Now In Production

MAY 2012

Gaithersburg High School, Gaithersburg, MD
Seventeen (17) custom new energy recovery, water source heat pump (WSHP) systems with digital scroll compressors, R-410a refrigerant and walk-in service vestibules.
Representative: Envirocon Associates 8314 Harford Road, Baltimore, MD 21234
Bill Marano; P: 410-663-5900 ; F : 410-663-8025 ; ww.enviroconassociates.com

The entire base frames and roof structures are fully welded and sprayed with polyurethane foam insulation. Base frame is painted with epoxy primer.

Some of the features provided include two stage energy recovery systems utilizing flat heat pipes and aluminum air-to-air plate heat exchangers and direct drive air foil plenum supply air and exhaust air blowers with VFDS.

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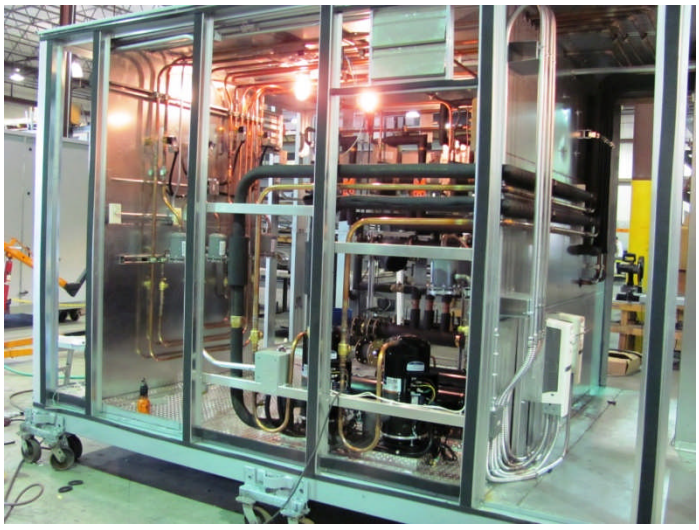
Each refrigerant circuit is piped independently and has a dedicated hot gas reheat coil for humidity control.



Each circuit has Copeland scroll compressors with a digital lead and water cooled condensers located in a walk-in service vestibule with aluminum tread plate floors and electric heaters.

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Service lights in all accessible sections, perforated liners in blower sections, and doors that open against pressure with internal door handles are additional features provided.

The exterior panels are Kynar painted galvanized steel, insulated with 2” foam polyurethane. The doors are mounted in welded extruded aluminum frames. The units are tested and shipped to the jobsite.

ENGINEERING SPECIFICATIONS

JOB NAME	GAITHERSBURG HS
LOCATION	GAITHERSBURG, MD
DATE PREPARED	Revised: 01/24/12
SEASONS-4 REFERENCE #	B109-02
UNIT MODEL #	3ESK35-0864-XXXXX-14RH
UNIT DESIGNATION	ERU-6
SYSTEM VOLTAGE	460/3/60

DESIGN DATA

TOTAL COOLING CAPACITY (BTUH)	1,037,353
SENSIBLE CAPACITY (BTUH)	337,230
LATENT CAPACITY (BTUH)	700,123
TOTAL AIRFLOW (CFM)	13,740
OUTDOOR AIR (CFM)	13,740
RETURN AIR (CFM)	13,615
OUTDOOR AIR TEMP (FDB/FWB):	83/78
UNIT LEAVING AIR TEMP (FDB/FWB/GRAINS) COOLING MODE	76.6/62.2/60.3
UNIT LEAVING AIR TEMP (DEG F) HEATING MODE	73.6
ESTIMATED REFRIGERANT CHARGE (LBS. R410A)	519

COMPRESSOR SECTION

COMPRESSOR:

TYPE	COPELAND SCROLL
NUMBER	4
STAGES OF CAPACITY	MODULATING

WATER PLATE HEAT EXCHANGER SECTION (EVAPORATOR IN HEATING MODE)

TYPE HX/QTY	BRAZED PLATE TYPE / 4
TOTAL HEAT REJECTED (BTUH)	1,226,613
TYPE FLUID	WATER
ENTERING FLUID TEMP (F)	86.0
DESIGN FLUID TD (F)	10.0
MAX FLUID PRESSURE DROP (FT)	10.0
FLUID FLOW RATE-TOTAL (GPM)	255.0

INDOOR COIL SECTION (EVAPORATOR IN COOLING MODE)

FACE AREA (SQ-FT)	30.0
ROWS/FPI	8/10
COIL CIRCUITS (NUMBER)	4
TOTAL CAPACITY (BTUH)	1,037,353
SENSIBLE CAPACITY (BTUH)	337,230
ENTERING AIR TEMP (FDB/FWB)	75.4/75.4
COIL LEAVING AIR TEMP (FDB/FWB)	53.2/53.2
CONDITIONED AIR (CFM)	13,740

ENGINEERING SPECIFICATIONS

HOT GAS REHEAT COIL SECTION (COOLING MODE ONLY)

FACE AREA (SQ-FT)	27.0
ROWS/FPI	1/12
COIL CIRCUITS (NUMBER)	4
REHEAT CAPACITY (BTUH)	222,566
ENTERING AIR TEMP (FDB/FWB)	61.7/56.6
LEAVING AIR TEMP (FDB/FWB)	76.6/62.2
CONDITIONED AIR (CFM)	13,740

SUPPLY AIR BLOWER SECTION

TYPE	AF SWSI PLENUM (90% WHEEL WIDTH)
NUMBER/SIZE	1/27"
AIRFLOW (CFM)	13,740
TOTAL STATIC PRESSURE (TSP) IN WC	5.08
EXTERNAL STATIC (ESP) IN WC	0.80
DESIGN FAN SPEED (RPM)	1,736
FAN BHP	14.7
MOTOR HP	20.0
MOTOR DRIVE	DIRECT DRIVE W/ VFD

EXHAUST AIR BLOWER SECTION

TYPE	AF SWSI PLENUM (85% WHEEL WIDTH)
NUMBER/SIZE	3/19.5"
AIRFLOW (CFM)	13,614
TOTAL STATIC PRESSURE (TSP) IN WC	2.46
EXTERNAL STATIC (ESP) IN WC	0.55
DESIGN FAN SPEED (RPM)	1,770
FAN BHP	3 @ 2.6
MOTOR HP	3 @ 3
MOTOR DRIVE	DIRECT DRIVE W/ VFD

OA FILTER SECTION

TYPE	2" PLEATED; MERV 8
NUMBER/SIZE	12/16x25
TOTAL FACE AREA (SQ-FT)	33.3
FACE VELOCITY (FPM)	412

EA FILTER SECTION

TYPE	2" PLEATED; MERV 8
NUMBER/SIZE	8/16x25
TOTAL FACE AREA (SQ-FT)	22.2
FACE VELOCITY (FPM)	613

WATER PLATE HEAT EXCHANGER SECTION (EVAPORATOR IN HEATING MODE)

TYPE HX/QTY	BRAZED PLATE TYPE / 2
TYPE FLUID	WATER
ENTERING FLUID TEMP (F)	53
DESIGN FLUID TD (F)	7.1
MAX FLUID PRESSURE DROP (FT)	10 (HX ONLY)
FLUID FLOW RATE - TOTAL (GPM)	127.3

ENGINEERING SPECIFICATIONS

INDOOR COIL SECTION (CONDENSER IN HEATING MODE)

FACE AREA (SQ-FT)	15.0
ROWS/FPI	8/10
COIL CIRCUITS (NUMBER)	2
TOTAL HEATING CAPACITY (BTUH)	482,553
COIL ENTERING AIR TEMP (DEG F)	43.3
COIL LEAVING AIR TEMP (DEG F)	107.8
CONDITIONED AIR (CFM)	6870
BYPASS AIR (CFM)	6870
MIXED LEAVING AIR TEMP (DEG F)	73.6

ENERGY RECOVERY PLATE HEAT EXCHANGER--SUMMER

FACE AREA (SQ-FT) SUPPLY AND EXHAUST SIDE	25.1
MODEL	NV-085/R-274.3
OUTSIDE AIR FLOW (CFM)	13,740
RETURN AIR FLOW (CFM)	13,615
ENTERING/LEAVING OA TEMP (DEG F/DEG F)	83/78.3
ENTERING/LEAVING RA TEMP (DEG F/DEG F)	75/79.9
HEAT EXCHANGED (BTUH)	69,830
AIR PRESSURE DROP OA/RA (IN-WC)	0.94/0.91

ENERGY RECOVERY PLATE HEAT EXCHANGER--WINTER

FACE AREA (SQ-FT) SUPPLY AND EXHAUST SIDE	25.1
MODEL	NV-085/R-274.3
OUTSIDE AIR FLOW (CFM)	13,740
RETURN AIR FLOW (CFM)	13,615
ENTERING/LEAVING OA TEMP (DEG F/DEG F)	0/43.3
ENTERING/LEAVING RA TEMP (DEG F/DEG F)	70/32.2
HEAT EXCHANGED (BTUH)	639,360
AIR PRESSURE DROP OA/RA (IN-WC)	0.82/0.92

SLAB HEAT PIPE--SUMMER

FACE AREA (SQ-FT) SUPPLY AND RETURN SIDE	24.8
ROWS/FINS	3/11
CONDITIONED AIR (CFM) BOTH SIDES	13,740
ENTERING AIR TEMP (FDB/FWB) FIRST PASS	80.6/77.5
LEAVING AIR TEMP (FDB/FWB) FIRST PASS	75.4/75.4
ENTERING AIR TEMP (FDB/FWB) LAST PASS	53.3/53.2
LEAVING AIR TEMP (FDB/FWB) LAST PASS	61.7/56.6
AIR PRESSURE DROP (IN-WC) FIRST/LAST	0.36/0.47
NOTE: DURING WINTER MODE, THE HEATPIPE IS BYPASSED.	

UNIT WEIGHT (LBS)	24,850
CURB WEIGHT (LBS)	1,650

ENGINEERING SPECIFICATIONS
ELECTRICAL DATA

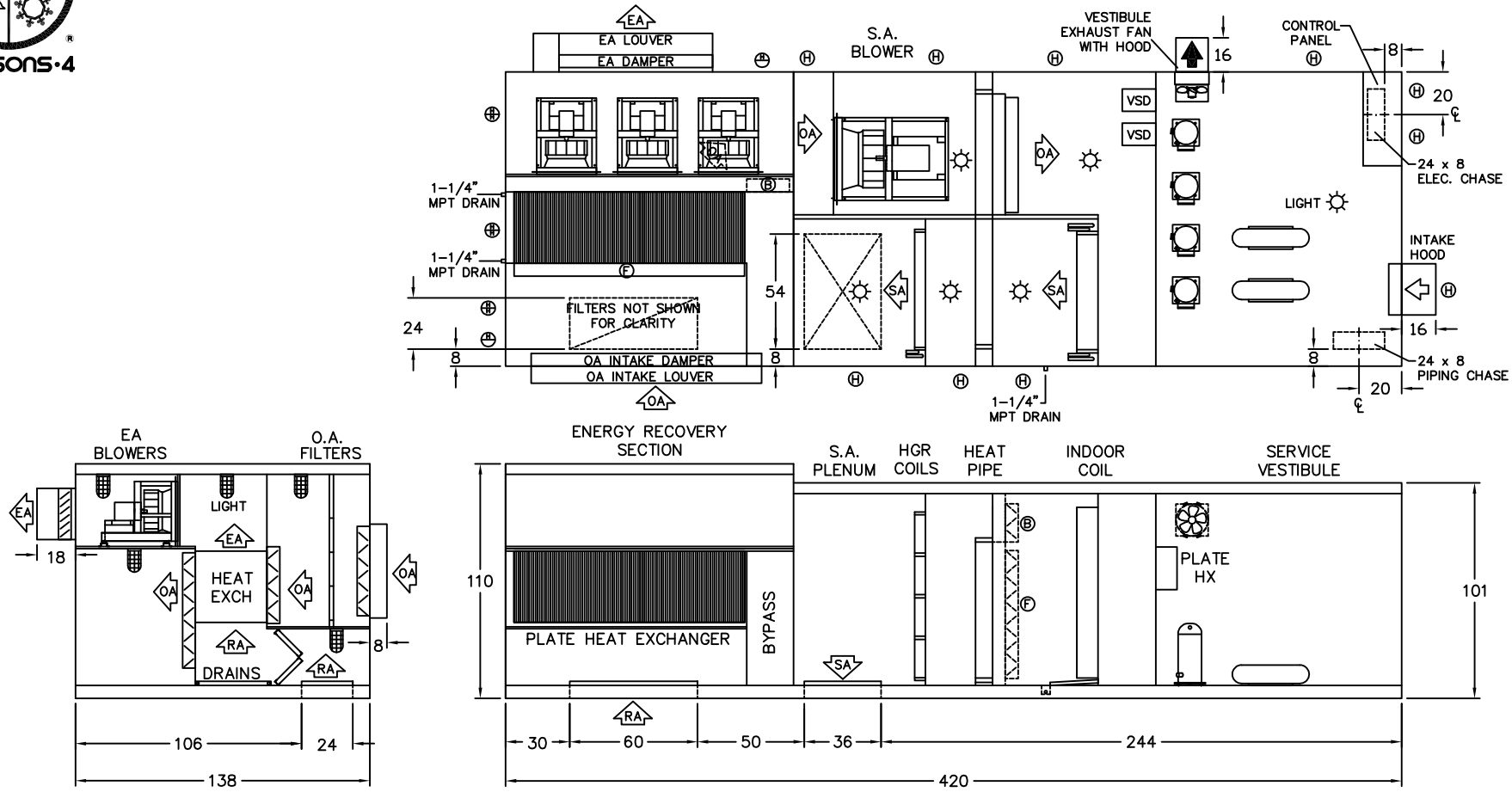
JOB NAME	GAITHERSBURG HS
LOCATION	GAITHERSBURG, MD
DATE PREPARED	Revised: 01/24/12
SEASONS-4 REF NUMBER	B109-02 **UNIT MODEL** 3ESK35-0864-XXXXX-14RH
UNIT DESIGNATION	ERU-6
SYSTEM VOLTAGE	460 **CONTROL VOLTAGE** 120 **EXT. VOLTAGE** 24

ITEM	QTY	HP	FLA	LRA	KW	TYPE
COMP 1	1	***	26.9	173	13.16	ZPD182KCE
COMP 2, 3 & 4	3	***	30.4	225	16.16	ZP235KCE
SA FAN	1	20.0	23.5	160.8	11.8	Bald
EXH FAN	3	3.0	4.0	32.0	2.2	Bald
CONTROL CIRCUIT			3.3			
TOTALS (COOL)	8	***	156.9		79.9	
TOTALS (HEAT)	4	29.0	38.8		18.2	

M.C.A.	164	(MINIMUM CIRCUIT AMPACITY)
M.O.P.	175	(MAXIMUM OVERLOAD PROTECTION)
S.C.C.R.	65,000	(SHORT CIRCUIT CURRENT RATING)

NOTE 1: A 3 KW HEATER WILL BE PROVIDED IN THE WATER PLATE HEAT EXCHANGER SECTION.
NOTE 2: THE WATER H/X HEATER WILL BE POWERED BY A SEPARATE BUILDING CIRCUIT (460/3/60).
NOTE 3: A 1 KW VESTIBULE HEATER WILL BE POWERED BY A SEPARATE BLDG CIRCUIT (120/1/60).
NOTE 4: ALL LIGHTS WILL BE POWERED BY THE SAME CIRCUIT AS THE VESTIBULE HEATER.

SEASONS·4



LEGEND	
Ⓗ	HINGED ACCESS DOOR
Ⓛ	LIFT-OFF ACCESS DOOR
Ⓕ	FACE DAMPER
Ⓑ	BYPASS DAMPER

NOTE: O.A./E.A. LOUVERS, FURNACE VENT CAPS, ETC. MAY REQUIRE FIELD INSTALLATION

REV. #	BY	DATE	DESCRIPTION
0	TDM	1/3/2012	ORIGINAL ISSUE (WAS B016D02TM)
1	TDM	2/3/12	REMOVED INDOOR COIL LIFT-OFF DOOR. ADDED OA DAMPER ACCESS DOOR.
2	TDM	2/14/12	REMOVED RECIRCULATION DAMPER.

DIMENSIONAL DATA

GAITHERSBURG H.S.
GAITHERSBURG, MD
ERU-6

DRAWN BY	TDM
DATE	1/3/2012
SCALE	N/A
REVISION #	2
DWG. NAME	B109D02TM