WI -100% F.A.P.U.

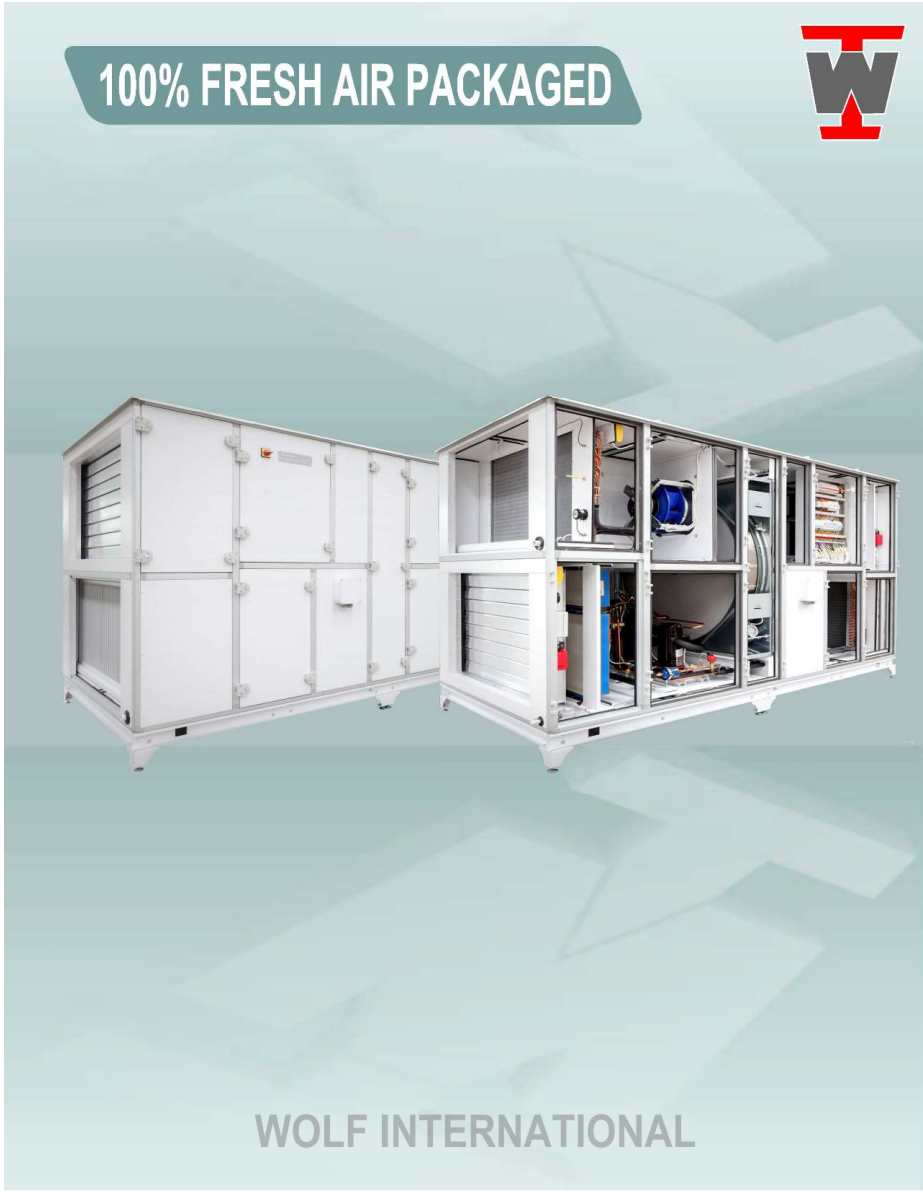
DAMVENT SERIES

50% POWER SAVING APPLICATION FOR

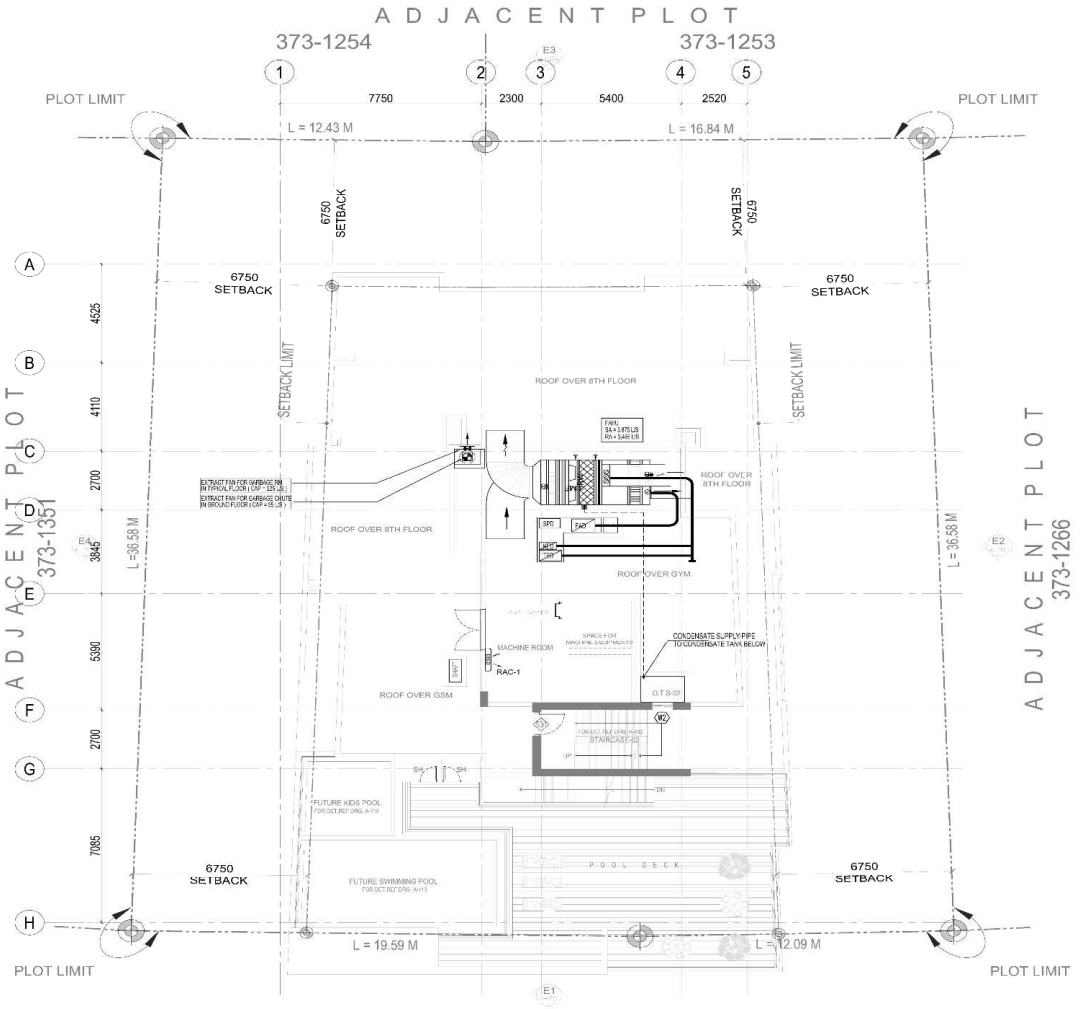
- MOSQUES
- OFFICES
- SCHOOLS
- SPORTS
- LARGE HALLS
- GYMNASIUMS
- THEATERS
- SMOKE LAUNGES

COMPARISON WITH STANDARD FRESH AIR AC

ADVANTAGES OF WI-100% FAPU

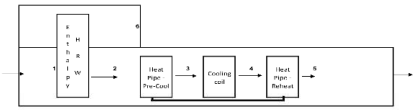


HOW 100% FRESH AIR UNITS IS DESIGNED?



SYMBOL	DESCRIPTION
	SUPPLY AIR DIFFUSER
	RETURN AIR DIFFUSER
	REFRIGERANT LINE
	CONDENSING UNIT
	EXHAUST FAN
	EXHAUST FAN DIFFUSER
FCU	FAN COIL UNIT (FCU)
	DECO FAN COIL UNIT
	EXHAUST FAN (Wall Mounted)
T	THERMOSTAT
	SIDE GRILLE SUPPLY
	SIDE GRILLE RETURN
FAS	FRESH AIR SUPPLY
T / A	TO ABOVE
T / B	TO BELOW
F / A	FROM ABOVE
F / B	FROM BELOW
H / L	HIGH LEVEL
IV	ISOLATION VALVE
VCD	VOLUME CONTROL DAMPER
NRD	NON RETURN DAMPER

FAHU 1 with Enthalpy Wheel, Cooling Coil & Horse Shoe Heat Pipe lab



Supply Air (CFM) - 8209.74575 **Supply Air (L/S) 3875**
Return Air (CFM) - 7383.47468 **Return Air (L/S) - 3485**

REF	1 DBT, F	1 WBT, F	1 grs/lb	1 RH, %	2 DBT, F	2 WBT, F	2 grs/lb	2 RH, %
FAHU-1	95	83.5	143	64	83.5	75.74	113	62.1

REF	3 DBT, F	3 WBT, F	3 grs/lb	3 RH, %	4 DBT, F	4 WBT, F	4 grs/lb	4 RH, %
FAHU-1	76.7	67.77	114	100	67.77	70	64.4	100

REF	5 DBT, F	5 WBT, F	5 grs/lb	5 RH, %	6 DBT, F	6 WBT, F	6 grs/lb	6 RH, %
FAHU-1	70.0	62.04	64.4	63.9	77	90.14	204	55

REF	Cooling Coil Load (MBH) Sensible	Latent	Total	TON	Supply fan kw	Return Fan kw	total
FAHU-1	168.85	272.62	435.17	36.26	8.21	7.66	15.87
Correction to SI	48.09	79.96	127.62				

HVAC CONDENSATE CALCULATOR

Input Conditions		Output Conditions	
Avg DailyTemp	115	Temp	75
Avg Daily % RH	75	% RH	50
SH in gr/ft³	20.54	SH in gr/ft³	4.80

Difference in Specific Humidity gr/ft3: 15.74

Percentage of Outside Air	12%
Tonnage of System	37
Note: Assumption is 350 ft³ per minute per ton	
Gallons per Minute	9.21
Gallons per Hour	12.58
Gallons per Day	302.0

NOTES:

1. FIRE DAMPERS TO BE PROVIDED FOR ALL THE DUCTS WHICH ENTERING FROM CORRIDOR TO THE FLATS OR VICE VERSA.
2. ALL KITCHEN EXHAUST FAN SHOULD HAVE TIMER SWITCH.
3. CONDENSATE WATER TO BE USED FOR GYM PUBLIC TOILET, OVERFLOW WATER TO BE CONNECTED TO NEAREST DRAIN.

STANDARD NOTES :

ALL DIMENSIONS ARE IN METER UNLESS STATED
DO NOT SCALE THIS DRAWING USE ONLY FIGURED DIMENSIONS
CHECK ALL DIMENSIONS ON SITE BEFORE WORK PROCEEDS
REPORT ANY ERROR AND OMISSIONS TO PROJECT ADMINISTRATOR
READ IN CONJUNCTION WITH ALL OTHER PROJECT INFORMATION
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IMPORTANT:

1. ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATION COORDINATE WITH CONSULTANT
2. NO CHANGES NOR ALTERATION TO SPECIFICATION AND DRAWINGS SHALL BE CONSIDER WITHOUT PRIOR APPROVAL OF THE OWNER AND CONSULTANT, ANY SUCH CHANGES SHALL BE CHARGE ACCORDINGLY TO ANY CONTRACTOR.

75% OF ROOF FLAT PAVING SPACE'S SHOULD HAVE SOLAR REFLECTANCE INDEX (SRI) VALUE OF 78 OR ABOVE

REV.	DATE	DESCRIPTION	INIT.	CHK.	V.

THIS DRAWING FOR :

- ☐ INFORMATION ONLY
- ☐ TENDER ONLY
- ☐ CLIENT APPROVAL
- ☐ CONSTRUCTION
- ☑ MUNICIPALITY APPROVAL
- ☐ OTHER AUTHORITY

PROJECT NAME
PROPOSED 2B+G+8 TYP.+GYM BUILDING

CLIENT

PLOT NO. : 373-1265 AREA : AL BARSHA FIRST

MECHANICAL

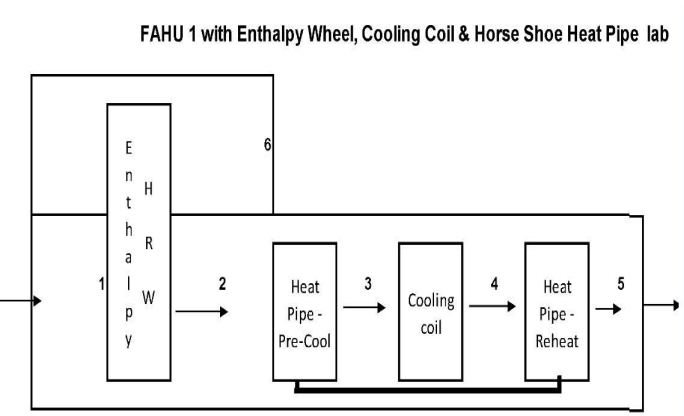
SHEET CONTENT
ROOF OVER ROOF VENTILATION LAYOUT

SCALE	DRAWN BY	CHECKED BY	DATE
1:100 A1			

CONSULTANT

PROJECT NUMBER	DRAWING NUMBER	REV
	M-108A	

STANDARD FAHU SYSTEM – HEAT LOAD CALCULATION



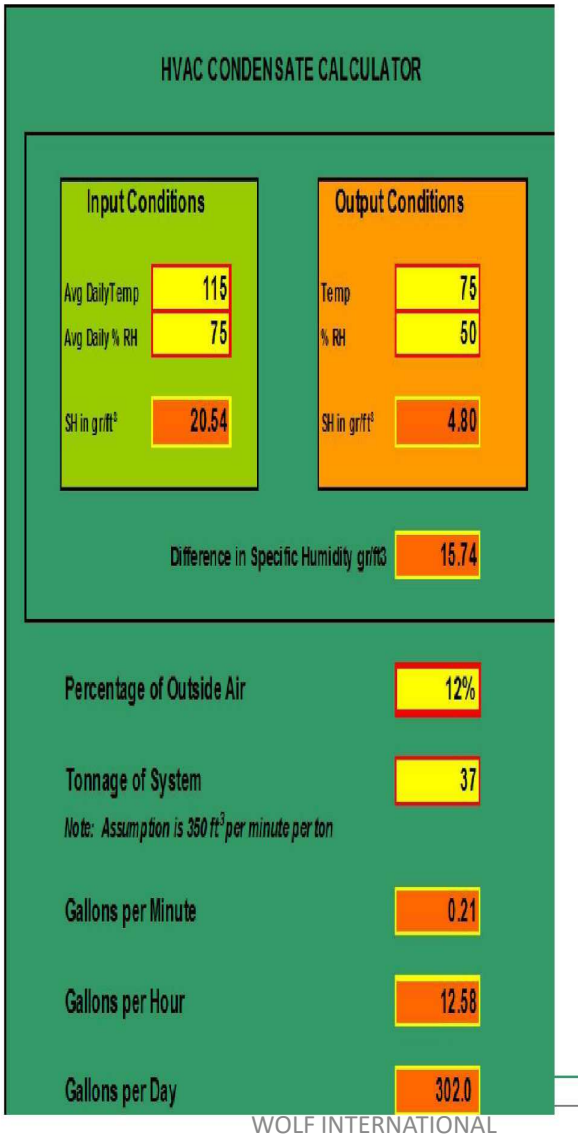
Supply Air (CFM) - 8209.74576 Supply Air (L/S) 3875
Return Air (CFM) - 7383.47458 Return Air (L/S) - 3485

REF	1				2			
	DBT, F	WBT, F	grs/lb	RH, %	DBT, F	WBT, F	grs/lb	RH, %
FAHU-1	95	83.5	143	84	83.5	75.74	113	82.1

REF	3				4			
	DBT, F	WBT, F	grs/lb	RH, %	DBT, F	WBT, F	grs/lb	RH, %
FAHU-1	75.7	57.22	113	100	57.22	70	64.4	100

REF	5				6			
	DBT, F	WBT, F	grs/lb	RH, %	DBT, F	WBT, F	grs/lb	RH, %
FAHU-1	70.0	62.04	64.4	63.9	77	90.14	104	55

REF	Cooling Coil Load (MBH)				Supply fan kw	Return Fan kw	total
	Sensible	Latent	Total	TON			
FAHU-1	163.85	271.32	435.17	36.26	8.21	7.38	15.59
Conversion to SI	48.05	79.56	127.62				



SYSTEM OVERSIZED

- AIR EXTRACTED AT 25 ^{O}C/ 50 % RH
- Air supplied at 21.1 ^{O}C/ 63.9% RH
- System oversized by 4 ^{O}C.
- Due to oversizing
- REQUIRED COOLING CAPACITY
  - 127.5 Kw (435.17 MBH)
  - Power consumption of FAHU
  - AHU + CONDENSING UNIT
  - 15.59 + 41.19 = 56.78

STANDARD FAHU DX SPLIT SYSTEM COMMONLY USED

AIR HANDLING UNIT FROM SUPPLIER – A

CONDENSING UNIT FROM SUPPLIER – B

CONTROLS– PRIMITIVE – FROM SUPPLIER –C

INTERCONNECTING PIPING SUPPLIED & INSTALLED BY LOCAL CONTRACTOR

STANDARD FAHU DX SPLIT SYSTEM

AHU FROM MANUFACTURER - A

CONDENSING UNIT FROM MANUFACTURER - B

COMBINED PERFORMANCE IS NOT TESTED, SO NO PERFORMANCE GUARANTEE, NO THIRD PARTY TESTED

STANDARD FAHU DX SPLIT SYSTEM

Project : PROPOSED 2B+G+8TYP.+ROOF BUILDING AT AL BARSHA FIRST

FAHU & CONDENSING UNIT TECHNICAL DATA

					Fans						Heat Recovery Wheel						Coils												VRF Condensing Unit				
					Supply			Extract			Return		Supply				Pre Cool Pipe				Cooling Coil					Reheat Heat Pipe						TOTAL		
					AF	ESP	Motor	AF	ESP	Motor	Air On		Air On		Air Off		Air On		Air Off		Air On		Air Off		Capacity		Air On		Air Off		Unit	Dimensions (mm)	Capacity	Rated Power (T3)	Total CU
Data		Ref	Model	Qty	LPS	Pa	Kw	LPS	Pa	Kw	RDB	RWB	DB	WB	DB	WB	DB	WB	DB	WB	DB	WB	DB	WB	TKW	SKW	DB	WB	DB	WB	Model	WxHxD2	T KW	PI KW	QTY(Nos)
Specified		FAHU-1		1	3875			3485			25.0	18.7	35.0	32.5	28.6	26.1	28.6	26.1	24.2	24.2	24.2	24.2	14.0	14.0	127.6	48.1	14.0	14.0	21.1	16.6					
Proposed	CONDITION 1: AT 35 AIR ENTERING	FAHU-1	VVS120	1	3875	500	7.5	3485	500	4	24.5	16.7	35.0	32.0	28.0	22.3	28.0	22.3	22.21	20.62	22.21	20.62	14.1	13.7	97.0	37.9	14.1	13.7	20.1	15.9	AM340HXVFGH/ID	(880 x 1,695 x 765) x 1 + (1,295 x 1,695 x 765) x 2	98.9	28	1
Proposed	CONDITION 2: AT 46 AIR ENTERING	FAHU-1	VVS120	1	3875	500	7.5	3485	500	4	24.5	16.7	46.1	29.4	31.6	21.4	31.6	21.4	23.59	18.96	23.59	18.96	12.4	11.9	91.9	52.60	12.4	11.9	20.6	15.1	AM340HXVFGH/ID	(880 x 1,695 x 765) x 1 + (1,295 x 1,695 x 765) x 2	98.9	28	1

AGAINST DESIGNED FRESH AIR UNIT
STANDARD DX SPLIT FRESH AIR HANDLING UNIT SELECTION

UNIT IS DESIGNED TO OPERATE AT 46 DEG C AIR ENTERING UNIT, **AS INPUT POWER SHOULD BE DESIGNED FOR THAT POWER CONSUMPTION**. THEN OPERATION IS CHECKED FOR 35 DEG C AIR ENTERING UNIT.

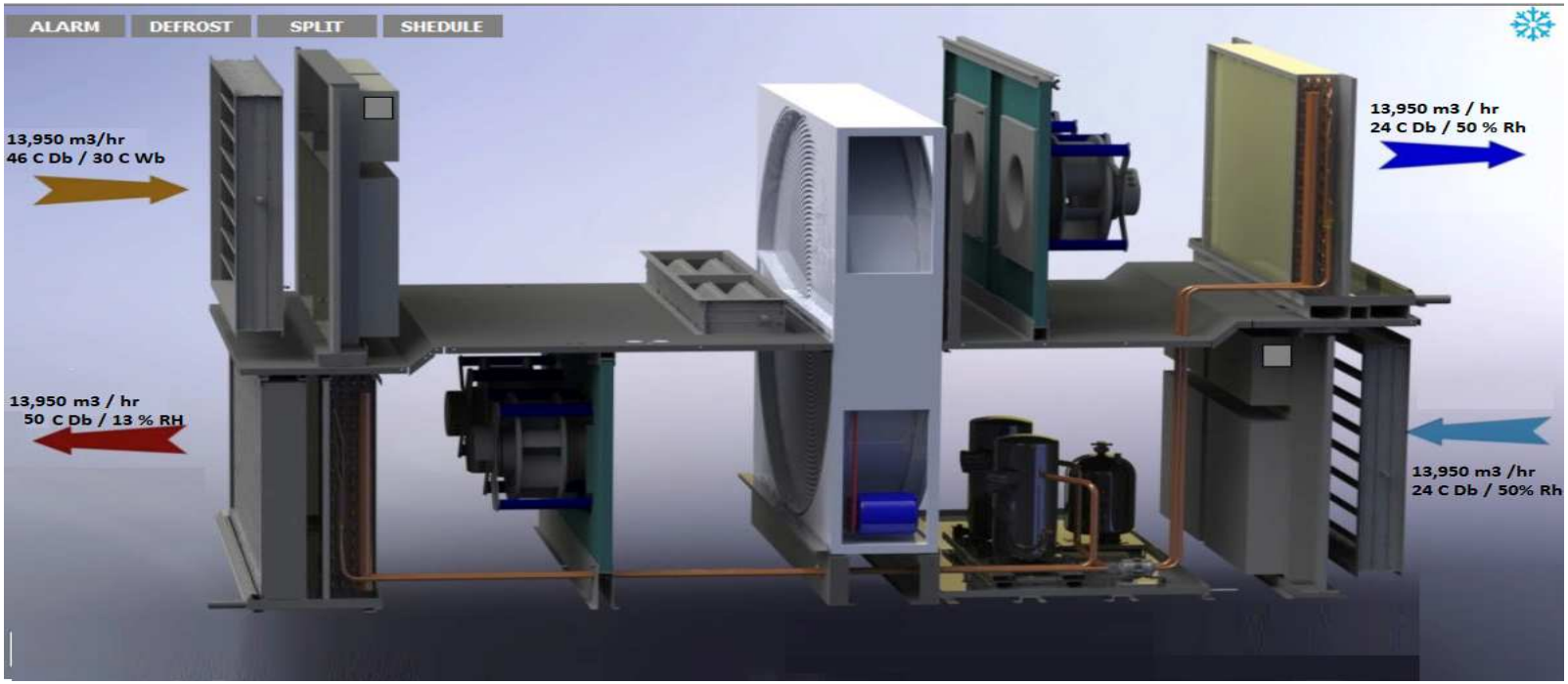
- OFFERS 98 KW COOLING CAPACITY

- POWER CONSUMPTION
  - AHU 7.5 Kw+ 4 Kw = 11.5 Kw
  - CONDENSING UNIT = 28 Kw

DAMVENT SERIES –
100% FRESH AIR PACKAGED UNIT

WI – 100% FRESH AIR PACKAGED UNIT

COMPLETELY FACTORY ASSEMBLED
PLUG & PLAY



DAMVENT SERIES –
100% FRESH AIR PACKAGED UNIT

Date : 28.04.2021
Reference:
Issued by :

SUMMER max.e3 -18

GENERAL DATA	Supply Side	Exhaust Side
AirflowUnit	13950 m3/h	13950 m3/h
Extra Fresh Air		4050 m3/h
Total Cooling Capacity	205.7 kW	
Specific Fan Power(SFP)-total for unit	2344 W/m3/s	
System EER	8.76	
Total power input	23.46 kW	
Refrigerant	R407C	
Unit power supply	400 V/3 ph/50 Hz	
Sea level	0 m	

The system's Specific Fan Power (SFP) calculation is based on clean filter and acc. To EN13779

DIMENSIONS AND WEIGHT

Width	0 mm
Height	0 mm
Lenght	0 mm
Weight	0 kg

PRESSURE DROP

Intake louvre grill with mesh filter	59 Pa	
Filter	(F6 Microcell Rigid Filters L=130)	
Clean Filter	69 Pa	
Dirty Filter for replacing	300 Pa	
	Supply Side	Exhaust Side
Intake louvre grill with mesh filter	59 Pa	
Working point pressure drop (clean filters). F6	69 Pa	69 Pa
Mixing Section		24 Pa
Rotary Heat Exchanger	101 Pa	101 Pa
Evaporator	51 Pa	
Condenser		93 Pa
Total Internal Pressure Drops	280 Pa	287 Pa
External Static Pressure (ESP)	500 Pa	500 Pa

FILTERS

Class of filtration	F6
Total Filtration Area	65.1 m2

ROTARY HEAT EXCHANGER

Incoming Temperature	46.0 °C	
Incoming Relative Humidity	30 %	
Incoming Temperature		24.0 °C
Incoming Relative Humidity		45 %

DV_Select Rel.3.1 Page 1 / 2

Date : 28.04.2021
Reference:
Issued by :

Recovered Heat(Total)	172.5 kW		
Temp. Eff. (Dry)\ Hum. Eff.	75.1% \ 71.9		
Outgoing Temperature		29.5 °C	
Outgoing Relative Humidity		44 %	
Outgoing Temperature			40.5 °C
Outgoing Relative Humidity			34 %
Mass Transfer Humidity		0.0 l/h	130 l/h

MIXING BOX

Inlet Temp. from Heat Recovery	- °C	40.5 °C
Inlet Rel. Hum. from Heat Recovery	- %	34 %
Inlet Temp. from Recirculation Damper	- °C	46 °C
Inlet Rel. Hum. from Recirculation Damper	- %	30 %
Outlet temperature	- °C	42.0 °C
Outlet relative humidity	- %	37 %
Fresh air percentage		25.0 %

EVAPORATOR

Incoming Temperature	29.5 °C
Incoming Relative Humidity	44 %
Outgoing Temperature	23.7 °C
Outgoing Relative Humidity	67 %
Cooling capacity	33.2 kW

CONDENSER

Incoming Temperature	42.0 °C
Incoming Relative Humidity	37 %
Outgoing Temperature	51.0 °C
Outgoing Relative Humidity	25 %
Condensing capacity	45.0 kW

COMPRESSORS

Quantity	2 n°	Compressors COP	3.860
Power supply	400 V/3 ph/50 Hz	Operating Current	2 x 10.1 A
Power input	2 x 5.87 kW	Full load Current	2 x 14.50 A
Circuits	2	Locked rotor Current	2 x 66.00 A

FAN		Supply Side	Exhaust Side
Type:	Plug Fan - EC Blue		
Total Pressure		780 Pa	787 Pa
Fan speed		2036 rpm	2325 rpm

DV_Select Rel.3.1 Page 2 / 2

Date : 28.04.2021
Reference:
Issued by :

Fan Efficiency		
(Static Eff. Impeller incl. motor and controller)		
Power absorbed at fan shaft	2 x 2.435 kW	2 x 3.426 kW
Motor Efficiency	ErP conformity-2015/EC controller integrated	
Full load Current	2 x 8.4-6.6 A	2 x 8.4-6.6 A
K-factor for air flow measuring	197	197
Power supply	400 V/3 ph/50 Hz	

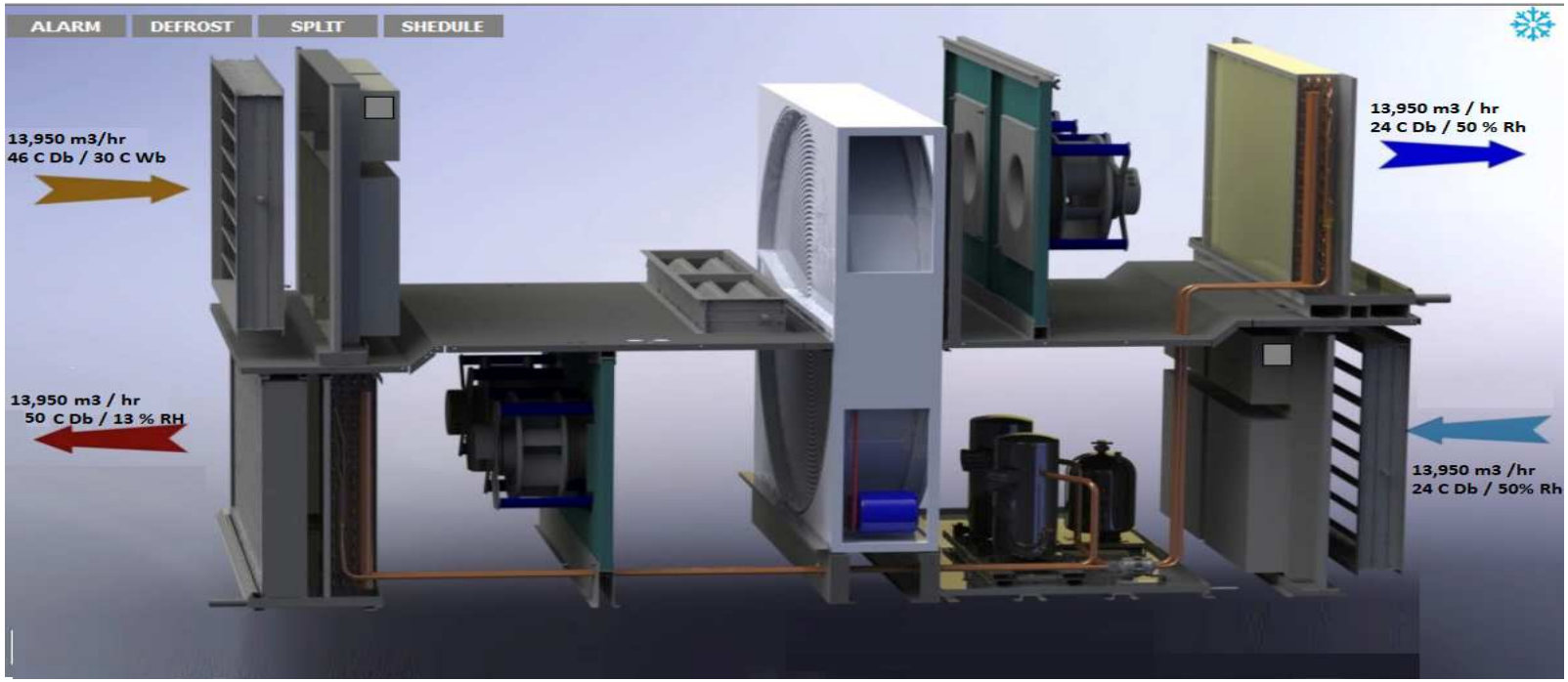
WI-DAMVENT 100% FAPU

- OFFERS ACHIEVES 23.7 OC/ 67% RH
- 45.8 KW Condenser Capacity
- 53% SAVING OVER SPLIT FAHU
- POWER CONSUMPTION
  - SUPPLY 2 x 2.5 = 5.0 Kw
  - RETURN 2 x 3.5 = 7.0 Kw
  - VRF COMPRESSORS
    - 2 x 5.87 =11.74 Kw
  - TOTAL kW = 23.74 Kw
- **Power Saved = 39.5-23.74=15.76 Kw**
- Yearly Saving in Bill
  =15.76 kw x 20 hours daily x 365 days x 0.45 rate
  = 51,775 UAE Dhs.

DV_Select Rel.3.1 Page 3 / 2

DAMVENT SERIES –
100% FRESH AIR PACKAGED UNIT

ADVANTAGES
WI 100% FRESH AIR PACKAGED UNITS



WI 100% FRESH AIR PACKAGED UNIT Vs Design & 100% FRESH AIR DX SPLIT UNIT

- PREVAILING DESIGN
  - OVERSIZED
  - UNNECESSARY CONFIGURATION
- STANDARD 100% FRESH AIR DX SPLIT UNITS
  - DIFFERENT SUPPLIERS FOR DIFFERENT PARTS.
  - AHU & CONDENSING UNIT NOT TESTED TO WORK TOGETHER.
  - AHU & CONDENSING UNIT FROM DIFFERENT SUPPLIER
  - CONTROLS ARE PRIMITIVE.
  - INTERCONNECTING PIPING DONE BY LOCAL CONTRACTOR WITH UNTRAINED INSTALLERS
  - WARRANTY ISSUES. DIFFERENT PARTS COVERED BY DIFFERENT SOURCES. ASSEMBLED UNIT COVERED BY LOCAL CONTRACTOR.

- WI – 100% FRESH AIR PACKAGED UNIT
  - DESIGN SUPPORT TO CONSULTANTS
- WI – 100% FRESH AIR PACKAGED UNIT
  - COMPLETELY DESIGNED, MANUFACTURED & ASSEMBLED IN ISO CERTIFIED FACTORY, AT SINGLE PLACE BY TRAINED PROFESSIONALS.
  - PACKAGED UNIT PERFORMANCE IS EUROVENT, AHRI CERTIFIED
  - WARRANTY COVERED BY ONE SOURCE.
  - **HUGE POWER SAVING UP TO 40%.**
  - 100% HEAT RECOVERY.
    - EXTRACT AIR USED TO COOL FRESH AIR THROUGH HIGHLY EFFICIENT HEAT WHEEL
    - AFTER IT LEAVES HEAT WHEEL, IT IS USED TO COOL CONDENSER. THIS AIR IS MUCH LOWER THAN AMBIENT. SO CONDENSER PART IS MUCH SMALLER, REQUIRES LESS CAPACITY COMPRESSORS, HENCE POWER SAVING.