Version 530 Updated 20260601

Heatex Select API Manual

1. Plate/calculate-performance — How to Call the Endpoint

Developer guide covering the request payload, units and constraints, enum reference, example calls, and the PlateCalculationPerformanceResponse schema.

2. Overview

This document explains how to call the plate/calculate-performance endpoint for plate heat exchanger performance. It details the request body fields, unit conventions (SI, IP), enumerations used, example requests (cURL), and places a placeholder section for the PlateCalculationPerformanceResponse schema.

Endpoint & Method (assumptions)

Most services expose this as JSON over HTTP. Adapt base URL and authentication to your environment.

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

Note: Replace host (e.g., https://api.example.com) and token placeholders with your actual values.

3. Request Body Schema

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	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 (Wet bulb in for IP)	kg/kg	°F	Exhaust air absolute moisture
SupplyMassFlow	kg/s	cfm	Supply air mass flow
SupplyPressure	Pa	inH_2O	Supply air pressure
SupplyTemperature	°C	°F	Supply air temperature
SupplyMoisture (Wet bulb in for IP)	kg/kg	°F	Supply air absolute moisture
DifferentialPressure	Pa	inH_2O	Differential pressure
InletAirPressure	Pa	inH_2O	Inlet air pressure
Season	-	-	0 = Winter, 1 = Summer
ExchangerModel	-	-	Model identifier(H, H2, P, Z ,Z2, T)
TotalWidth	m	inch	Total width
Steps	-	-	OneStep=1, TwoSteps =2 (see NumberOfSteps enum described below).
BypassCode[0)]	-	-	Bypass code (except for Z2, Z)
UseDiffPressure[1)]	-	-	0 = No, 1 = Yes (see UseDifferentialPressure enum described below).
ShapeForUnevenFlow[2)]	-	-	Uneven flow shape factor
HorizontalPlates[3)]	-	-	No = 0, Yes = 1 (see HorizontalPlatesOption enum described below). (except for Z2)
BypassColdOrWarm	-	-	ColdSide = 0, WarmSide = 1 (see BypassOnColdOrWarmSide enum described below). (except for Z2,Z)
FixedBypass[4)]	-	-	Fixed bypass value (except for Z2, Z)
IsImperialUnit(only for IP)			true=> make the calculation using IP units false=> make the calculation using SI units

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.

4. Validation Rules & Combinatorial Constraints

- Season must be 0 (Winter) or 1 (Summer).
- PlateMaterialType = StainlessSteel is only available for model Z and model Z2 (if used in pricing contexts).
- DamperType is not an enum (0 = No damper; other positive integers refer to actual damper numbers per product guide).

[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 diagonal 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 non-uniformity. Uneven flow profiles reduce efficiency and increase pressure drop. For this reason, the shape factor must not exceed 50%.

[3)] Horizontal plate orientation will due to design restrictions impact the performance and price for model H2 with low plate distances (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. Enum Reference

JSON Accepted Values: Use enum string names (recommended). Integers are accepted if your server supports them.

NumberOfSteps

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

UseDifferentialPressure

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

HorizontalPlatesOption

Value	Name	Description
0	No	No horizontal plates
1	Yes	Use horizontal plates(Not for Z2)

BypassOnColdOrWarmSide

Value	Name	Description
0	ColdSide	Bypass on cold side
1	WarmSide	Bypass on warm side (except for Z2)

6. Calling Examples

cURL

```
curl -X POST  https://api.heatex.com/ plate/calculate-performance\
-H "Content-Type: application/json"
-H "Accept: application/json"
 -H "Authorization: Bearer <token>"   -d '{
  "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,
  "exchangerModel": "H20500/6.0/E",
  "totalWidth": 1.2,
  "steps": "OneStep",
  "bypassCode": 0,
  "useDiffPressure": "No",
  "shapeForUnevenFlow": 0,
  "horizontalPlates": "No",
  "bypassColdOrWarm": "ColdSide",
  "fixedBypass": 0
}’
```

7. Response Schema

Response Schema — PlateCalculationPerformanceResponse table

PlateCalculationPerformanceResponse Output Table

Property	SI Unit	Imperial Unit	Description
ExchangerModel	—	—	Model code
TotalWidth	m	inch	Total width
NumberOfSteps	—	—	Number of steps
BypassCode	—	—	Bypass code
InletAirPressure	Pa	inH2O	Inlet air pressure
UseDiffPressure	—	—	Use differential pressure flag
ShapeForUnevenFlow	—	—	Shape for uneven flow
HorizontalPlates	—	—	Horizontal plates option
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
ExhaustEfficiency	%	%	Exhaust temperature efficiency
ExhaustEfficiencyDry	%	%	Exhaust dry efficiency Calculated at 0% RH for warm and cold air.
ExhaustChannelVelocity	m/s	ft/min	Exhaust channel velocity
ExhaustFaceVelocity	m/s	ft/min	Exhaust face velocity
ExhaustPressureCorrected	Pa	inH2O	Corrected exhaust pressure
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 outlet moisture
SupplyEfficiency	%	%	Supply temp efficiency
SupplyEfficiencyDry	%	%	Supply dry efficiency
SupplyChannelVelocity	m/s	ft/min	Supply channel velocity
SupplyFaceVelocity	m/s	ft/min	Supply face velocity
SupplyPressureCorrected	Pa	inH2O	Corrected supply pressure
TotalPower	W	BTU/h	Total exchanged power
Condensate	kg/s	lb/s	Condensate generated
CondensationTemperature	°C	°F	Condensation temperature
BypassWidth	m	inch	Bypass width
ExchangerWeight	kg	lb	Exchanger weight
EnergyEfficiencyClassification	—	—	Energy efficiency class (H 1-5) according to EN13053
Tfrost	°C	°F	Frost temperature
EnergyEfficiency	%	%	Energy efficiency Calculating energy efficiency according to EN13053. Calculations adjusts thermal efficiency, based on warm air 25˚C/0% RH and at cold air 5˚C/0% RH, with the impact from pressure drop.
ErpEfficiency	%	%	ERP compliance efficiency (ErP directive in Europe)
PressureOutBypass	Pa	inH2O	Bypass pressure
PressureOutBypassCorrected	Pa	inH2O	Corrected bypass pressure
ErrorCode	—	—	Error code
ErrorMessage	—	—	Error message

Example JSON Response (illustrative)


```
{
  "exchangerModel": "H20500/6.0/E",
  "exhaustOutletMassFlow": 1.6699999999999997,
  "exhaustOutletPressure": -74.85589726011612,
  "exhaustOutletTemperature": 16.07253416982405,
  "exhaustOutletMoisture": 0.009868,
  "exhaustEfficiency": 0.4463732915087975,
  "exhaustEfficiencyDry": 0.4463732915087975,
  "exhaustChannelVelocity": 6.091326123659097,
  "exhaustFaceVelocity": 2.350527403569372,
  "exhaustPressureCorrected": -74.98870450635077,
  "supplyOutletMassFlow": 1.67,
  "supplyOutletPressure": -72.51319665549137,
  "supplyOutletTemperature": 13.92746583017595,
  "supplyOutletMoisture": 0.0026850000000000003,
  "supplyEfficiency": 0.4463732915087975,
  "supplyEfficiencyDry": 0.4463732915087975,
  "supplyChannelVelocity": 5.682717965104067,
  "supplyFaceVelocity": 2.1928532527345994,
  "supplyPressureCorrected": -75.48788525015225,
  "totalPower": 14860.960925506884,
  "condensate": 0,
  "condensationTemperature": 13.86,
  "bypassWidth": 0,
  "exchangerWeight": 0,
  "energyEfficiencyClassification": 5,
  "tfrost": 0,
  "energyEfficiency": 43.622683756587094,
  "erpEfficiency": 0.4463732915087975,
  "pressureOutBypass": 0,
  "pressureOutBypassCorrected": 0,
  "errorCode": 0,
  "errorMessage": "Success"
}
  "errorCode": 1302,
  "errorMessage": "Condensation occurs. Pressure drop cannot be predicted. For more information please refer to the technical specification (warning)"
}
```

8. Plate/ calculate-price— How to Call the Endpoint

Developer guide for preparing the request payload, understanding enum values, constraints, examples, and interpreting the response (PlateCalculationPriceResponse).

Overview

This document explains how to call the plate/calculate-price endpoint for plate heat exchanger pricing. It describes the request body fields, unit conventions (SI and IP), the enumerations used, provides example cURL requests, and includes a placeholder section for the PlateCalculationPerformancePriceResponse schema.

9. Endpoint & Method (assumptions)

Price calculation endpoints are usually JSON-over-HTTP. Adjust base URL and auth as per your environment.

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

Note: Replace host and token placeholders with your actual values.

10. Request Body Schema

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	SI Unit	IP Unit	Description
ExchangerModel	-	-	Exchanger model (KEY).
Material	-	-	Aluminium = 0, Epoxy = 1, StainlessSteel = 4 (see PlateMaterialType enum described below).
Sealing	-	-	SiliconeFree = 2, Silicone = 7,TempHigh=5 (see SealingType enum described below).
Profile	-	-	ALProfile45 = 1, ALProfile90 = 2, BrushALProfile45, ALProfile90Slotted, StProfile90 (see ProfileType enum described below).
TotalWidth	m	inch	Total exchanger width.
BypassWidth	m	inch	Bypass width (used only if bypass is selected).(except for Z,Z2)
Bypass	-	-	Bypass type: 0 = NoBypass, 1 = Bypass, 11 = MiddleBypass (see BypassType enum described below). (except Z, Z2)
DamperWidth	m	inch	Damper width (only when a damper is selected).
DamperType	-	-	Damper selection: 0=NoDamper; other numbers = specific damper ID. See damper document. (except for Z2, Z)
Steps	-	-	OneStep=1, TwoSteps =2(see NumberOfSteps enum described below).
CorrosionProtectedFramework	-	-	Corrosion protection: 0=NotSelected, 1=Selected. (see SelectionOption enum described below). (except for Z2, Z)
IndividualAirTightnessTest	-	-	NotSelected = 0, Selected = 1 (see SelectionOption enum described below).
Aquaseal	-	-	NotSelected = 0, Selected = 1 (see SelectionOption enum described below).Plate-Heat-Exchanger-Technical-Information
IndividualWaterTightnessTest	-	-	NotSelected = 0, Selected = 1 (see SelectionOption enum described below).
LacqueredPlateEdges	-	-	NotSelected = 0, Selected = 1 (see SelectionOption enum described below).
Discount	%	%	Discount percentage (0–100).
DamperShaftCode	-	-	Damper shaft: 0=Square, 1=Round12 mm. (DamperShaftCode enum) Square= 12 x 12 mm square
HorizontalPlates	-	-	Horizontal plates: 0=No, 1=Yes. (SelectionOption enum) (except for Z2, Z)
DamperSquareShaft	-	-	Square = 0 (12 × 12 mm square), Round12mm = 1 (see DamperShaftCode enum described below)

11. Validation Rules & Combinatorial Constraints

- The Product code is automatically generated. The description of the Product code is available in separate documentation (supplied with the dll and this manual). If two dampers are included the product code is separated by a _ (underscore).

- Horizontal plate orientation will, due to design restrictions impact the performance and price for model H2 with low channel heights (see Heatex Technical Information for more details) 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.

- KEY describes the heat exchanger model. It is built up by:
    - Model name e.g. H, H2, Z, Z2 or P
    - Model size e.g. 0600
    - Channel height e.g. 6.0
    - End plate design e.g. A, C or E
    - Example: H20600/6.0/E

For full product range see “Plate-Heat-Exchanger-Technical-Information” on Heatex.com.

12. Enum Reference

JSON Accepted Values: Use enum string names (recommended). Integers are accepted if your server supports them.

NumberOfSteps

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

UseDifferentialPressure

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

HorizontalPlatesOption

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

BypassOnColdOrWarmSide

Value	Name	Description
0	ColdSide	Bypass on cold side
1	WarmSide	Bypass on warm side

SupplySideOption

Value	Name	Description
0	ColdSide	Supply is cold side
1	WarmSide	Supply is warm side

PlateMaterialType

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

SealingType

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

5	HighTemp	Hightemp max 230 (°C)

ProfileType

Value	Name	Description
2	AlProfile90	90° Aluminium profile
1	ALProfile45	45° Aluminium profile
4	StProfile90	90° Stainless profile

BypassType

Value	Name	Description
0	NoBypass	No bypass
1	Bypass	Standard bypass
11	MiddleBypass	Middle bypass

DamperShaftCode

Value	Name	Description
0	Square12x12	12×12 mm square shaft
1	Round12	12 mm round shaft

SelectionOption

Value	Name	Description
0	NotSelected	Not selected / No
1	Selected	Selected / Yes

13. Calling Examples

cURL

```
curl -X 'POST' \
  'https://api.heatex.com/ plate /api/HeatexExchangerCalculationApi/plate/calculate-price' \
  -H 'accept: text/plain' \
  -H 'Content-Type: application/json' \
  -d '{
  "exchangerModel": "H20500/2.0/E",
  "material": "Aluminium",
  "sealing": "SiliconeFree",
  "profile": "2",
  "totalWidth": 1.2,
  "bypassWidth": 0,
  "bypass": "NoBypass",
  "damperWidth": 0,
  "damperType": 0,
  "steps": "OneStep",
  "corrosionProtectedFramework": "NotSelected",
  "individualAirTightnessTest": "NotSelected",
  "lacqueredPlateEdges": "NotSelected",
  "discount": 0,
  "damperShaftCode": "Square",
  "horizontalPlates": "NotSelected",
  "aquaseal": "NotSelected",
  "individualWaterTightnessTest": "NotSelected",
  "damperSquareShaft": 0
}’
```

14. Response PlateCalculationPriceResponse

Response Schema

Field	SI Unit	IP Unit	Description
ProductCode	–	–	Product code generated during price calculation.
DamperProductCode	–	–	Damper product code generated during price calculation.
RecirculationDamperProductCode	–	–	Recirculation damper product code.
BypassDamperProductCode	–	–	Bypass damper product code.
GrossExchangerPrice	EUR	USD	Gross exchanger price.
GrossBypassPrice	EUR	USD	Gross bypass price.
GrossDamperPrice	EUR	USD	Gross damper price.
NetExchangerPrice	EUR	USD	Net exchanger price.
NetBypassPrice	EUR	USD	Net bypass price.
NetDamperPrice	EUR	USD	Net damper price.
BypassWidthOutput	m	inch	Bypass width (output).
NumberOfModules	–	–	Number of modules.
ExchangerWeight	kg	lb	Exchanger weight.
Co2Emission	kg CO_2-eq	kg CO_2-eq	CO_2 emissions (equivalent).
ErrorCode	–	–	Error code from calculation.
ErrorMessage	–	–	Error message text.

Example JSON Response (illustrative)


```
{
  "productCode": "H2A0500-1200-020-2EOO-2-2-0-1200",
  "damperProductCode": "",
  "recirculationDamperProductCode": "",
  "bypassDamperProductCode": "",
  "grossExchangerPrice": 3437,
  "grossBypassPrice": 0,
  "grossDamperPrice": 0,
  "netExchangerPrice": 3437,
  "netBypassPrice": 0,
  "netDamperPrice": 0,
  "bypassWidthOutput": 0,
  "numberOfModules": 2,
  "exchangerWeight": 65,
  "co2Emission": 496,
  "errorCode": 0,
  "errorMessage": "Success"
}
```

15. Rotary/calculate-performance — How to Call the Endpoint

Developer guide covering the request payload, units and constraints, enum reference, example calls, and the RotorCalculationPerformanceResponse schema.

16. Overview

This document describes how to use the rotary/calculate-performance endpoint to obtain rotor performance data. It outlines the request body fields, unit conventions (SI and IP), validation rules (such as RPM limits per material and allowed well heights), the enumerations involved, and provides example requests. The document also includes the complete response schema along with the corresponding OUT index mapping.

17. Endpoint & Method (assumptions)

Most services expose this as JSON over HTTP. Adapt base URL and authentication to your environment.

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

Note: Replace host (e.g., https://api.example.com) and token placeholders with your actual values.

18. Request Body Schema

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 (Type)	SI Unit	IP unit	Description
PurgeSectorPosition	–	–	NoPurgeSector = 0, FrontRightOrUpwards = 1, FrontLeftOrDownwards = 2, BackRightOrUpwards = 3, BackLeftOrDownwards = 4, DeliveredLaterPurgeSector = 5 (see PurgeSectorPosition enum described below)
SealsType	–	–	SiliconeFree = 2, Silicone = 7 (see *SealingType* enum described below).
Material	–	–	Material number : Canyou wite oAl, 1=Epoxy, 7=Adsorption (Molecular Sieve), 9=Enthalpy (Hybrid MS). (see *RotorMaterialType* enum described below).
OuterDiameter	m	inch	Outer diameter
RotationalSpeed	rpm	rpm	RPM depends on the material: 12 RPM for material 0 (Aluminium), material 1 (Epoxy), and material 9 (Enthalpy/Hybrid MS); 20 RPM for material 7 (Adsorption/Molecular Sieve) when using Model ES/ER; and 25 RPM for material 7 for all other rotor models, with standard RPM automatically selected for material 0.
WellHeight	m	inch	SI note: Allowed discrete values are 1.4, 1.6, 1.8, 2.0, 2.2, and 2.5 mm (i.e., 0.0014–0.0025 m). The 1.4 mm option is not permitted for material 7 (Molecular Sieve), and the 2.2 mm and 2.5 mm sizes are not available for the EN model. IP note: Allowed discrete values are 0.055, 0.063, 0.071, 0.079, 0.087, and 0.098 in. The 0.055 inch option is not permitted for material 7 (Molecular Sieve), and the 0.087 inch and 0.098 inch sizes are not available for the EN model. 0.0017 (0.067") is available only for molecular sieve and model EN
RotorDepth	m	inch	SI note:: Not Model EN: 0.2 m; Model EN: 0.1, 0.15, or 0.2 m. IP note: Not Model EN: 7.9 in; Model EN: 3.9 in, 5.9 in, or 7.9 in.
ShadowFactor	%	%	How much of the total wheel front area that is shadowed by cross beams and seals. 1= Heatex casing, 0= no casing, “XX” % for own casing.
WheelModel	–	–	O/E = 3 (see WheelType enum described below).
CasingModel	–	–	NoCasing = 0, ModelE_ES_EQ = 5 (see CasingType enum described below).
ExhaustMassFlow	kg/s	lb/s	Exhaust air mass flow
ExhaustPressure	Pa	inH2O	Exhaust air pressure
ExhaustTemperature	°C	°F	Exhaust air temperature
ExhaustMoisture	kg/kg	lb/lb	Exhaust absolute moisture
SupplyMassFlow	kg/s	lb/s	Supply air mass flow
SupplyPressure	Pa	inH2O	Supply air pressure

SupplyTemperature	°C	°F	Supply air temperature
SupplyMoisture	kg/kg	lb/lb	Supply absolute moisture
DifferentialPressure	Pa	inH2O	Differential pressure
InletAirPressure	Pa	psi	Inlet air pressure
Season (int)	–	–	0=Winter, 1=Summer (default 0).

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.

19. Validation Rules & Combinatorial Constraints

- Purge sector: Enum also defines code 5 (delivered on the side) only for model E; use if supported by backend.
- Season:
    - 0=Winter,
    - 1=Summer — ensure inputs (temperatures/moistures) match scenario.

20. Enum Reference

JSON Accepted Values: Use enum string names (recommended). Integers are accepted if your server supports them.

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)

RotorSealsType

Value	Name	Description
0	StandardSeals	Standard seals
1	SpecialSeals	Special seals (only for model E)

RotorMaterialType

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

WheelType

Value	Name	Description
3	ModelOAndE	Model O and E
5	ModelEN	Model EN
6	ModelEVAndEQ	Model EV and EQ
7	ModelESAndER	Model ES and ER

CasingType

Value	Name	Description
0	NoCasing	No casing
5	ModelE_ES_EQ	Model E, ES and EQ

21. Calling Examples

cURL

```
curl -X POST  https://api.heatex.com/ rotary/calculate-performance   -H "Content-Type:
application/json"   -H "Accept: application/json"   -H "Authorization: Bearer <token>"   -d '{
{
  "exhaustMassFlow": 1,
  "exhaustPressure":0,
  "exhaustTemperature": 20,
  "exhaustMoisture":0.0057,
  "supplyMassFlow": 1.67,
  "supplyPressure": 0,
  "supplyTemperature": 4,
  "supplyMoisture": 0.0017,
  "differentialPressure": 250,
  "inletAirPressure": 101325,
  "season": 0,
  "purgeSectorPosition": "NoPurgeSector",
  "sealsType": "StandardSeals",
  "material": "Aluminum",
  "outerDiameter": 1.3,
  "rotationalSpeed": 12,
  "wellHeight": 0.002,
  "rotorDepth": 0.2,
  "shadowFactor": 0,
  "wheelModel": "ModelOAndE",
  "casingModel": "NoCasing"
}'
```

22. Response

Response Schema — RotorCalculationPerformanceResponse

Field	SI Unit	IP Unit	Description
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.
ExhaustOutletPressure	Pa	inH2O	Exhaust pressure drop.
ExhaustTemperatureEfficiency	%	%	Exhaust temperature efficiency.
ExhaustHumidityEfficiency	%	%	Humidity efficiency exhaust
ExhaustEnthalpyEfficiency	%	%	Warm side enthalpy efficiency.
ExhaustChannelVelocity	m/s	ft/min	Exhaust channel velocity.
ExhaustFaceVelocity	m/s	ft/min	Exhaust face velocity.
ExhaustPressureCorrected	Pa	inH2O	Exhaust pressure corrected to density 1.2 kg/m³.
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.
SupplyHumidityEfficiency	%	%	Supply humidity efficiency.
SupplyEnthalpyEfficiency	%	%	Cold side enthalpy efficiency.
SupplyChannelVelocity	m/s	ft/min	Supply channel velocity.
SupplyFaceVelocity	m/s	ft/min	Supply face velocity.
SupplyPressureCorrected	Pa	inH2O	Supply pressure corrected to density 1.2 kg/m³.
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/ES/EQ rotors).
EATR	%	%	Exhaust Air Transfer Ratio.
EnergyEfficiencyClassification	—	—	Energy efficiency classification (1:1 mass flow only).
EnergyEfficiency	%	%	Energy efficiency.
ErpEfficiency	%	%	ERP compliance efficiency.
ErrorCode			The error number as written in our documentation
ErrorMessage			The error message as written in our documentation

Example JSON Response (illustrative)


```
{
  "exhaustOutletMassFlow": 1,
  "exhaustOutletPressure": -50.569646964992636,
  "exhaustOutletTemperature": 4.796943887659498,
  "exhaustOutletMoisture": 0.005192567738532153,
  "exhaustTemperatureEfficiency": 0.9501910070212813,
  "exhaustHumidityEfficiency": 0.1268580653669617,
  "exhaustEnthalpyEfficiency": 0.6359874048179289,
  "exhaustChannelVelocity": 1.3348698201562375,
  "exhaustFaceVelocity": 1.2876938537374942,
  "exhaustPressureCorrected": -52.96117838307083,
  "supplyOutletMassFlow": 1.67,
  "supplyOutletPressure": -82.46546736126854,
  "supplyOutletTemperature": 13.125035813372836,
  "supplyOutletMoisture": 0.001953716130733923,
  "supplyTemperatureEfficiency": 0.5703147383358023,
  "supplyHumidityEfficiency": 0.06342903268348081,
  "supplyEnthalpyEfficiency": 0.37443783115144746,
  "supplyChannelVelocity": 2.199285901882464,
  "supplyFaceVelocity": 2.0330781753736606,
  "supplyPressureCorrected": -88.44516789972832,
  "totalPower": 16459.469684435007,
  "freeWater": 0.00025371613073392344,
  "condensationTemperature": 5.729739368751246,
  "exchangerWeight": 0,
  "sensiblePower": 15330,
  "latentPower": 1129.4696844350074,
  "oacf": 0,
  "eatr": 0,
  "energyEfficiencyClassification": 1,
  "energyEfficiency": 78.48198448247663,
  "erpEfficiency": 0.7927312713884375,
  "errorCode": 1302,
  "errorMessage": "Condensation occurs. Pressure drop cannot be predicted. For more information please refer to the technical specification (warning)"
}
```

23. Notes

- Keep enum values as integers in JSON unless your backend accepts strings.
- Validate rotor geometry (depth, well height) vs. selected wheel model on the client to avoid failed calls.

24. Rotary/calculate-price — How to Call the Endpoint

Developer guide for preparing the request payload, understanding enum values, constraints, examples, and interpreting the response (RotorCalculationPriceResponse).

25. Overview

This document explains how a client calls the rotary/calculate-price endpoint: request schema, unit handling, validation rules, enum reference, example calls, and the response schema.

26. Endpoint & Method (assumptions)

Price calculation endpoints are usually JSON-over-HTTP. Adjust base URL and auth as per your environment.

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

Note: Replace host and token placeholders with your actual values.

27. Request Body Schema

Fields, types, and units. Prefer SI for unit handling; see 3.1.
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 (Type)	SI Unit	IP Unit	Description
Material	–	–	Al = 0, Epoxy = 1, Adsorption (Molecular Sieve) = 7, Enthalpy (Hybrid MS) = 9 (see RotorMaterialType enum described below).
OuterDiameter	m	inch	Outer diameter: • Model O & E: 0.5–2.575 m (19.69–101.38") • Model EN: 0.2–0.5 m (7.87–19.69") • Models EV & EQ: 1.6–3.8 m (63–149.61") • Models ES & ER: 1.6–3.8 m (63–149.61")
WellHeight	m	inch	Allowed discrete values: 1.4, 1.6, 1.8, 2.0, 2.2, 2.5 mm (0.055, 0.063, 0.071, 0.079, 0.087, 0.098"). Restrictions: • 1.4 mm not allowed for Molecular Sieve (7) • 2.2 and 2.5 mm not allowed for EN • 1.9 mm (0.074") only for Aluminium and EN • 1.7 (0.067") is available only for molecular sieve and model EN
RotorDepth	m	inch	Depth: • Models O, E, EV, EQ, ER, ES: 0.2 m (7.87") • Model EN: 0.1, 0.15, 0.2 m (3.94, 5.91, 7.87")
RotorPosition	–	–	Plane of intersection: Horizontal (over/under) = 0, Vertical (side by side) = 1 (see RotorPosition enum described below).
Casing	–	–	None = 0, Covered = 1, Standard = 3 (see RotorPriceCasingType enum described below).Covered casing 290=2(only for model E) Standard casing 290=4(only for model E)
CasingHeight	m	inch	Maximum values: • Type E: 2.82 m (111.02") • Type EQ: 4.14 m (162.99") • Type ES: 4.10 m (157.48")
CasingWidth	m	inch	Maximum values: • Type E: 2.85m (112.20") • Type EQ: 4.14 m (162.99") • Type ES: 4.10 m (157.48")
HubType	–	–	Hub/bearing options. Full selection rules included: EN: 2 = Standard ball bearing with shaft E, O: 0 = No bearing/shaft, 2 = Standard, 7 = Corrosion-resistant EQ, EV: 6 = External fixed shaft, 7 = Corrosion-resistant, 5 = Fixed shaft (EV only) ES: 6 = External, 7 = Corrosion-resistant ER: 2 = Internal (max Ø2800), 5 = Shaft w/o external bearing, 7 = Corrosion-resistant internal (max Ø2800) Rules: If Material = 1 (Epoxy) → default = 7. If Casing = 1 or 3, HubType 0 not allowed(see **HubType** enum described below).
DriveEquipment	–	–	(see DriveCode enum described below)
DriveLocation	–	–	Drive position: 0 = None, 1 = Floor left, 2 = Floor right, 5 = Floor left (control unit not attached, not for ES), 6 = Floor right (control unit not attached, not for ES). (DrivePosition enum)
PurgeSector	–	–	*None = 0, FloorLeftSide = 1, FloorRightSide = 2, CeilingLeftSide = 3, CeilingRightSide = 4, DeliveredLaterPurgeSector = 5,* (see DrivePosition enum described below)
Belt	–	–	NoBelt = 0, PowerBelt = 2 (see RotorBeltType enum described

			below).
Options[0)]	–	–	
Discount	%	%	Discount percentage (0–100%).
RotationDetector	–	–	NoDetector = 0, WithDetector = 1 (see RotorRotationDetector enum described below).
Orientation	–	–	Horizontal = 0, Vertical = 1 (see WheelOrientation enum described below) Horizontal is not allowed for ER, ES, EV, EQ.
ModelType			Wheel type: 3=O/E, 5=EN, 6=EV/EQ, 7=ES/ER. (WheelType enum)
SealType			SiliconeFree = 2, Silicone = 7 (see *SealingType* enum described below).
DeliveryOptions			TwoHalves = 1, Segments = 2 (see RotorDeliveryOption enum described below).
CleanBlade			None = 0, CleanBladeRightRegularRight = 1, CleanBladeRightRegularLeft = 2, CleanBladeLeftRegularRight = 3, CleanBladeLeftRegularLeft = 4 (see RotorCleanBlade enum described below).

28. Validation Rules & Combinatorial Constraints

- For correct assembly clearance, the **CasingHeight** and **CasingWidth** values must meet the following minimums:
  - **Model E:** diameter + 50 mm
  - **Model EQ:** diameter + 140 mm
  - **Model ES:** diameter + 100 mm
- Options[0]. The code is constructed as a “binary number” with six possible digits. The number is built up from right to left. Leftmost zeros can be excluded.

Digit	**6**	**5**	**4**	**3**	**2**	**1**
Parameter	Currently not used	Cable gland (No=0, Yes=1)	Condensate tray on non-motor side, (No=0, Yes=1)	Condensate tray on motor side, (No=0, Yes=1)	Inspection hatches, (No=0, Yes=1)	Corrosion protected framework, (No=0, Yes=1)
Example	No	Yes	Yes	No	No	Yes
	0	1	1	0	0	1

Example: 11001 will give the options corrosion protected framework, condensate tray on non-motor side and cable glands.

All combinations between the clean blade and purge sector can be found in the file "Product Codes Rotor - Model E”.

Please note: if the purge sector is on the left, you must select the left clean blade position; otherwise, "Not valid" will appear in the product code. The same applies for the right side.

Clean blade is not available in the AHRI version.

29. Enum Reference

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)

RotorSealsType

Value	Name	Description
0	StandardSeals	Standard seals
1	SpecialSeals	Special seals (only for model E)

RotorCleanBlade

Value	Name	Description
0	None	No clean blade
1	CleanBladeRightRegularRight	Right clean blade / regulator right
2	CleanBladeRightRegularLeft	Right clean blade / regulator left
3	CleanBladeLeftRegularRight	Left clean blade / regulator right
4	CleanBladeLeftRegularLeft	Left clean blade / regulator left

RotorMaterialType

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

WheelType

Value	Name	Description
3	ModelOAndE	Model O and E
5	ModelEN	Model EN
6	ModelEVAndEQ	Model EV and EQ
7	ModelESAndER	Model ES and ER

RotorPriceCasingType

Value	Name	Description
0	NoCasing	No casing
1	CoveredCasing	Covered casing
2	CoveredCasing290	Covered casing 290 (only for

		model E)
3	StandardCasing	Standard casing
4	StandardCasing290	Standard casing 290(only for model E)

RotorRotationDetector

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

WheelOrientation

Value	Name	Description
0	Horizontal	Horizontal orientation
1	Vertical	Vertical orientation

HubType

Value	Name	Description
0	WithoutShaftBearing	Without shaft / bearing
1	SlideBearingWithShaft	Slide bearing with shaft
2	BallBearingWithShaft	Ball bearing with shaft
4	BallBearingWithoutShaft	Ball bearing without shaft
5	FixedShaftWithoutBearing	Fixed shaft without bearing
6	ExternalBallBearings	External bearing with fixed shaft (Only for Model ES, EQ)
7	BallBearingWithShaftCorrosionResistant	Corrosion resistant ball bearing with shaft
8	ModelEReplacementWheels	Model E replacement wheels

DriveCode

Value	Name	Description
0	NoDrive	No drive
4	StandardDriveAndControl	IBC Micromax drive and control (for EQ, ES)
6	ConstantDrive380V	Constant drive 380V
7	ConstantDrive230V	Constant drive 230V(for E)
10	OJStepDriveWithModbus	OJ step drive with Modbus (for E)
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 (for E,ES)

DrivePosition

Value	Name	Description
0	NoDrive	No drive
1	FloorLeftSide	Floor, left side
2	FloorRightSide	Floor, right side
3	RoofLeftSide	Roof, left side (not used)
4	RoofRightSide	Roof, right side (not used)
5	FloorLeftSideControlUnitNotAttached	Floor, left; control unit not attached
6	FloorRightSideControlUnitNotAttached	Floor, right; control unit not attached

RotorBeltType

Value	Name	Description
0	NoBelt	No belt
2	PowerBelt	Power belt

RotorPosition

Value	Name	Description
0	Horizontal	Horizontal (upper/lower deck)
1	Vertical	Vertical (side by side)

RotorDeliveryOption

Value	Name	Description
1	TwoHalves	Two Halves (A)
2	Segments	Segments (B)

30. Calling Examples

cURL

```
curl -X POST   https://api.heatex.com/calculate-price   -H "Content-Type: application/json"   -H
"Accept: application/json"   -H "Authorization: Bearer <token>"   -d '{

{
  "material": "Aluminium",
  "outerDiameter": 1.2,
  "wellHeight": 0.002,
  "rotorDepth": 0.2,
  "rotorPosition": "Horizontal",
  "casing": "1",
  "casingHeight": 0,
  "casingWidth": 0,
  "hubTypeValue": "2",
  "driveEquipment": "6",
  "driveLocation": "2",
  "purgeSector": "0",
  "belt": "2",
  "options": 0,
  "discount": 0,
  "rotationDetector": "NoDetector",
  "orientation": "1",
  "modelType": "ModelOAndE",
  "sealType": "StandardSeals",
  " deliveryOptions ": 0,
  "cleanBlade": "0"
}
  }'
```

C# (HttpClient)

```
using System.Net.Http;
using System.Net.Http.Json;

var http = new HttpClient { BaseAddress = new Uri("https://<your-host>") };
http.DefaultRequestHeaders.Accept.ParseAdd("application/json");
http.DefaultRequestHeaders.Authorization =
    new System.Net.Http.Headers.AuthenticationHeaderValue("Bearer", "<token>");

var payload =           var request= new RotorCalculationPriceRequest {


    Material = 0,    // Aluminium
    OuterDiameter = 1.2,
    WellHeight = 0.002,
    RotorDepth = 0.2,
    RotorPosition = 0,    // Horizontal
    Casing = RotorPriceCasingType.CoveredCasing ,    // CoveredCasing
    CasingHeight = 0,
    CasingWidth = 0,
    HubTypeValue =  HubType.BallBearingWithShaft,    // BallBearingWithShaft
    DriveEquipment =DriveCode.ConstantDrive380V,    // ConstantDrive380V
    DriveLocation = DrivePosition.FloorRightSide  ,    // FloorRightSide
    PurgeSector = 0,    // NoPurgeSector
    belt = 2,    // PowerBelt
    Options = 0,
    Discount = 0,
    RotationDetector = 0,    // NoDetector
    Orientation = WheelOrientation.Vertical,    // Vertical  (your input was "1")
    ModelType = WheelType.ModelOAndE,    // ModelOAndE
    SealType = 0,    // StandardSeals
    DeliveryOptions = 0,
    CleanBlade = 0     // None


};
var res = await http.PostAsJsonAsync("/rotary/calculate-price", payload);
res.EnsureSuccessStatusCode();

// var result = await res.Content.ReadFromJsonAsync<YourResponseType>();
```

31. Response & Error Handling (general)

Response Schema — RotorCalculationPriceResponse

Field	SI Unit	IP Unit	Description
Discount	%	%	Discount percentage.
GrossExchangerPrice	EUR	USD	Gross exchanger price.
NetExchangerPrice	EUR	USD	Net exchanger price.
GrossOptionPrice	EUR	USD	Gross option price (available for model EQ).
NetOptionPrice	EUR	USD	Net option price (available for model EQ).
ExchangerWeight	kg	lb	Exchanger weight.
CaseHeight	m	inch	Case height.
CaseWidth	m	inch	Case width.
CaseDepth	m	inch	Case depth.
ErrorCode	-	-	Error code from calculation.
ErrorMessage	-	-	Error message in text.
Co2Emission	kg CO_2-eq	kg CO_2-eq	CO_2 emissions (CO_2 equivalent).
ProductCode	-	-	Product code generated during price calculation.

32. 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

33. Notes

- Keep enums as integers in JSON unless your backend accepts strings.
- Validate combinations client-side to reduce failed calls.