

# Novothermic

HEAT RECOVERY FROM DISHWASHER DRAIN WATER  
- INNOVATION TOWARD SMARTER ENERGY & WATER USE -



2015 HOT WATER FORUM

NASHVILLE, TENNESSE

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## WHO ARE WE?

### NOVOTHERMIC TECHNOLOGIES IS:

- A CANADIAN CLEAN-TECH COMPANY DEDICATED TO THE **ENERGY RECOVERY INDUSTRY.**
- MANUFACTURES AND MARKETS WORLDWIDE A **REVOLUTIONARY HEAT EXCHANGER SYSTEM.**
- FIRST COMMERCIAL APPLICATION : **DISHWASHER DRAIN HEAT RECOVERY FOR LARGE COMMERCIAL KITCHENS**

## THE NEED

### LARGE COMMERCIAL KITCHEN HAVE ECONOMIC & SUSTAINABILITY ISSUES:

#### 1) ENERGY INTENSIVE HOT WATER USE

HOT WATER PRODUCTION FOR DISHWASHER'S OPERATIONS ARE A SIGNIFICANT PART OF TOTAL UTILITY SPENDING.

#### 2) WASTED FRESH WATER

FRESH WATER IS USED TO TEMPER DISHWASHER'S HOT DRAINED WATER (WHERE REGULATIONS APPLY)

#### 3) DRAIN CLOGGING & GREASE TRAP MALFUNCTION

TOO MANY FOOD RESIDUE PASS THROUGH TO THE GREASE TRAP – CAUSING GREASE TRAP MALFUNCTIONS

## THE SOLUTION

NOVOTHERMIC SOLUTION'S :  
HEAT RECOVERY OF DRAIN WATER WITH :

1) ALL ENCLOSED HEAT EXCHANGER SYSTEM

2) PRODUCING FREE HOT WATER - AS A HOT  
WATER HEATER

3) WORKING SEAMLESSLY IN PARTNERSHIP  
WITH THE EXISTING HOT WATER SYSTEM



## THE SOLUTION

THINK OF THE SYSTEM IN TERMS OF THE CAR INDUSTRY  
COMPARISON:

A NORMAL DISHWASHER COMPARES TO A CONVENTIONAL  
COMBUSTION ENGINE DRIVEN CAR – WITH LOTS OF HEAT  
WASTE

OUR SYSTEM TRANSFORMS THE EXISTING DISHWASHER IN  
A "HYBRID CAR" COMPARISON – HARVESTING WASTED  
ENERGY LIKE A THERMAL BATTERY TO ENHANCE ITS HOT  
WATER USE PERFORMANCE

## THE SOLUTION

- 1) RECOVERS THE HEAT FROM WASTED HIGH-TEMPERATURE DRAINED WATER OF A DISHWASHER.
- 2) USES IT TO HEAT UP THE COLD FRESH WATER OF THIS DISHWASHER'S INLET – ACTS LIKE A **GREEN HOT WATER HEATER**
- 3) COOLS DRAIN WATER & REDUCE TEMPERING WATER
- 4) PROTECTS RESIDUE FROM ENTERING THE SEWER DRAIN NETWORK

# WHAT IS IT?

**Novo**thermic 



# WHAT IS IT?





# A LOOK OUTSIDE...

Automatic cleaning system  
In / Out

Inlet #1 - Cold water

Inlet #2 - Hot water

Outlet #1 - Hot water

Electrical connexion 120 V

Vent connexion: 1 ¼" slip

Drain outlet . 1 ½ "

Drain inlet 1 ½ "  
(optional entries on each side)



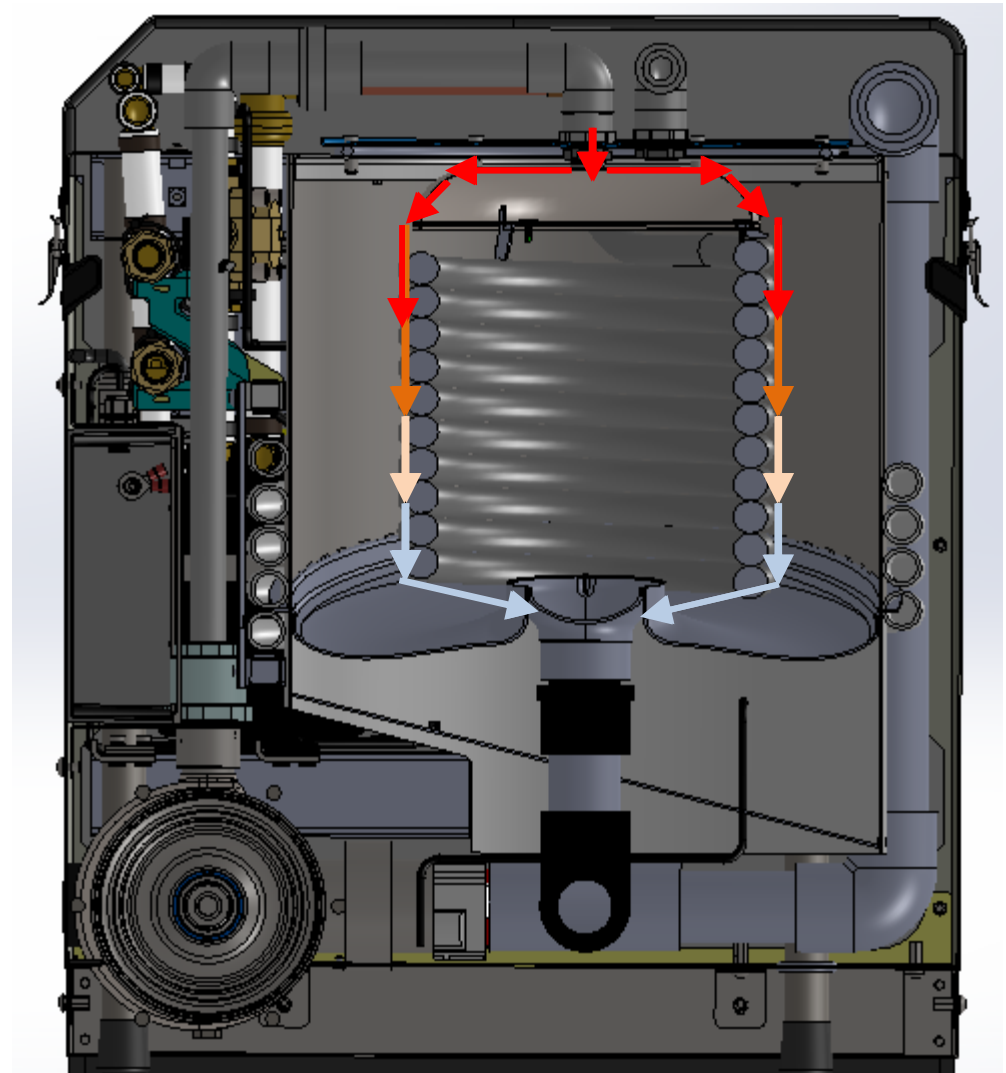
## A LOOK INSIDE...

### KEY FEATURES:

PATENTED FALLING FILM HEAT EXCHANGER – NON CLOGGING EXTERNAL FLOW BY DESIGN

ALL INCLUDED PUMPS, SOLENOID VALVES & ELECTRONIC CONTROLS FOR FAST PLUG AND PLAY DESIGN – NO FIELD MODIFICATION REQUIRED.

CAN PRODUCE HOT WATER TO COLD & HOT WATER FED DISHWASHERS

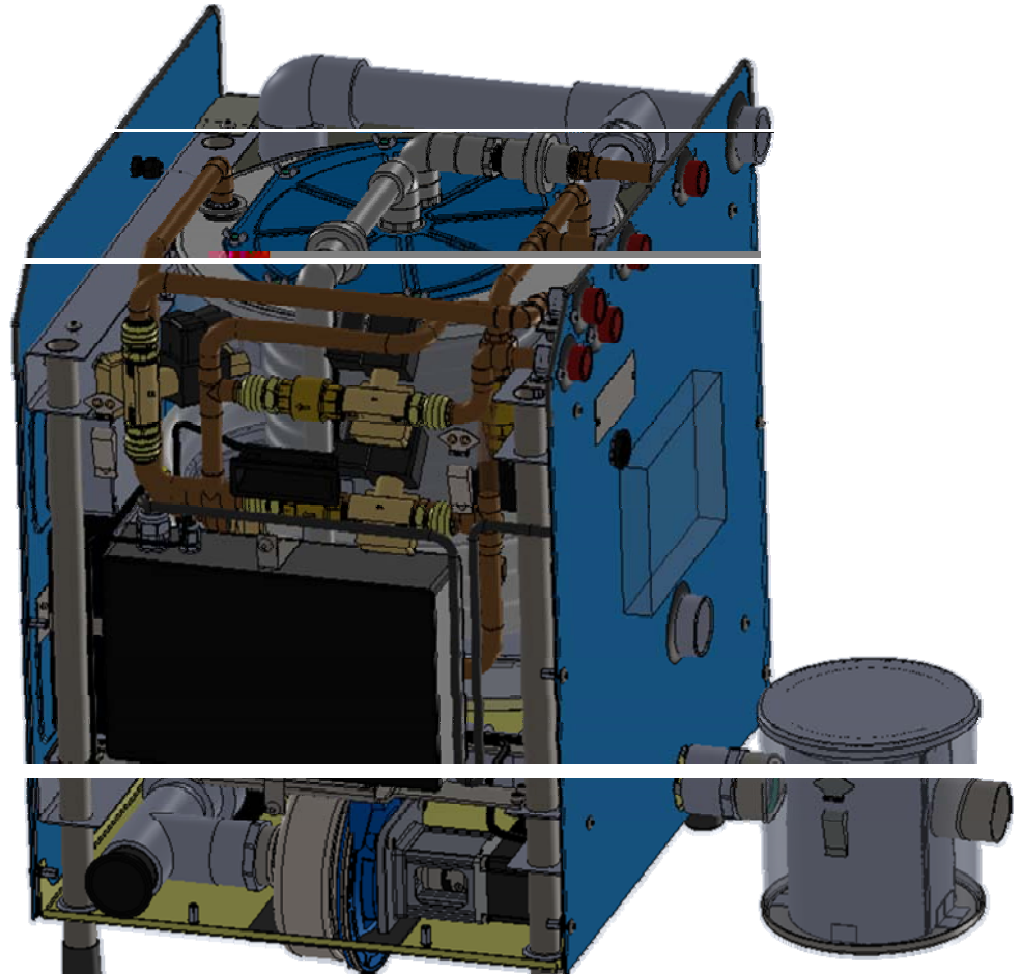


# A LOOK INSIDE...

## KEY FEATURES (CONTINUED):

SELF-CLEANING SYSTEM PURGES  
LUKEWARM WATER BETWEEN  
IDLE TIME AND CLEANS THE  
HEAT EXCHANGER COIL

EXTERNAL BASKET STRAINER  
STOPS FOOD RESIDUE FROM  
ENTERING THE SYSTEM AND  
THE DRAIN PIPING & GREASE  
TRAPS





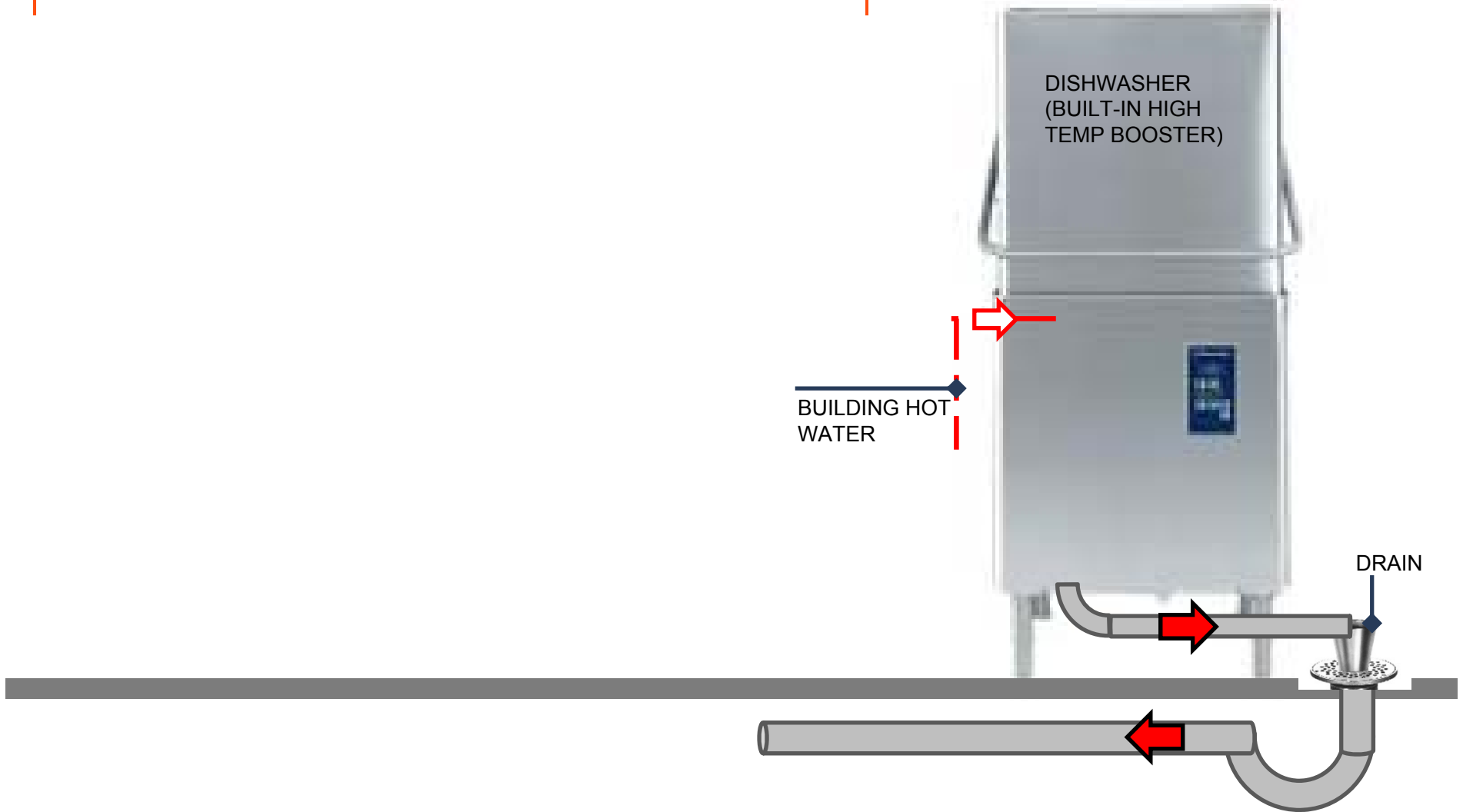
# INSTALLATIONS



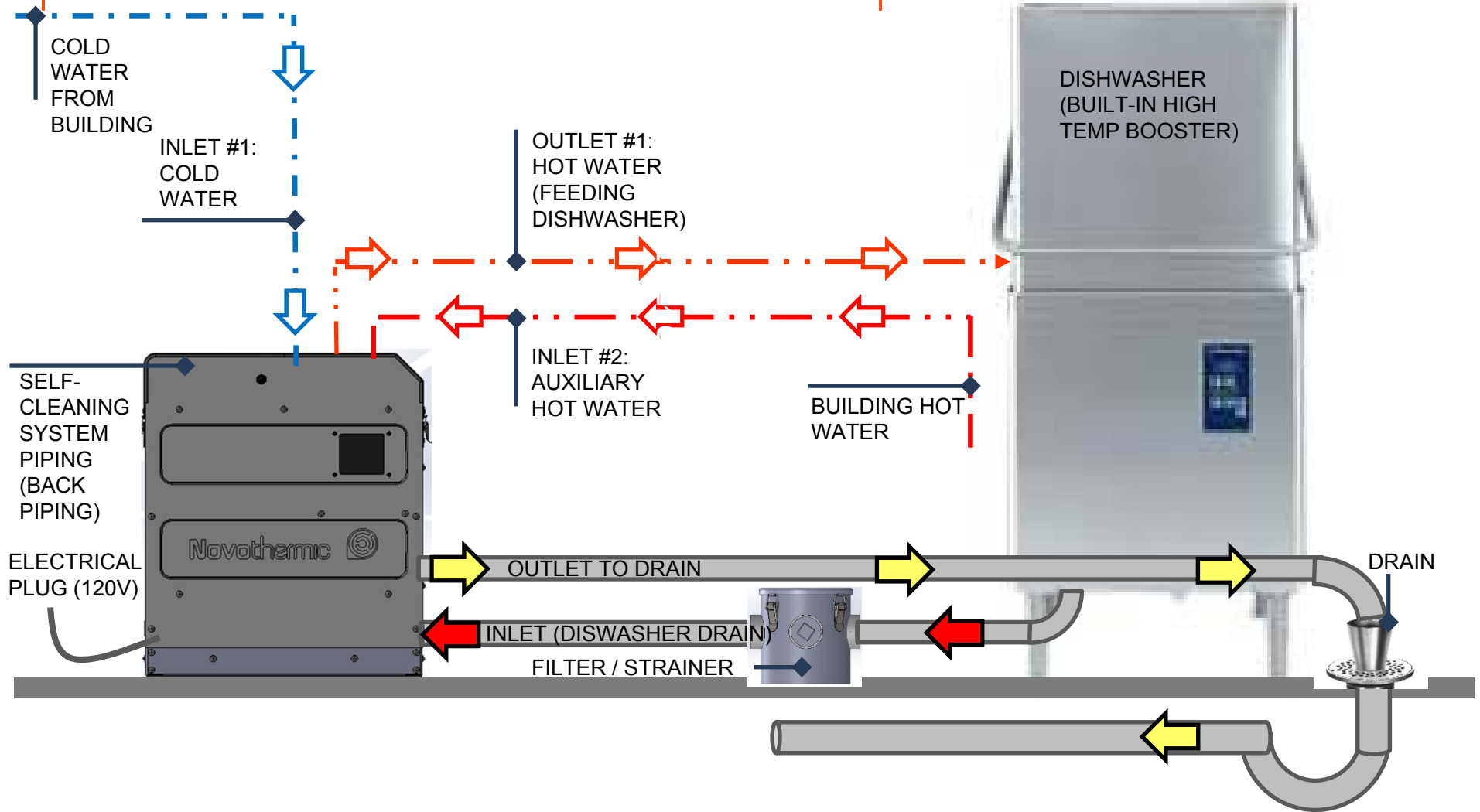
# INSTALLATIONS



# INSTALLATIONS SCHEMATIC



# INSTALLATIONS SCHEMATIC



## INSTALLATION VARIA

- 1) AVERAGE INSTALLATION TIME IS ABOUT 6 HOURS X 2 PLUMBERS + 4 HOURS ELECTRICIAN (IF REQUIRED)
- 2) TYPICAL INSTALLATION DOES NOT GO BACK TO THE WATER HEATER – SAVES \$\$\$ INSTALLATION COSTS...
- 3) ...BUT IF PREFERRED, CAN BE CONNECTED TO THE HOT WATER HEATER AS A COLD WATER PREHEATING LOOP
- 4) CAN BE USED TO PREHEAT COLD WATER FOR VENTLESS DISHWASHERS
- 5) CAN SUIT FROM HOOD TO FLIGHT DISHWASHER



## SAVINGS EXAMPLES

### APPLICATION EXAMPLE #1:

HOTEL APPLICATION IN BOSTON – NATURAL GAS

4 000 meals/week

8 hours run-time Conveyor dishwasher

Natural gas price: 10,40\$/ MMBTU

RESULT: 695 \$ HOT WATER SAVINGS

760 THERMS SAVED

PAYBACK: 5 YEARS (ALL INCLUDED COSTS)

IF ELECTRIC @ 11 \$/MWh: 1 606\$ , PAYBACK : 2,5 YEARS

## SAVINGS EXAMPLES

### APPLICATION EXAMPLE #2:

#### BUSY RESTAURANT – FLORIDA ELECTRICITY

3 000 meals/week

6 hours run-time Hood dishwasher

Electricity price: 11 \$/ MWh

RESULT: 1 180 \$ HOT WATER SAVINGS

11 000 kWh SAVED

PAYBACK: 3,5 YEARS (ALL INCLUDED COSTS)

## SAVINGS EXAMPLES

### APPLICATION EXAMPLE #3:

LARGE CAFETERIA EXAMPLE – SAN DIEGO –  
NATURAL GAS

4 500 meals/week

6 hours run-time Conveyor dishwasher

Natural gas price: 8,1 \$/Therm

Temp in drain: 160 F, regulated 140 F

Average cost of water + drain = 8,23 \$ / HCF

RESULT:        650 \$ HOT WATER SAVINGS  
                  355 \$ WATER/SEWER SAVINGS FROM  
                                 TEMPERING (30 000 gallons/year)

1 005\$ TOTAL SAVINGS

PAYBACK:    4 YEARS (ALL INCLUDED COSTS)

## TO RESUME

- 1) RETROFIT ANY KIND OR BRAND OF DISHWASHER
- 2) REDUCES HOT WATER USE FROM HOT WATER HEATER
- 3) REDUCE DISHWASHER DRAIN TEMPERATURE
- 4) SAVE ON CLOGGING AND DRAIN MAINTENANCE
- 5) SELF-CLEANING AND LOW MAINTENANCE
- 6) EASY PLUG & PLAY INSTALLATION

NRA KI AWARD - 2014

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THANKS FOR YOUR  
ATTENTION!



WE WELCOME YOUR INTEREST  
COMMENTS / QUESTIONS ?