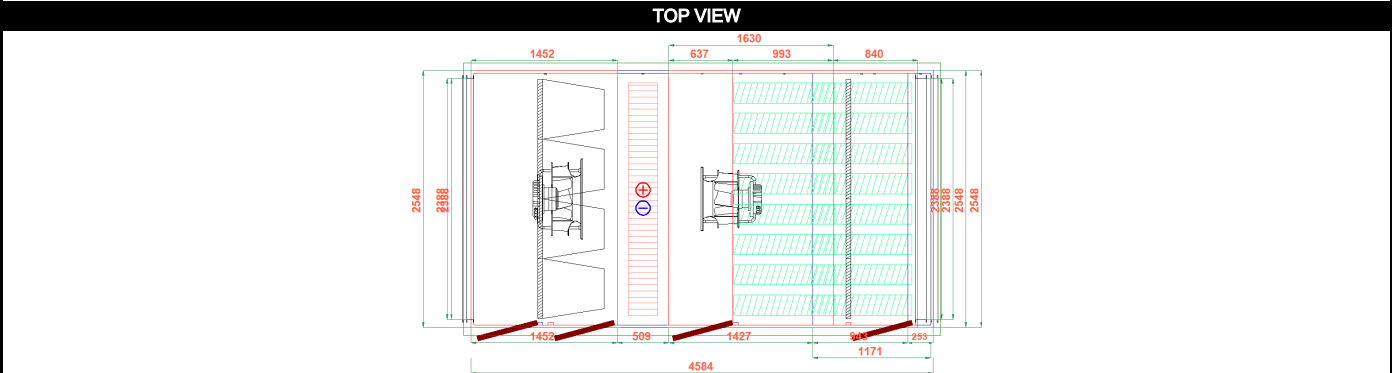
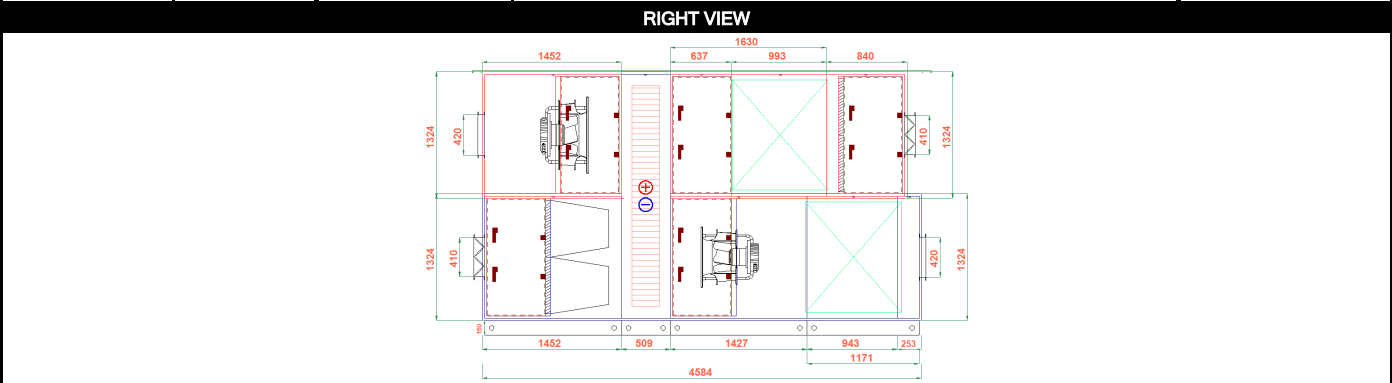




TECHNICAL DATA

| | | | |
|--------------|----------------------|---------------|------------|
| Date | 12/03/2018 | Rev. Date | 02/05/2018 |
| Project No | 2130 | Proj.Trace No | 31369-R1 |
| Project Name | HEAT ECOVERY UNIT-R1 | | |
| AHU Name | AHU | | |
| AHU Model | JUPITER 16 X 32 | | |



GENERAL SPECIFICATIONS

| | | | |
|---------------------------------------------------|---------------------------------|----------------------------------------------------|------------------------------------------------|
| Supply Air Flow 14,000 m³/h | Return Air Flow 14,000 m³/h | Frame 25 steel profile | Dimensions (mm) A2608 x H2723 x L4789 |
| Supply Air Velocity 1.30 m/s | Return Air Velocity 1.30 m/s | Insulation Material Rockwool 70 kg/m³ | Total Weight 2,966 kg |
| Coil Air Velocity | Air Density 1.3255 kg/m³ | Insulation Thickness 50 mm | Base Height / Installation 150 mm / Outside |
| Design Outdoor Temp. -7.7 °C / 25.8 °C(Odense) | Mixing Ratio % 0.00 | Outside Sheet Material 0.9 mm Painted Galvanize | Absorbed Power 8.20 kW |
| Total Heating Capacity | Total Cooling Capacity | Inside Sheet Material 0.9 mm Galvanize | Motor Power(Vant/Asp) |
| Specific Fan Power(SFP Total) 0.57 kW/(m³/s) | ErP Compliance 2016 & 2018 | ErP Code NRVU - BVU | Real Unit CAL Class -400 Pa L3 |
| | | | Real Unit CAL Class +400 Pa L3 |

NOISE LEVEL

SOUND POWER LEVEL (dB)

LwA-tot

| Frequency Hz | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | |
|--------------------------------------------|------|------|------|------|------|------|------|------|-------|
| Airborne Sound Power Level | 59.8 | 58.9 | 56.8 | 54.6 | 53.6 | 46.9 | 41.4 | 59.1 | dB(A) |
| Supply Air Outlet Induct Sound Power Level | 75.5 | 62.6 | 64.2 | 66.2 | 61.0 | 75.3 | 67.4 | 76.3 | dB(A) |
| Supply Air Inlet Induct Sound Power Level | 64.6 | 68.1 | 63.5 | 64.5 | 68.5 | 81.2 | 71.3 | 82.2 | dB(A) |
| Return Air Outlet Induct Sound Power Level | 78.2 | 86.1 | 86.9 | 90.0 | 86.9 | 83.4 | 85.3 | 93.0 | dB(A) |
| Return Air Inlet Induct Sound Power Level | 57.0 | 50.9 | 47.1 | 43.7 | 49.4 | 52.2 | 60.4 | 60.4 | dB(A) |

ACCESSORIES

Manometer Pressure Gauge


| Model | CS Class | CAL Class -400 Pa | CAL Class +400 Pa | FBL Class | TT Class | TBF Class | Casing accoustical insulation at 125 Hz [dB] | Casing accoustical insulation at 250 Hz [dB] | Casing accoustical insulation at 500 Hz [dB] | Casing accoustical insulation at 1000 Hz [dB] | Casing accoustical insulation at 2000 Hz [dB] | Casing accoustical insulation at 4000 Hz [dB] | Casing accoustical insulation at 8000 Hz [dB] |
|---------|----------|-------------------|-------------------|-----------|----------|-----------|----------------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| JUPITER | D2 | L1 | L1 | F9 | T2 | TB2 | 18.4 | 27.2 | 30.1 | 35.4 | 33.3 | 36.5 | 43.9 |

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| | | | | | |
|-----------------------------------------------------------------------------------|------------------------|-----------------------|----------------------|---------------|------------|
|  | | TECHNICAL DATA | | | |
| | | Date | 12/03/2018 | Rev. Date | 02/05/2018 |
| | | Project No | 2130 | Proj.Trace No | 31369-R1 |
| | | Project Name | HEAT ECOVERY UNIT-R1 | | |
| AHUSEL V. | 2.2.3.12 26/02/2018 | AHU Name | AHU | | |
| BSK | 2/5 | AHU Model | JUPITER 16 X 32 | | |



FRESH AIR CONNECTION

| | | |
|-----------------|----------------------|---------------|
| Connection Type | Automation | Pressure Drop |
| Gear Damper | Automatic | 10 Pa |
| Airflow | Dimensions | Air Velocity |
| 14,000 m³/h | A 2388 mm x H 410 mm | 3.97 m/s |

SUPPLY CONNECTION

| | | |
|-----------------|----------------------|---------------|
| Connection Type | Automation | Pressure Drop |
| Flange | Automatic | 10 Pa |
| Airflow | Dimensions | Air Velocity |
| 14,000 m³/h | A 2388 mm x H 420 mm | 3.88 m/s |


RETURN CONNECTION

| | | |
|-----------------|----------------------|---------------|
| Connection Type | Automation | Pressure Drop |
| Gear Damper | Automatic | 10 Pa |
| Airflow | Dimensions | Air Velocity |
| 14,000 m³/h | A 2388 mm x H 410 mm | 3.97 m/s |

EXHAUST CONNECTION

| | | |
|-----------------|----------------------|---------------|
| Connection Type | Automation | Pressure Drop |
| Flange | Automatic | 10 Pa |
| Airflow | Dimensions | Air Velocity |
| 14,000 m³/h | A 2388 mm x H 420 mm | 3.88 m/s |

FILTER (M3)

| Filter Type | Initial / Final / Design P.Drop | Air Velocity | Size/Quantity/EC* | Size/Quantity/EC* | Size/Quantity/EC* | Section Weight |
|-------------|---------------------------------|--------------|-------------------|-------------------|-------------------|---------------------------------------------------------------------------------------|
| G-4 Panel | 32 Pa / 160 Pa / 96 Pa | 1.39 m/s | 592x592x50/8/NA | | | 508 kg |
| Filter Type | Initial / Final / Design P.Drop | Air Velocity | Size/Quantity/EC* | Size/Quantity/EC* | Size/Quantity/EC* | Spare Filter |
| F-7 Bag | 38 Pa / 360 Pa / 199 Pa | 1.39 m/s | 592x592x610/8/E | | |  |

* Filter Energy Performance; preferably energy classification

ACCESSORIES

| | |
|--------------------------|---------------------------------------------------------------------------------------|
| Manometer Pressure Gauge |  |
|--------------------------|---------------------------------------------------------------------------------------|

ROTARY HEAT RECOVERY (M1)

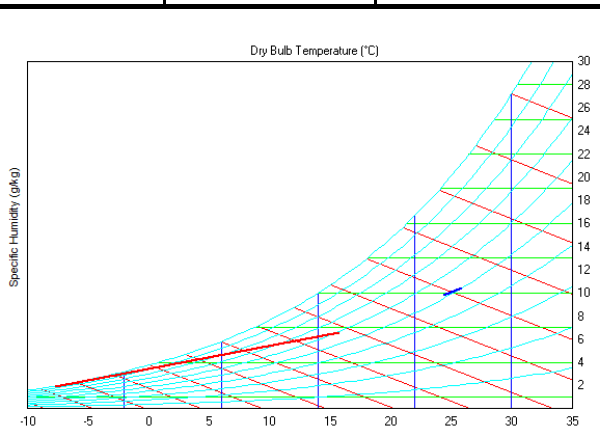
| | | | |
|-------------------------------|-----|----------|----------------|
| Model | Rpm | Quantity | Section Weight |
| TQ AL 23 N v11 C 1 N TN AT AS | 15 | 1 | 428 kg |

| | Fresh Air | | Exhaust | | Capacity | Summer | | Winter | | |
|--|-------------|----------|-------------|----------|----------|-----------|--------|-----------|-------|-----|
| | Airflow | Air Vel. | Airflow | Air Vel. | | Fresh | Exhaus | Fresh | Exhau | |
| | 14,000 m³/h | 2.14 m/s | 14,000 m³/h | 2.19 m/s | | -13.86 kW | | 166.68 kW | | |
| | Summer | | Winter | | P.D (Pa) | 119 | 119 | 105 | 109 | |
| | Effect. | Ratio(*) | Effect. | Ratio(*) | | 1.2kg/m³ | 116 | 116 | 116 | 116 |
| | 77.03 | 77.03 | 78.94 | 78.94 | | | | | | |

| Air Inlet / Outlet | Summer | | | | Winter | | | |
|--------------------|-----------|--------|---------|--------|-----------|--------|---------|--------|
| | Fresh Air | | Exhaust | | Fresh Air | | Exhaust | |
| | Inlet | Outlet | Inlet | Outlet | Inlet | Outlet | Inlet | Outlet |
| DT | 25.80 | 24.41 | 24.00 | 25.39 | -7.70 | 15.74 | 22.00 | -1.44 |
| WT | 18.54 | 17.59 | 17.06 | 18.04 | -8.08 | 11.37 | 15.42 | -1.44 |
| RH | 50.00 | 51.16 | 50.00 | 49.00 | 90.00 | 59.19 | 50.00 | 100.00 |

| | | |
|------------------|------|----------|
| Condensation Pan | OACF | EATR (%) |
| | 1.13 | 0.00 |

Frequency Inverter





* Efficiency at balanced flow

* OACF: Outdoor Air Correction Factor, EATR: Exhaust Air Transfer Ratio

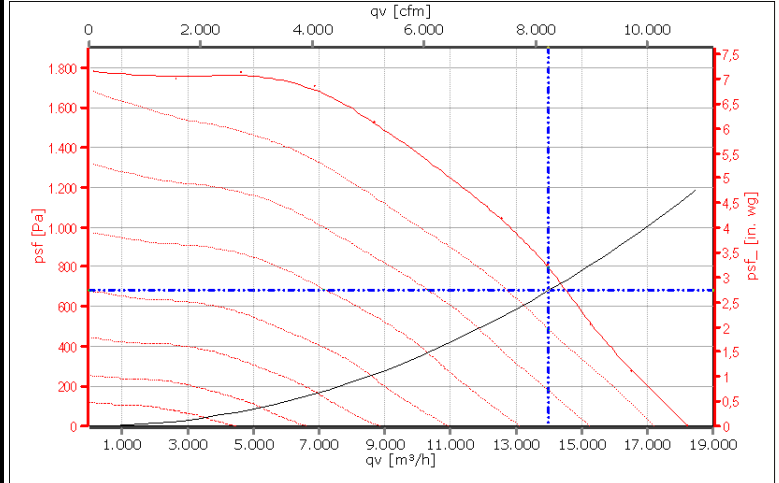
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| | | | | | |
|-----------------------------------------------------------------------------------|------------------------|----------------------|-----------------|------------|------------------------------------------------------------------------------------|
|  | TECHNICAL DATA | | | |  |
| | Date | 12/03/2018 | Rev. Date | 02/05/2018 | |
| | Project No | 2130 | Proj.Trace No | 31369-R1 | |
| | Project Name | HEAT ECOVERY UNIT-R1 | | | |
| AHUSEL V. | 2.2.3.12 26/02/2018 | AHU Name | AHU | | |
| BSK | 3/5 | AHU Model | JUPITER 16 X 32 | | |

| | | |
|--------------------|--|-------------------------------------------------------------------------------------|
| ACCESSORIES | |  |
| | | |

SUPPLY FAN (M4)

| Airflow 14,000 m³/h | Fan Model EBM Papst-K3G500PB3301 | Quantity 1 | Section Weight 420 kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------------------|----------------|--------------------|--------------|-------------------|-----|---------------------|---|---------|--|----|-----|-----|-----|------|------|------|------|--|--|-------------------|------|------|------|------|------|------|------|------|-----|--------------------|------|------|------|------|------|------|------|------|-----|
| Internal Static Pressure 431 Pa | Motor P./Volt./Pha./Freq. 3P/400V/50-60Hz |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| External Static Pressure 250 Pa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Static Pressure 681 Pa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Pressure 804 Pa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total / Static Efficiency 67.67 / 57.28 % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shaft / Absorbed Power 4.62 / 4.62 kW | Absorbed Pow.With VFD 4.62 kW | <table border="1" style="width: 100%;"> <tr> <th colspan="8" style="text-align: center;">Sound Power Level (dB)</th> <th colspan="2" style="text-align: center;">LwA-tot</th> </tr> <tr> <th>Hz</th> <th>125</th> <th>250</th> <th>500</th> <th>1000</th> <th>2000</th> <th>4000</th> <th>8000</th> <th></th> <th></th> </tr> <tr> <td>SPLa - Inlet Side</td> <td>80.6</td> <td>84.1</td> <td>79.5</td> <td>80.5</td> <td>80.5</td> <td>93.2</td> <td>83.3</td> <td>94.9</td> <td>dBA</td> </tr> <tr> <td>SPLm - Outlet Side</td> <td>83.1</td> <td>85.6</td> <td>85.7</td> <td>90.7</td> <td>85.5</td> <td>93.2</td> <td>84.5</td> <td>96.7</td> <td>dBA</td> </tr> </table> | | Sound Power Level (dB) | | | | | | | | LwA-tot | | Hz | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | | SPLa - Inlet Side | 80.6 | 84.1 | 79.5 | 80.5 | 80.5 | 93.2 | 83.3 | 94.9 | dBA | SPLm - Outlet Side | 83.1 | 85.6 | 85.7 | 90.7 | 85.5 | 93.2 | 84.5 | 96.7 | dBA |
| Sound Power Level (dB) | | | | | | | | LwA-tot | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hz | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SPLa - Inlet Side | 80.6 | 84.1 | 79.5 | 80.5 | 80.5 | 93.2 | 83.3 | 94.9 | dBA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SPLm - Outlet Side | 83.1 | 85.6 | 85.7 | 90.7 | 85.5 | 93.2 | 84.5 | 96.7 | dBA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fan Speed 2190 rpm(Max.2250 rpm) | | <table border="1" style="width: 100%;"> <tr> <td>Specific Fan Power(SFPe int)</td> <td>0.10 kW/(m³/s)</td> <td>Air Density</td> <td>1.2000 kg/m³</td> </tr> <tr> <td>Backup Fan</td> <td>0</td> <td>Backup Motor</td> <td>0</td> </tr> </table> | | Specific Fan Power(SFPe int) | 0.10 kW/(m³/s) | Air Density | 1.2000 kg/m³ | Backup Fan | 0 | Backup Motor | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Specific Fan Power(SFPe int) | 0.10 kW/(m³/s) | Air Density | 1.2000 kg/m³ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Backup Fan | 0 | Backup Motor | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* The fan system effect is taken into account in the fan performance
 * The fan calculated for wet conditions
 * Sfp is calculated based on clean filter & dry coil conditions

| | | |
|--------------------|--|---------------------------------------------------------------------------------------|
| ACCESSORIES | |  |
| | | |

SILENCER (M8)

| | | | | | |
|-------------------------------|-------------------------------------------|-------------------------------|-------------------------------------|--------------------------------------------------------|---------------------------------|
| Airflow 14,000 m³/h | Sound Absorption (250 Hz) 22 dB | Pressure Drop 11 Pa | Silencer Thickness 200 mm | Silencer Material Rockwool (52 kg/m³) 50 m | Section Weight 302 kg |
| Silencer Code | 200d 100s 8n 1000L 1150H 2433A | | | | |

| | | |
|--------------------|--|---------------------------------------------------------------------------------------|
| ACCESSORIES | |  |
| | | |

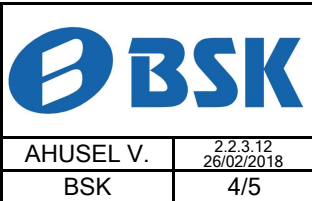
EMPTY SECTION (M9)

| | | |
|-------------------------------|------------------------------|---------------------------------|
| Airflow 14,000 m³/h | Pressure Drop 0 Pa | Section Weight 153 kg |
|-------------------------------|------------------------------|---------------------------------|

| | | |
|--------------------|--|---------------------------------------------------------------------------------------|
| ACCESSORIES | |  |
| | | |

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| TECHNICAL DATA | | | |
|----------------|----------------------|---------------|------------|
| Date | 12/03/2018 | Rev. Date | 02/05/2018 |
| Project No | 2130 | Proj.Trace No | 31369-R1 |
| Project Name | HEAT ECOVERY UNIT-R1 | | |
| AHU Name | AHU | | |
| AHU Model | JUPITER 16 X 32 | | |



EXHAUST FAN (M5)

| | | | | | | | | | | | |
|------------------------------|------------------------|---------------------------|------------------------|----------|------|----------------|--------|------|------|------|-----|
| Airflow | 14,000 m³/h | Fan Model | EBM Papst-K3G560AQ0401 | Quantity | 1 | Section Weight | 465 kg | | | | |
| Internal Static Pressure | 236 Pa | Motor P./Volt./Pha./Freq. | 3P/400V/50-60Hz | | | | | | | | |
| External Static Pressure | 250 Pa | | | | | | | | | | |
| Total Static Pressure | 486 Pa | | | | | | | | | | |
| Total Pressure | 574 Pa | | | | | | | | | | |
| Total / Static Efficiency | 62.57 / 52.90 % | | | | | | | | | | |
| Shaft / Absorbed Power | 3.57 / 3.57 kW | Absorbed Pow.With VFD | 3.57 kW | | | | | | | | |
| Fan Speed | 1679 rpm(Max.1750 rpm) | | | | | | | | | | |
| | | Sound Power Level (dB) | | | | LwA-tot | | | | | |
| | | Hz | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | |
| | | SPLa - Inlet Side | 75.6 | 84.9 | 79.6 | 79.2 | 81.9 | 78.1 | 85.5 | 88.6 | dBa |
| | | SPLm - Outlet Side | 78.2 | 86.1 | 86.9 | 90.0 | 86.9 | 83.4 | 85.3 | 93.9 | dBa |
| Specific Fan Power(SFPe int) | 0.05 kW/(m³/s) | Air Density | 1.2000 kg/m³ | | | | | | | | |
| Backup Fan | 0 | Backup Motor | 0 | | | | | | | | |

* The fan system effect is taken into account in the fan performance
 * The fan calculated for wet conditions
 * Sfp is calculated based on clean filter & dry coil conditions

| ACCESSORIES | |
|-------------|--|
| | |

| EMPTY SECTION (M7) | | | |
|--------------------|-------------|----------------|--------|
| Airflow | 14,000 m³/h | Pressure Drop | 0 Pa |
| | | Section Weight | 155 kg |

| ACCESSORIES | |
|-------------|--|
| | |

| SILENCER (M6) | | | | | |
|----------------|-------------|--------------------------------|--------|-------------------|----------------------------|
| Airflow | 14,000 m³/h | Sound Absorption (250 Hz) | 22 dB | Pressure Drop | 11 Pa |
| | | Silencer Thickness | 200 mm | Silencer Material | Rockwool (52 kg/m³) 50 m |
| Section Weight | | 281 kg | | | |
| Silencer Code | | 200d 100s 8n 1000L 1150H 2433A | | | |


| ACCESSORIES | |
|-------------|--|
| | |

| FILTER (M2) | | | | | | |
|-------------|---------------------------------|--------------|-------------------|-------------------|-------------------|--------------------------|
| Filter Type | Initial / Final / Design P.Drop | Air Velocity | Size/Quantity/EC* | Size/Quantity/EC* | Size/Quantity/EC* | Section Weight |
| G-4 Panel | 32 Pa / 160 Pa / 96 Pa | 1.39 m/s | 592x592x50/8/NA | | | 254 kg |
| Filter Type | Initial / Final / Design P.Drop | Air Velocity | Size/Quantity/EC* | Size/Quantity/EC* | Size/Quantity/EC* | Spare Filter |
| | | | | | | <input type="checkbox"/> |

* Filter Energy Performance; preferably energy classification

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|  | | TECHNICAL DATA | | | |
|-----------------------------------------------------------------------------------|------------------------|----------------|-----------------|-----------|------------|
| | | Date | 12/03/2018 | Rev. Date | 02/05/2018 |
| Project No | 2130 | Proj.Trace No | 31369-R1 | | |
| Project Name | HEAT ECOVERY UNIT-R1 | | | | |
| AHUSEL V. | 2.2.3.12 26/02/2018 | AHU Name | AHU | | |
| BSK | 5/5 | AHU Model | JUPITER 16 X 32 | | |



| ACCESSORIES | |
|--------------------------|-------------------------------------------------------------------------------------|
| Manometer Pressure Gauge |  |

| Ecodesign Requirements Table | | | | |
|------------------------------|-----------------------------------------|-----------------------------------|----------------------------|----------|
| | | Value | 2016 | 2018 |
| | Product | JUPITER 25 | | |
| | Erp | 2016 & 2018 | | |
| A | Manufacturer | BSK Havalandırma Ekipmanları A.Ş. | | |
| B | Model Identifier | JUPITER 16 X 32 | | |
| C | ErP Code | NRVU - BVU | | |
| D | Type Of Drive | Variable Speed Drive (VSD) | Variable Speed Drive (VSD) | Required |
| E | Type Of HRS | Rotary | | |
| | HRS Damper | Exists | | Required |
| F | Thermal Efficiency of HRS | 78.94 % | | >= 67 % |
| G | Nominal Flow Rate | 3.89 m³/s | 3.89 m³/s | |
| H | Effective Electrical Power Input | 4.62 kW | 3.57 kW | |
| I | SPFInt | 673 W/(m³/s) | 674 W/(m³/s) | <= 1098 |
| J | Face Velocity | 1.30 m/s | 1.30 m/s | |
| K | Nominal External Drop Δps, Ext | 250 Pa | 250 Pa | |
| L | Internal Pressure Drop Δps, Int | 431 Pa | 236 Pa | |
| M | Additional Pressure Drop Δps, Add | 123 Pa | 88 Pa | |
| N | Static Fan Efficiency EC327/2011 | 57.28 % | 52.90 % | |
| O | Declared Maximum Ext./Int. Leakage Rate | 1.13 % | | |
| P | Energy Performance Of Filters | E | NA | |
| Q | Description Of Visual Filter Warning | Manometer Pressure Gauge | Manometer Pressure Gauge | Required |
| R | Casing Sound Power Level (Lwa) | 96.7 dB | 93.9 dB | |
| S | Internet Address Of Instructions | www.bskhavalandirma.com.tr | | |

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