Heatex Select API Automatic Selection Manual

1. Plate/calculate-automaticselection - Full API Documentation

2. Overview

This guide explains how to call the plate/calculate-automaticselection endpoint to obtain an automatically selected plate configuration that meets your performance, pressure drop, geometry, and pricing constraints. It describes the request body fields, unit conventions (SI and IP), validation rules, the relevant enumerations, example requests (cURL and C#), and provides general notes on responses and error handling.

3. Endpoint & Method

Property	Value
HTTP Method	POST (JSON)
Path	plate/calculate-automaticselection
Content-Type	application/json
Accept	application/json
Authorization	Bearer <token> (if required)

4. Request Body Schema

The request body contains four logical sections:

1. CommonInputProperties — Air input conditions
2. General Plate Parameters — Selection of plate models, wheel height, and materials
3. SelectionParameters — Product configuration
4. FilterParameters — Search constraints

4.1. Common Input Properties

For all fields that use enumerated values, the input may be given either as a numeric code or as the corresponding enum type name.

Parameter	SI Unit	IP Unit	Description
ExhaustMassFlow	kg/s	cfm	Exhaust air mass flow
ExhaustPressure	Pa	inH_2O	Exhaust air pressure
ExhaustTemperature	°C	°F	Exhaust air temperature
ExhaustMoisture (WB for IP)	kg/kg	°F	Exhaust absolute humidity
SupplyMassFlow	kg/s	lb/s	Supply air mass flow
SupplyPressure	Pa	inH_2O	Supply air pressure
SupplyTemperature	°C	°F	Supply air temperature
SupplyMoisture (WB for IP)	kg/kg	°F	Supply absolute humidity
DifferentialPressure	Pa	inH_2O	Used for OACF
InletAirPressure	Pa	inH_2O	Inlet total pressure
Season	0/1	0/1	0 = Winter, 1 = Summer
TotalWidth	m	inch	Total width in meters
Steps	—	—	OneStep=1, TwoSteps =2 (see NumberOfSteps enum described below).
BypassCode [0)]	—	—	Composite bypass logic code (except for Z2, Z)
UseDiffPressure[1)]	—	—	No = 0, Yes = 1 (see *UseDifferentialPressure* enum described below).
ShapeForUnevenFlow[2)]	%	%	Shape factor, max 50%
HorizontalPlates[3)]	—	—	No = 0, Yes = 1 (see *HorizontalPlatesOption* enum described below). (except for Z2, Z)

5. Validation Rules

- Season: 0=Winter, 1=Summer — ensure inputs (temperatures/moistures) match scenario.
- PlateMaterialType = StainlessSteel is only available for model Z (if used in pricing contexts).
- The Season parameter is used to calculate the Supply and Exhaust values.
    - If season = 0 (Winter), then ExhaustTemperature must be greater than SupplyTemperature.
    - If season = 1 (Summer), then ExhaustTemperature must be less than SupplyTemperature.

If these conditions are not met, errors 101 and 102 will appear.

[0] The bypass code is constructed as a “binary number” with four digits. The number is built up from right to left. Leftmost zeros can be excluded.

Digit	**4**	**3**	**2**	**1**
Parameter	No damper or own damper (0) / Heatex damper (1)	1-step or 2-step with supply side in vertical orientation (0)/ 2-step with diagonally orientation (1)	Bypass on the side (0)/bypass in the middle (1)	No bypass (0)/With Bypass (1)
Example	Heatex damper	1-step	Bypass on the side	With bypass
Bypass Code	1	0	0	1

[1] If UseDiffPressure = Yes, the differential pressure is calculated as the difference between ExhaustPressure and SupplyPressure. This differential pressure causes the channels to contract or expand, depending on whether the pressure drop increases or decreases. This functionality is implemented for models H2, H (size 0415 and larger), P, and Z.

[2] Shape factor = (Maximum_inlet_velocity − Average_inlet_velocity) / Average_inlet_velocity × 100 (%).It serves as an approximate measure of inlet flow nonuniformity. Uneven flow profiles reduce efficiency and increase pressure drop. For this reason, the shape factor must not exceed 50%.

[3] Horizontal orientation will due to design restrictions impact the performance and price for model H2 with low channel heights (see “Plate-Heat-Exchanger-Technical-Information” on Heatex.com) and model H configurations; H0600/2.7/E, H0600/3.0/E, H0850/3.0/E, H0850/3.5/E and H0850/4.0/E. For plate heat exchangers without restrictions the performance, price and product code will be the same for vertical and horizontal orientation.

[4] Calculate bypass: Enabled when FixedBypass = 0 and BypassCode = 1. The program calculates the bypass width required to match the pressure drop of the heat exchanger. Fixed bypass: Enabled when FixedBypass ≠ 0 and BypassCode = 1. The given bypass width is used as-is.

No bypass: To disable the bypass function, set FixedBypass = 0 *and* BypassCode = 0.

5.1. NumberOfSteps

Value	Name	Description
1	OneStep	Single step calculation
2	TwoSteps	Two step calculation

5.2. UseDifferentialPressure

Value	Name	Description
0	No	Do not use differential pressure
1	Yes	Use differential pressure

5.3. HorizontalPlatesOption

Value	Name	Description
0	No	No horizontal plates
1	Yes	Use horizontal plates (except for Z2, Z)

5.4. General Plate Parameters

For all fields that use enumerated values, the input may be given either as a numeric code or as the corresponding enum type name.

Field	Description
Plate Models	Plates: H2,H,P,Z When no plate exchanger model is specified, the calculation automatically includes all available plate exchanger types.
Materials	Material types: Aluminum, Epoxy, StainlessStee. If no material is specified, the calculation automatically includes all available material types (see PlateMaterialType enum described below).

5.5. PlateMaterialType

Value	Name	Description
0	Aluminium	Al (Aluminium)
1	Epoxy	Epoxy
4	StainlessSteel	Stainless steel (only model Z, Z2)

5.6. PlateMaterialType

{H2, P, H, Z, Z2}

5.7. SelectionParameters

For all fields that use enumerated values, the input may be given either as a numeric code or as the corresponding enum type name.

Field	Default Value	Description
Sealing	SiliconeFree	SiliconeFree = 2, Silicone = 7 (see *SealingType* enum described below).
Profile	AlProfile90	ALProfile90 = 2, ALProfile45 = 1 (see *ProfileType* enum described below).

5.8. SealingType

Value	Name	Description
2	SiliconeFree	Silicone free (max 90°C)
7	Silicone	Silicone with acetum (max 200°C)

5.9. ProfileType

Value	Name	Description
2	AlProfile90	90° Aluminum Profile
1	ALProfile45	45° Aluminum Profile

5.10. FilterParameters

Field	SI Unit	IP Unit	Default Value	Description
MaxDiagonalLength	m	inch		Maximum diagonal length in meters. Only plates with diagonal length less than this value are considered. This selection is mandatory.
MinAllowedPressure	Pa	inH2O	50 Pa (0.201 inH2O)	Only plates with a pressure drop exceeding this value are included in the calculation.
MaxAllowedPressure	Pa	inH2O	50 Pa (0.201 inH2O)	Only plates whose pressure drop is less than this value are included in the calculation.
MaxAllowedGrossPrice	EUR	USD	1 000 000	Only plates where (Gross Damper Price + Gross Bypass Price + Gross Exchanger Price) is less than this value
MinSupplyEfficiency	%	%	50 %	Only plates whose supply temperature efficiency is greater than this value are included in the calculation.

6. Calling Examples

6.1. cURL

```
curl -X 'POST' \
'https://localhost:7251/api/HeatexExchangerCalculationApi/plate/calculate-automaticselection' \
-H 'accept: text/plain' \
-H 'Content-Type: application/json' \
-d '{
"totalWidth": 0.8,
"steps": "OneStep",
"bypassCode": 0,
"useDiffPressure": "No",
"shapeForUnevenFlow": 0,
"horizontalPlates": "No",
"plateModels": [
  "H2"
],
"materials": [
  "Aluminium"
],
"selectionParameters": {
  "sealing": "SiliconeFree",
  "profile": "AlProfile90"
},
"filterParameters": {
  "maxDiagonalLength": 1000,
  "minAllowedPressure": 50,
  "maxAllowedPressure": 250,
  "minSupplyEfficiency": 50,
  "minTotalPower": 0,
  "maxAllowedGrossPrice": 100000
},
"exhaustMassFlow": 1.67,
"exhaustPressure": 0,
"exhaustTemperature": 25,
"exhaustMoisture": 0.009868,
```

```
  "supplyMassFlow": 1.67,
  "supplyPressure": 0,
  "supplyTemperature": 5,
  "supplyMoisture": 0.002685,
  "differentialPressure": 0,
  "inletAirPressure": 101325,
  "season": 0
}'
```

7. Response Structure

7.1. AutomaticSelectionPlateResponse contains

Field (Type)	Description
AutomaticSelectionPlateResult	Explained below
Warnings	List of warnings
Errors	List of errors

7.2. AutomaticSelectionPlateResult

Field	SI Unit	IP Unit	Description
PlateCode	—	—	Plate code (automatically generated from input parameters).
ExhaustOutletMassFlow	kg/s	cfm	Exhaust outlet mass flow.
ExhaustOutletPressure	Pa	inH2O	Exhaust outlet pressure.
ExhaustOutletTemperature	°C	°F	Exhaust outlet temperature.
ExhaustOutletMoisture	kg/kg	lb/lb	Exhaust absolute moisture.
ExhaustPressureDrop	Pa	inH2O	Exhaust pressure drop.
ExhaustTemperatureEfficiency	%	%	Exhaust temperature efficiency.
ExhaustChannelVelocity	m/s	ft/min	Exhaust channel velocity.
ExhaustFaceVelocity	m/s	ft/min	Exhaust face velocity.
ExhaustPressureCorrected to 1.2 kg/m3 exhaust	Pa	inH2O	Exhaust pressure corrected to density 1.2 kg/m^3.
ExhaustHumidityEfficiency	%	%	Exhaust humidity efficiency.
SupplyOutletMassFlow	kg/s	cfm	Supply outlet mass flow.
SupplyOutletPressure	Pa	inH2O	Supply outlet pressure.
SupplyOutletTemperature	°C	°F	Supply outlet temperature.
SupplyOutletMoisture	kg/kg	lb/lb	Supply absolute moisture.
SupplyPressureDrop	Pa	inH2O	Supply pressure drop.
SupplyTemperatureEfficiency	%	%	Supply temperature efficiency.

SupplyChannelVelocity	m/s	ft/min	Supply channel velocity.
SupplyFaceVelocity	m/s	ft/min	Supply face velocity.
SupplyPressureCorrected to 1.2 kg/m3 supply	Pa	inH2O	Supply pressure corrected to density 1.2 kg/m^3.
SupplyHumidityEfficiency	%	%	Supply humidity efficiency.
TotalPower	W	BTU/h	Total exchanged power.
FreeWater	kg/s	lb/s	Condensate generated.
CondensationTemperature	°C	°F	Condensation temperature.
BypassWidth	m	inch	
ExchangerWeight	kg	lb	Weight of exchanger.
SensiblePower	W	BTU/h	Sensible exchanged power.
EnergyEfficiencyClassification	—	—	Energy efficiency classification (1:1 mass flow only).
GrossExchangerPrice	€	USD	Gross price.
ProductCode	—	—	Final generated product code string.
EnergyEfficiency	%	%	Energy efficiency.
ErpEfficiency	%	%	ERP compliance efficiency.
ExhaustEnthalpyEfficiency	%	%	Warm side enthalpy efficiency.
SupplyEnthalpyEfficiency	%	%	Cold side enthalpy efficiency.
CO2Emission	CO_2-eq kg	CO_2-eq lb	CO_2 emission value.
ErrorCode			Error code
ErrorMessage			Error Message

Example JSON Response (illustrative)


```
{
 "plateResults": [
  {
```

```
"plateCode": "H20600/4.0/E",
"exhaustOutletMassFlow": 1.6699999999999997,
"exhaustOutletPressure": -208.21208284977743,
"exhaustOutletTemperature": 13.796527909324501,
"exhaustOutletMoisture": 0.009823271430738946,
"exhaustEfficiency": 0.560173604533775,
"exhaustEfficiencyDry": 0.5650092968854485,
"exhaustChannelVelocity": 7.438085751903656,
"exhaustFaceVelocity": 2.938159254461715,
"exhaustPressureCorrected": -209.39757161707956,
"supplyOutletMassFlow": 1.67,
"supplyOutletPressure": -202.5302868142859,
"supplyOutletTemperature": 16.396162330933375,
"supplyOutletMoisture": 0.0026849999999999995,
"supplyEfficiency": 0.5701435976893802,
"supplyEfficiencyDry": 0.5650092968854485,
"supplyChannelVelocity": 6.939136514814696,
"supplyFaceVelocity": 2.741066565918249,
"supplyPressureCorrected": -209.92425357013445,
"totalPower": 18970.436439900262,
"sensiblePower": null,
"condensate": 0.00007371992172460323,
"condensationTemperature": 13.86,
"bypassWidth": 0,
"exchangerWeight": 36,
"energyEfficiencyClassification": 5,
"grossExchangerPrice": 1827,
"productCode": "H2A0600-0800-040-2EOO-2-0-0-0800",
"energyEfficiency": 53.67342789879256,
"erpEfficiency": 0.5650092968854485,
"cO2Emission": 262,
"errorCode": null,
"errorMessage": null
```

```
  },      ....
}
```

8. Rotary/calculate-automaticselection — Full API Documentation

8.1. Overview

This guide explains how to call the rotary/calculate-automaticselection endpoint to obtain an automatically selected rotor configuration that meets your performance, pressure drop, geometry, and pricing constraints. It describes the request body fields, unit conventions (SI and IP), validation rules, the relevant enumerations, example requests (cURL), and provides general notes on responses and error handling.

8.2. Endpoint & Method

Property	Value
HTTP Method	POST (JSON)
Path	/rotary/calculate-automaticselection
Content-Type	application/json
Accept	application/json
Authorization	Bearer <token> (if required)

9. Request Body Schema

The request body contains four logical sections:

1. CommonInputProperties — Air input conditions
2. General Rotor Parameters — Selection of rotor models, wheel height, and materials
3. SelectionParameters — Product configuration
4. FilterParameters — Search constraints

10. Common Input Properties

Parameter	SI Unit	IP Unit	Description
ExhaustMassFlow	kg/s	cfm	Exhaust air mass flow
ExhaustPressure	Pa	inH2O	Exhaust air pressure
ExhaustTemperature	°C	°F	Exhaust air temperature
ExhaustMoisture (Wet bulb in for IP)	kg/kg	°F	Exhaust absolute humidity
SupplyMassFlow	kg/s	lb/s	Supply air mass flow
SupplyPressure	Pa	inH2O	Supply air pressure
SupplyTemperature	°C	°F	Supply air temperature
SupplyMoisture (Wet bulb in for IP)	kg/kg	°F	Supply absolute humidity
DifferentialPressure	Pa	inH2O	Used for OACF
InletAirPressure	Pa	inH2O	Inlet total pressure
Season	0/1	0/1	0 = Winter, 1 = Summer

The Season parameter is used to calculate the Supply and Exhaust values.

• If Season = 0 (Winter), then ExhaustTemperature must be greater than SupplyTemperature.
• If Season = 1 (Summer), then ExhaustTemperature must be less than SupplyTemperature.

If these conditions are not met, errors 101 and 102 will appear.

10.1. General Rotor Parameters

Field	Description
Rotor Models	Rotors: E, O, ES, ER, EQ, EV, EN If no rotor exchanger model is specified, the calculation automatically includes all available rotor exchanger types.
Materials	Materials: Aluminum, Epoxy, Enthalpy (hybrid with molecular sieve), Molecular Sieve. The materials field can be null or a list of materials, for example: Materials= ["MolecularSieve", "Aluminum", "1"] If no materials are provided, the calculation automatically uses all materials defined in the RotorMaterialType enum (see *RotorMaterialType* enum described below).
Well Height	1.4, 1.6, 1.8, 2.0, 2.2 and 2.5 mm. (0.055, 0.063, 0.071, 0.079, 0.087 and 0.098") 1.4 mm (0.055") is not available for Molecular sieve. 2.2 and 2.5 mm (0.087 and 0.098") not available for model EN. 1.9 mm (0.074 inch) available only for Aluminium and model EN. 0.0017 (0.067") is available only for molecular sieve and model EN The well height field can be null or a list like: {1.2,1.6} When no well heights are specified, the calculation includes all available well heights

10.2. RotorMaterialType

Value	Name	Description
0	Aluminium	Al (Aluminium)
1	Epoxy	Epoxy
7	AdsorptionMolecularSieve	Adsorption (Molecular Sieve)
9	EnthalpyHybridMolecularSieve	Enthalpy (Hybrid with molecular sieve)

10.3. RotorModelType

{ E, O, ES, ER, EQ, EV, EN, }

10.4. SelectionParameters

For all fields that use enumerated values, the input may be given either as a numeric code or as the corresponding enum type name.

Field	Default Value	Description
CasingCode	StandardCasingVertical	see RotorCasingCode enum described below
Orientation	Vertical	Horizontal = 0, Vertical = 1 (see WheelOrientation enum described below)
PurgeSector	None	NoPurgeSector = 0, FrontRightOrUpwards = 1, FrontLeftOrDownwards = 2, BackRightOrUpwards = 3, BackLeftOrDownwards = 4, DeliveredLaterPurgeSector = 5 (see PurgeSectorPosition enum described below)
DriveEquipment	Standard	see DriveCode enum described below
DriveLocation	FloorLeft	None = 0, FloorLeftSide = 1, FloorRightSide = 2, CeilingLeftSide = 3, CeilingRightSide = 4, FloorLeftSideControlUnit = 5, FloorRightSideControlUnit = 6 (see DrivePosition enum described below)
Belt	PowerBelt	NoBelt = 0, PowerBelt = 2 (see RotorBeltType enum described below).
RotationDetector	NoDetector	NoDetector = 0, WithDetector = 1 (see RotorRotationDetector enum described below).
DeliveryOptions	TwoHalves	TwoHalves = 1, Segments = 2 (see RotorDeliveryOption enum described below).
CleanBlade	None	None = 0, CleanBladeRightRegularRight = 1, CleanBladeRightRegularLeft = 2, CleanBladeLeftRegularRight = 3, CleanBladeLeftRegularLeft = 4 (see RotorCleanBlade enum described below).
Options	Binary Code	Values: 7-digit binary configuration (Painted, Hatches, CondTrayMotor, CondTrayNonMotor, CableGlands, Unused, ILH)

10.5. RotorCasingCode

Value	Name	Description
0	NoCasing	No casing (O, V, EV, ER)
1	CoveredCasingHorizontal	Covered casing · horizontal plane (E, EQ, ES)
2	StandardCasingHorizontal	Standard casing · horizontal plane (E, EQ, ES)
3	CoveredCasingVertical	Covered casing · vertical plane (E, EQ, ES)
4	StandardCasingVertical	Standard casing · vertical plane (E, EQ, ES)
5	CoveredCasing290	Covered casing 290 (horizontal plane of intersection) (for E, ES)

6	StandardCasing290	Standard Casing 290 (horizontal plane of intersection) (for E,ES)
7	CoveredCasing290Vertical	Covered casing 290 with sidewise airflow (vertical plane of intersection) (for E, ES)
8	StandardCasing290Vertical	Standard casing 290with sidewise airflow (vertical plane of intersection) (for E, ES)

10.6. WheelOrientation

Value	Name	Description
0	Horizontal	Horizontal orientation (not allowed for ER, ES, EV, EQ)
1	Vertical	Vertical orientation (Standard)

10.7. PurgeSectorPosition

Value	Name	Description
0	NoPurgeSector	No purge sector.
1	FrontRightOrUpwards	Front right / front upwards.
2	FrontLeftOrDownwards	Front left / front downwards.
3	BackRightOrUpwards	Back right / back upwards.
4	BackLeftOrDownwards	Back left / back downwards.
5	DeliveredLaterPurgeSector	Delivered later (only for model E).

10.8. DriveCode

Val	Name	Description
0	NoDrive	No drive
1	Standard	Standard for all casing (code 10 for E, 6 for EQ or ES)
4	StandardDriveAndControl	Standard drive and control
6	ConstantDrive380V	Constant drive 380V
7	ConstantDrive230V	Constant drive 230V
10	OJStepDriveWithModbus	OJ step drive with Modbus
11	ConstantDrive115V_1Ph_60Hz	115V/1Ph/60Hz
12	ConstantDrive208V_3Ph_60Hz	208V/3Ph/60Hz
13	ConstantDrive230V_3Ph_60Hz	230V/3Ph/60Hz
14	ConstantDrive460V_3Ph_60Hz	460V/3Ph/60Hz
15	ConstantDrive575V_3Ph_60Hz	575V/3Ph/60Hz
16	ConstantDrive115V_1Ph_60Hz_VFD	115V/1Ph/60Hz + VFD
17	ConstantDrive208V_3Ph_60Hz_VFD	208V/3Ph/60Hz + VFD
18	ConstantDrive230V_3Ph_60Hz_VFD	230V/3Ph/60Hz + VFD
19	ConstantDrive460V_3Ph_60Hz_VFD	460V/3Ph/60Hz + VFD
20	ConstantDrive575V_3Ph_60Hz_VFD	575V/3Ph/60Hz + VFD
21	NGVarimaxStepDriveWithModbus	NG Varimax step drive with Modbus

10.9. RotorDrivePosition

Value	Name	Description
0	NoDrive	No drive
1	FloorLeft	Floor left
2	FloorRight	Floor right
3	CeilingLeft	Ceiling left (not for ES)
4	CeilingRight	Ceiling right (not for ES)

10.10. RotorBeltType

Value	Name	Description
0	NoBelt	No belt installed
2	Powerbelt	Standard Powerbelt selection

10.11. RotorRotationDetector

Value	Name	Description
0	NoDetector	No rotation detector
1	WithDetector	Includes rotation detector

10.12. RotorDeliveryOption

Value	Name	Description
1	TwoHalves	Two halves (ES, ER)
2	Segments	Segmented delivery (ES, ER)

10.13. RotorCleanBlade

Value	Name	Description
0	None	No Clean Blade
1	CleanBladeRightRegularRight	Clean blade right, regular right
2	CleanBladeRightRegularLeft	Clean blade right, regular left
3	CleanBladeLeftRegularRight	Clean blade left, regular right
4	CleanBladeLeftRegularLeft	Clean blade left, regular left

10.14. FilterParameters

Field	SI Unit	IP Unit	Default Value	Description
CalculationType			DiameterCalculation	Calculates values based on the maximum allowable diameter or casing type. DiameterCalculation → The calculation is performed between MinDiameter and MaxDiameter. CasingTypeCalculation → The calculation is performed between MinDiameter and the minimum value of CasingHeight and CasingWidth; This selection is mandatory. (see AutomaticSelectionCalculationType described bellow)
MinDiameter	mm	inch	500 mm (19.69 in)	Only rotors whose diameter is greater than this value are included in the calculation.
MaxDiameter	mm	inch	2500 mm (98.43 in)	Only rotors whose diameter is less than this value are included in the calculation. If CasingHeight > 0 and CasingWidth > 0, the rotor calculation is performed using these casing parameters.
MinAllowedPressure	Pa	inH2O	50 Pa (0.201 inH2O)	Only rotors with a pressure drop exceeding this value are included in the calculation.
MaxAllowedPressure	Pa	inH2O	50 Pa (0.201 inH2O)	Only rotors whose pressure drop is less than this value are included in the calculation.
MaxAllowedGrossPrice	EUR	USD	1 000 000	Only rotors whose PriceTotal is less than this value considered. For EQ rotors: PriceTotal = Gross Exchanger Price + Gross Option Price. For E, O, EV rotors: PriceTotal = Gross Exchanger Price.

MinSupplyEfficiency	%	%	50 %	Only rotors whose supply temperature efficiency is greater than this value are included in the calculation.
MinHumidityEfficiency	%	%	50 %	Only rotors whose supply humidity efficiency is greater than this value are included in the calculation.
DifferentialPressure	Pa	inH2O	250 Pa (1.005 inH2O)	Used for calculating the Outdoor Air Correction Factor (OACF).
DiameterIncrement	mm	inch	100 mm (3.94 in)	Each newly calculated rotor has a diameter equal to the previous diameter plus this increment value.
CasingHeight	mm	inch	0 mm (0.00 in)	Only rotors whose diameter is less than the maximum allowable diameter defined by Min(CasingWidth, CasingHeight) are included.
CasingWidth	mm	inch		If CasingStartDiameter = 0, the calculation is based on diameter. If CasingStartDiameter > 0, the calculation uses CasingWidth / CasingHeight.

10.15. AutomaticSelectionCalculationType

Value	Name	Description
0	DiameterCalculation	Calculation based on maximum diameter.
1	CasingTypeCalculation	Calculation based on casing type.

11. Validation Rules

- MinDiameter must be ≤ MaxDiameter
- MinAllowedPressure must be ≤ MaxAllowedPressure
- MinSupplyEfficiency must be 0–100%
- MinHumidityEfficiency must be 0–100%
- RotationalSpeed: 12 rpm for material 0,1,6,9; 17 rpm for 5; 25 rpm for 7.
- WellHeight allowed values: 1.4, 1.6, 1.8, 2.0, 2.2, 2.5 mm (convert to meters). Not available: 1.4 mm for materials 5 and 7; 2.2/2.5 mm not for EN.
- RotorDepth: O & EV fixed at 0.2 m; EN can be 0.1 / 0.15 / 0.2 m.
- Purge sector: Enum also defines code 5 (delivered later) only for model E; use if supported by backend.
- Season: 0=Winter, 1=Summer — ensure inputs (temperatures/moistures) match scenario.

12. Calling Examples

12.1. cURL

```
curl -X 'POST' \
  'https://localhost:44338/api/HeatexExchangerCalculationApi/rotary/calculate-automaticselection' \
  -H 'accept: text/plain' \
  -H 'Content-Type: application/json' \
  -d '
{
  "rotorModels": [
    "E"
  ],
  "materials": [
    "Aluminum","1"
  ],
  "wheelHeights": [],
  "selectionParameters": {
    "casingCode": "StandardCasingHorizontal",
    "orientation": "Vertical",
    "purgeSector": "BackRightOrUpwards",
    "driveEquipment": "Standard",
    "driveLocation": "FloorLeftSide",
    "belt": "PowerBelt",
    "rotationDetector": "NoDetector",
    "options": 0,
```

```
  "deliveryOptions": "TwoHalves",
  "cleanBlade": "CleanBladeRightRegularRight"
 },
 "filterParameters": {
  "calculationType": "DiameterCalculation",
  "maxDiameter": 2000,
  "minDiameter": 1950,
  "minAllowedPressure": 0,
  "maxAllowedPressure": 250,
  "maxAllowedGrossPrice": 1000000,
  "minSupplyEfficiency": 10,
  "minHumidityEfficiency": 10,
  "differentialPressure": 250,
  "diameterIncrement": 100,
  "casingHeight": 0,
  "casingWidth": 0
 },
 "exhaustMassFlow": 1.67,
 "exhaustPressure": 0,
 "exhaustTemperature": 25,
 "exhaustMoisture": 0.009868,
 "supplyMassFlow": 1.67,
 "supplyPressure": 0,
 "supplyTemperature": 5,
 "supplyMoisture": 0.002685,
 "differentialPressure":250,
 "inletAirPressure": 101325,
 "season": 0
}'
```

13. Response Structure

13.1. AutomaticSelectionRotorResponse

Field (Type)	Description
AutomaticSelectionRotorResult	Explained below
Warnings	List of warnings
Errors	List of errors

13.2. AutomaticSelectionRotorResult

Field	SI Unit	IP Unit	Description
RotorCode	—	—	Rotor code (automatically generated from input parameters).
ExhaustOutletMassFlow	kg/s	cfm	Exhaust outlet mass flow.
ExhaustOutletPressure	Pa	inH2O	Exhaust outlet pressure.
ExhaustOutletTemperature	°C	°F	Exhaust outlet temperature.
ExhaustOutletMoisture	kg/kg	lb/lb	Exhaust absolute moisture.
ExhaustPressureDrop	Pa	inH2O	Exhaust pressure drop.
ExhaustTemperatureEfficiency	%	%	Exhaust temperature efficiency.
ExhaustChannelVelocity	m/s	ft/min	Exhaust channel velocity.
ExhaustFaceVelocity	m/s	ft/min	Exhaust face velocity.
ExhaustPressureCorrected to 1.2 kg/m3 exhaust	Pa	inH2O	Exhaust pressure corrected to density 1.2 kg/m^3.
ExhaustHumidityEfficiency	%	%	Exhaust humidity efficiency.
SupplyOutletMassFlow	kg/s	cfm	Supply outlet mass flow.
SupplyOutletPressure	Pa	inH2O	Supply outlet pressure.
SupplyOutletTemperature	°C	°F	Supply outlet temperature.
SupplyOutletMoisture	kg/kg	lb/lb	Supply absolute moisture.
SupplyPressureDrop	Pa	inH2O	Supply pressure drop.
SupplyTemperatureEfficiency	%	%	Supply temperature efficiency.

SupplyChannelVelocity	m/s	ft/min	Supply channel velocity.
SupplyFaceVelocity	m/s	ft/min	Supply face velocity.
SupplyPressureCorrected to 1.2 kg/m3 supply	Pa	inH2O	Supply pressure corrected to density 1.2 kg/m^3.
SupplyHumidityEfficiency	%	%	Supply humidity efficiency.
TotalPower	W	BTU/h	Total exchanged power.
FreeWater	kg/s	lb/s	Condensate generated.
CondensationTemperature	°C	°F	Condensation temperature.
ExchangerWeight	kg	lb	Weight of exchanger.
SensiblePower	W	BTU/h	Sensible exchanged power.
LatentPower	W	BTU/h	Latent exchanged power.
OACF	—	—	Outdoor Air Correction Factor (only for E/EQ rotors).
EATR	%	%	Exhaust Air Transfer Ratio.
EnergyEfficiencyClassification	—	—	Energy efficiency classification (1:1 mass flow only).
Diameter	m	ft	Rotor diameter.
WellHeight	m	ft	Rotor well height.
RotorWeight	kg	lb	Rotor total weight.
HeightDimension	mm	inch	Dimension A.
WidthDimension	mm	inch	Dimension B.
DepthDimension	mm	inch	Dimension C.
GrossExchangerPrice	€	USD	Gross price.
ProductCode	—	—	Final generated product code string.
EnergyEfficiency	%	%	Energy efficiency.
ErpEfficiency	%	%	ERP compliance efficiency.
ExhaustEnthalpyEfficiency	%	%	Warm side enthalpy efficiency.
SupplyEnthalpyEfficiency	%	%	Cold side enthalpy efficiency.

CO2Emission	CO_2-eq kg	CO_2-eq lb	CO_2 emission value.

13.3. Warnings

Rotors EQ, ES, and E do not support NoCasing, a casing option is mandatory.

Rotor models EN, O, ER, and EV do not support any casing option. It must be NoCasing.

ES and EQ can be calculated for drive controls 4 (Drive Control), 6 (Constant Drive 420), and 1 (Standard).

Horizontal orientation is not possible for the models ER, ES, EV, and EQ. ES and EQ can be calculated for StandardDriveAndControl (4), ConstantDrive380V (6), ConstantDrive230V (7), and Standard (1).

E can be calculated for ConstantDrive380V (6), ConstantDrive230V (7), IBCVarimaxStepDrive (8), OJStepDriveWithModbus (10), and NGVarimaxStepDriveWithModbus (21).

Drive positions 3 (Ceiling, left side) and 4 (Ceiling, right side) are not applicable for ES.

Horizontal orientation is not supported for the models EQ and ES.

For the selected drive, ER, EV, O, and EN cannot be calculated.

Standard model E, so the following fields in request.SelectionParameters will be set to standard values: DriveCode = OJStepDriveWithModbus, Belt = Powerbelt, and RotationDetector = WithDetector. Any previous values in these fields will be overwritten.

Model without casing, so the following fields in request.SelectionParameters will be set to standard values: PurgeSector = None, DrivePosition = NoDrive, DriveCode = NoDrive, Belt = NoBelt, RotationDetector = NoDetector, and DeliveryOptions = null. Any previous values in these fields will be overwritten.

Standard model ES, so the following fields in request.SelectionParameters will be set to standard values: DriveCode = StandardDriveControl, Belt = Powerbelt, RotationDetector = WithDetector, and WheelOrientation = Vertical. Any previous values in these fields will be overwritten.

Standard model EQ, so the following fields in request.SelectionParameters will be set to standard values: DriveCode = StandardDriveControl, Belt = Powerbelt, RotationDetector = WithDetector, and WheelOrientation = Vertical. Any previous values in these fields will be overwritten.

13.4. Example JSON Response (illustrative)


```
{
 "rotorResults": [
  {
   "rotorCode": "Heatex64Dll.RotorModel",
   "exhaustOutletMassFlow": 1.67,
   "exhaustOutletPressure": -87.06128716862189,
   "exhaustOutletTemperature": 9.803761954780255,
   "exhaustOutletMoisture": 0.006188022873142196,
   "exhaustPressureDrop": -87.06128716862189,
   "exhaustTemperatureEfficiency": 0.7598119022609873,
   "exhaustChannelVelocity": 1.0514440920486001,
   "exhaustFaceVelocity": 0.985911759387324,
   "exhaustPressureCorrected": -88.43490260532718,
   "exhaustHumidityEfficiency": 0.5123175729998335,
   "supplyOutletMassFlow": 1.67,
   "supplyOutletPressure": -85.0707945986466,
   "supplyOutletTemperature": 22.212424799322946,
   "supplyOutletMoisture": 0.005260983988800462,
   "supplyPressureDrop": -85.0707945986466,
   "supplyTemperatureEfficiency": 0.8606212399661473,
   "supplyChannelVelocity": 1.0377083926340853,
   "supplyFaceVelocity": 0.9197764745047264,
   "supplyPressureCorrected": -88.4349026053272,
   "supplyHumidityEfficiency": 0.35862230109988336,
   "totalPower": 40026.17090720503,
   "freeWater": 0.00184366854055576,
   "condensationTemperature": 13.888195680907039,
   "exchangerWeight": 0,
   "sensiblePower": 28920,
   "latentPower": 11106.170907205029,
   "oacf": 1.06,
   "eatr": 0.74,
```

```
    "energyEfficiencyClassification": 1,
    "diameter": 1.95,
    "wellHeight": 0.0014,
    "rotorWeight": 241,
    "heightDimension": 2,
    "widthDimension": 2,
    "depthDimension": 0.316,
    "grossExchangerPrice": 22243,
    "productCode": "EA2000x2000-1950V-014-2DPOO-AAPI-A",
    "energyEfficiency": 84.53163226204285,
    "erpEfficiency": 0.8577712399661482,
    "warmEnthalpyEfficiency": 0.6447723635193333,
    "coldEnthalpyEfficiency": 0.6217191323985527,
    "cO2Emission": 1683,
    "errorCode": null,
    "errorMessage": "",
    "error": null
  }, ...
}
```


14. Error Handling (general)

On success, expect HTTP 200 with a JSON payload. Handle non-2xx codes appropriately (400 validation, 401/403 auth, 404 path, 409 conflicts, 500 server).

Status / Code	Meaning / Message
200	OK — calculation successful
400	Bad Request — validation failed (e.g., constraint violations)
401	Unauthorized — missing/invalid token
403	Forbidden — not enough permissions
404	Not Found — incorrect path or resource
409	Conflict — incompatible combination of options
500	Server Error — unexpected condition

.