFORMED

Mod#/Ser#/Mfg/Tag#
VFB-150-G, TBD1, UNKNOWN, DH-1

Technician: Daniel Holland

Quality Task Code: Date: 10-25-2019

Sample Taken: No

Work Activity:

Work Performed Details:
Found both Dehumidifiers tripped out on pilot flame failure. Not able to reset unless one filter was removed from the react air supply. Performed annual on units and went through electrical contacts, greased bearing and checked sheaves, belts and bearings. Contacted manufacture tech support and they concur on the diagnosis of heat wheel failure. Advised to replace heat wheel and seals on both units or replace both units with new. If unit continues to trip, I would advise to lock out the gas and leave unit off until repair or replacement is done.

Tasks Performed:

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Customer Name: Codie

Customer PO: Cody

Signature Available No

Technician Name: Holland, Daniel

Reason: Customer Not Available

Link to your Trane service information

Services described were performed as a part of the terms of this document.
1. Agreement. These terms and conditions are an integral part of Company's offer to sell and form the basis of any agreement (the "Agreement") resulting from Company's proposal (the "Proposal") for the services (the "Services") on equipment listed in the Proposal (the "Covered Equipment"). COMPANY'S TERMS AND CONDITIONS ARE SUBJECT TO PERIODIC CHANGE OR AMENDMENT.

2. Acceptance. The Proposal is subject to acceptance in writing by the party to whom this offer is made or an authorized agent ("Customer") delivered to Company within 30 days from the date of the Proposal. If Customer accepts the Proposal by placing an order, without the addition of any other terms and conditions of sale or any other modification, Customer's order shall be deemed acceptance of the Proposal subject to Company's terms and conditions. If Customer's order is expressly conditioned upon the Company's acceptance or assent to terms or conditions other than those set forth in the Proposal, or is accompanied by such terms or conditions, or if such order is given by means other than purchase order, Company reserves the right to cancel the order or refer the order or referenced service to Company's notice of objection to Customer's terms or conditions and to Company's counter-offer to provide Services in accordance with the Proposal. If Customer does not reject or object in writing to Company within 10 days, the Company's counter-offer will be deemed accepted. Customer's acceptance of the Services by Company will in any event constitute an acceptance by Company of Customer's terms and conditions. In the case of a dispute, the applicable terms and conditions shall be those set forth in the Proposal. This Agreement is subject to rejection by Company at any time prior to Company's approval and authorization of the credit. Company may delay or suspend performance or, at its option, renegotiate prices and/or terms and conditions with Customer. If Company and Customer are unable to agree on such revisions, this Agreement shall be cancelled without any liability, other than Customer's obligation to pay for Services rendered by Company to the date of cancellation.

3. Cancellation by Customer Prior to Services; Refund. If Customer cancels this Agreement within (a) thirty (30) days of the date this Agreement was signed by Customer or (b) twenty (20) days prior to the delivery date, and it was delivered to Company by Customer under this Agreement, the Agreement will be void and Company will refund to Customer, or credit Customer's account, the full Service Fee of this Agreement that Customer paid to Company, if any. A ten percent (10%) penalty per month will be added to a refund that is due but is not paid or credited within forty-five (45) days after return of this Agreement to Company. Customer's right to cancel this Agreement only applies to the Services and Equipment included in this Agreement. If the Services and Equipment have been provided by Company under this Agreement, the Agreement will be void and Company will refund to Customer, or credit Customer's account, the full Service Fee of this Agreement that Customer paid to Company, if any. If any Service or Equipment is not delivered to Customer by Company or is delivered to Customer outside of the stated period of delivery, then the delivery date will be extended by the number of days that the delivery was delayed. Company's obligation under the Limited Warranty is limited to replacing or repairing the defective parts at its expense and to correcting any improperly performed labor/ or repair. No liability whatsoever shall attach to Company until the Services have been paid for in full. Exclusions from this Limited Warranty include claims, losses, damages, and expenses in any way connected with, related to, or arising from failure or malfunction of equipment due to the following: wear and tear; consumer misuse; and corrosion, sanitization, detergents; Customer's failure to follow the equipment-provided maintenance plan; unauthorized or improper maintenance; unauthorized or improper parts or material; refrigerant not supplied by Company; and modifications made by others to Company's equipment. Company shall not be obligated to pay for the cost of lost refrigerant or lost product. Some components of Company equipment may be warranted directly from the component supplier, in which case this Limited Warranty shall not apply to those components and any warranty of such components shall be the warranty given by the component supplier. Notwithstanding the foregoing, all warranties provided herein terminate upon termination or cancellation of this Agreement.

6. Payment. Payment is due upon receipt of Company's invoice. Company reserves the right to add to any account outstanding for more than 30 days a service charge equal to the lesser of the maximum allowable legal interest rate or 1.5% of the principal amount due at the end of each month. Customer shall pay all costs (including attorneys' fees) incurred by Company in attempting to collect amounts due or otherwise enforcing these terms and conditions.

7. Customer Branch. Each of the following events will constitute a breach by Customer and shall give Company the right, without an election of remedies, to terminate this Agreement or suspend performance by delivery of written notice: (1) Any failure by Customer to pay amounts when due; (2) any general assignment by Customer for the benefit of its creditors, or if Customer becomes bankrupt or insolvent or takes the benefit of any statute for bankrupt or insolvent debtors, or makes or proposes to make any proposal or arrangement with creditors, or if any of the following events: the winding up or other liquidation of Customer or the assignment for the benefit of creditors, or the appointment of a receiver, sequestrator, or similar person to take control of or manage Customer or the property of Customer; (3) Any representation or warranty furnished by Customer in connection with this Agreement is false or misleading in any material respect when made; or (4) Any failure by Customer to perform or comply with any material provision of this Agreement. Company shall be liable to Company for all Services furnished to date and all damages sustained by Company (including lost profit and overhead).

8. Force Majeure. Company shall perform the Services in accordance with industry standards generally applicable in the state or province where the Services are performed under similar circumstances as of the time Company performs the Services. Company is not liable for any claims, losses, damages, or expenses, arising from or related to work done by or services provided by individuals or entities that are not employed by Company. Company may refuse to perform any Services or work where working conditions could endanger property or put at risk the safety of our employees. Parties bound by this Proposal will be those selected by Company for the repair and may be part manufactured by Company. Customer must immediately inform Company of any Service failures or repairs performed by Trane at Customer's request beyond the scope of Services or otherwise excluded under this Agreement. The reimbursement shall be at the then prevailing prevailing, overtime, or holiday rates for labor/hour and prices for materials. Prior to Trane performing the additional services, repairs, and/or replacements, Customer may request a separate written quote stating the work to be performed and the price to be paid by the Company for the work.

9. Customer Obligations. Customer shall: (a) provide Company reasonable and safe access to the Covered Equipment and areas where Company is to work; and (b) unless otherwise agreed by Company and Customer, at Customer's expense and before the Services begin, Customer will provide any necessary access platforms, catwalks to safely perform the Services in compliance with OSHA, state, or provincial industrial safety regulations or any other applicable industrial safety standards or guidelines.

10. Exclusions. Unless expressly included in the Proposal, the Services do not include, and Company shall not be responsible for or liable to the Customer for, any claims, losses, damages or expenses suffered by the Customer in any way connected with, related to or arising from any of the following: (a) Any guarantee of room conditions or system performance; (b) Inspection, operation, maintenance, repair, replacement or performance of work or services outside the covered equipment; (c) The replacement of parts made necessary as a result of the acts or omissions or any Event of Force Majeure; (d) Any claims, damages, losses, or expenses, arising from or related to conditions that existed in, on, or upon the premises before the effective date of this Agreement ("Pre-Existing Conditions") including, without limitation, damages, losses, or expenses involving in a Pre-Existing Condition of building envelope issues, mechanical issues, plumbing issues, and/or indoor air quality issues including mold/mould, bacteria, microbial growth, fungal or other contaminants or airborne biological agents; and (e) Any exclusion is unless otherwise prohibited by law or order. Refrigerant not supplied by or provided with the Proposal.

11. Limited Warranty. Company warrants that: (a) the material manufactured by Company and provided to the Customer in performance of the Services is free from defects in material and manufacture for a period of 12 months from the earlier of the date of equipment start-up or replacement and (b) the labor/portion of the Services is warranted to have been properly performed for a period of 90 days from date of completion of the limited warranty. Company obligations of equipment start-up, if any are stated in the Proposal, are coextensive with the Limited Warranty period. Defects must be reported to Company within the Limited Warranty period. Company's obligation under the Limited Warranty is limited to replacing or repairing the defective parts at its option and to correcting any improperly performed labor/ or repair. No liability whatsoever shall attach to Company until the Services have been paid for in full. Exclusions from Limited Warranty include claims, losses, damages, and expenses in any way connected with, related to, or arising from failure or malfunction of equipment due to the following: wear and tear; consumer misuse; and corrosion, sanitization, detergents; Customer's failure to follow the equipment-provided maintenance plan; unauthorized or improper maintenance; unauthorized or improper parts or material; refrigerant not supplied by Company; and modifications made by others to Company's equipment. Company shall not be obligated to pay for the cost of lost refrigerant or lost product. Some components of Company equipment may be warranted directly from the component supplier, in which case this Limited Warranty shall not apply to those components and any warranty of such components shall be the warranty given by the component supplier. Notwithstanding the foregoing, all warranties provided herein terminate upon termination or cancellation of this Agreement.

12. Indemnity. To the maximum extent permitted by law, Company and Customer shall indemnify and hold harmless each other from any and all claims, actions, costs, expenses, damages and liabilities, including reasonable attorneys' fees, resulting from death or bodily injury or damage to real or personal property, to the extent caused by the negligence or misconduct of the indemnifying party, and/or its representatives, contractors, agents, employees or authorized agents in connection with the Services within the scope of this Agreement. Neither party shall indemnify the other against any claims, damages, expenses, or liabilities to the extent attributable to the acts or omissions of the other party or third parties. If the parties are both at fault, the obligation to indemnify shall be proportional to their respective fault. The duty to indemnify and hold harmless will continue in full force and effect, notwithstanding the expiration or early termination of this Agreement, with respect to any claims based on facts or conditions that occurred prior to expiration or termination of this Agreement.

13. Limitation of Liability. NOTWITHSTANDING ANYTHING TO THE CONTRARY, NEITHER PARTY SHALL BE LIABLE FOR SPECIAL, INCIDENTAL, INDIRECT, OR