

**ROBUSCHI**

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**ROBOX**

**SELECTION**  
**International Measuring System (S.I.)**

Soft.Ver. : 13.0.18  
 D.B.Ver. : 17.5.18001  
 Date : 12.13.2018  
 Page 1/ 9

**MODEL : ES 45 /2 P**

Quantity : 1

**GENERAL DATA**

|          |                 |         |                                |
|----------|-----------------|---------|--------------------------------|
| Ref.     | : Med støykasse | Plant   | : Førresfjorden                |
| Customer | : Steinsvik     | Item    | : Att: Steffen                 |
|          |                 | Service | : Pressure pneumatic conveying |

**FLUID**

|                                  |                   |                         |         |                         |        |
|----------------------------------|-------------------|-------------------------|---------|-------------------------|--------|
| Fluid                            | : Atmospheric air |                         |         |                         |        |
| Spec. W.ght (kg/m <sup>3</sup> ) | : 1.199           | Spec. Heat Cp (kJ/kg°C) | : 1.010 | Spec. Heat Cv (kJ/kg°C) | : .723 |
| Altitude (m)                     | : 0               | Pressure (mbar)         | : 1,013 | Temperature (°C)        | : 20   |
| Relative humidity (%)            | : 50              |                         |         |                         |        |

**TECHNICAL DATA**

|                              |              |                                    |            |                        |            |
|------------------------------|--------------|------------------------------------|------------|------------------------|------------|
| Delivery (m <sup>3</sup> /h) | Q1 : 654 FAD | *Delivery (Nm <sup>3</sup> /h)     | Q2 : 582   | *Delivery (kg/h)       | Q3 : 753   |
|                              |              | ***Delivery T (Nm <sup>3</sup> /h) | Q2T : 589  | ***Delivery T (kg/h)   | Q3T : 758  |
| Delivery (m <sup>3</sup> /h) | Q4 :         | *Delivery (Nm <sup>3</sup> /h)     | Q4 :       | *Delivery (kg/h)       | Q4 :       |
| Speed (rpm)                  | n4 :         | ***Delivery T (Nm <sup>3</sup> /h) | Q4T :      | ***Delivery T (kg/h)   | Q4T :      |
| Dif.pressure (mbar)          | DP : 800     | Inlet press. (mbar a)              | P1 : 1,013 | Outlet pres.(mbar a)   | P2 : 1,813 |
| Temp.rise(°C)                | DT : 85      | Inlet temp.(°C)                    | T1 : 30    | Outlet temp.(°C)       | T2 : 115   |
|                              |              | Spec.W.ght (kg/m <sup>3</sup> )    | SW : 1.160 | H2O injection (lt/min) | ia : .00   |
| Abs.ed Power (kW)            | N : 19.7     | **Sound Pressure Level (dBA)       | : 74       | Heat radiation (kW)    | Wd : 1.6   |
| Speed (rpm)                  | n : 4,706    | n/nmax (%)                         | : 94       |                        |            |
| Volumetric efficiency (%)    | : 82.7       | Adiabatic efficiency (%)           | : 80.1     | Total efficiency (%)   | : 59.2     |

\*The Nm<sup>3</sup>/h and kg/h capacity are referred to the dry part of the conveyed gas/vapour mixture according DIN 1343

\*\*Estimated sound pressure level at 1 m, free field with soundproof piping

\*\*\*The Nm<sup>3</sup>/h and kg/h capacity are referred to total conveyed gas/vapour mixture

FAD measured as per ISO1217, performances tolerances as per Robuschi procedure TE1.S.0015 (Q1 =±5%\*nm<sup>3</sup>/h; N=±5%)

**ELECTRIC MOTOR**

|             |         |       |      |   |                         |
|-------------|---------|-------|------|---|-------------------------|
| IEC Motor   | : 180M  | Hz    | : 50 |   |                         |
| Power (kW)  | : 22.0  | Poles | : 2  | V | : 380-420 D / 660-690 Y |
| Speed (rpm) | : 2,930 | Size  | :    |   |                         |

**TRANSMISSION**

|                 |       |                       |         |                          |       |
|-----------------|-------|-----------------------|---------|--------------------------|-------|
| Coupling type   | :     |                       |         |                          |       |
| V-belt type     | : XPA | Length (mm)           | : 1,600 | Shaft centres (mm)       | : 527 |
| Grooves         | : 3   | Mot.pulley Diam. (mm) | : 212   | Blower pulley diam. (mm) | : 132 |
| (Int.Code C482) |       | (Int.Code 097M)       |         | (Int.Code S089)          |       |

**WARNING**

No warning

**MODEL** : ES 45 /2 P

Quantity : 1

### GENERAL DATA

|          |                 |         |                                |
|----------|-----------------|---------|--------------------------------|
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| Customer | : Steinsvik     | Item    | : Att: Steffen                 |
|          |                 | Service | : Pressure pneumatic conveying |

### FLUID

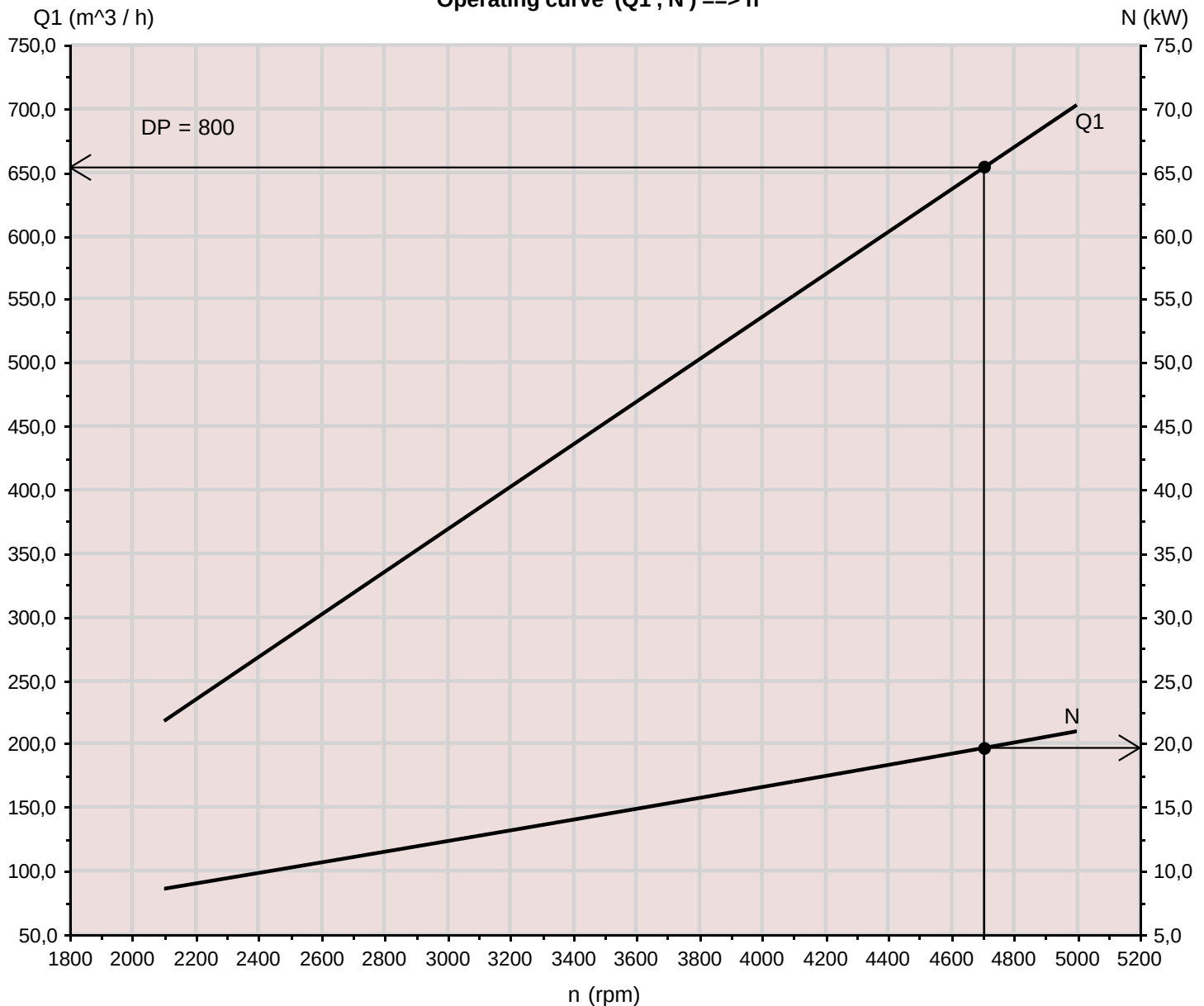
|                                  |                   |                         |         |                         |        |
|----------------------------------|-------------------|-------------------------|---------|-------------------------|--------|
| Fluid                            | : Atmospheric air |                         |         |                         |        |
| Spec. W.ght (kg/m <sup>3</sup> ) | : 1.199           | Spec. Heat Cp (kJ/kg°C) | : 1.010 | Spec. Heat Cv (kJ/kg°C) | : .723 |
| Altitude (m)                     | : 0               | Pressure (mbar)         | : 1,013 | Temperature (°C)        | : 20   |
| Relative humidity (%)            | : 50              |                         |         |                         |        |

### OPERATION POINT

|                              |            |                     |           |                                 |            |
|------------------------------|------------|---------------------|-----------|---------------------------------|------------|
| Inlet press. (mbar a)        | P1 : 1,013 | Inlet temp.(°C)     | T1 : 30   | Spec.W.ght (kg/m <sup>3</sup> ) | SW : 1.160 |
| Delivery (m <sup>3</sup> /h) | Q1 : 654   | Dif.pressure (mbar) | DP : 800  | Cp / Cv                         | : 1.4      |
| Abs.ed Power (kW)            | N : 19.7   | Speed (rpm)         | n : 4,706 | n/nmax (%)                      | : 94       |

FAD measured as per ISO1217, performances tolerances as per Robuschi procedure TE1.S.0015 (Q1 =±5%\*nm<sup>3</sup>/n; N=±5%)

Operating curve (Q1 , N) ==> n



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**OPERATING CURVES**  
International Measuring System (S.I.)

Soft.Ver. : 13.0.18  
D.B.Ver. : 17.5.18001  
Date : 12.13.2018  
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**MODEL : ES 45 /2 P**

Quantity : 1

## GENERAL DATA

|          |                 |         |                                |
|----------|-----------------|---------|--------------------------------|
| Ref.     | : Med støykasse | Plant   | : Førresfjorden                |
| Customer | : Steinsvik     | Item    | : Att: Steffen                 |
|          |                 | Service | : Pressure pneumatic conveying |

## FLUID

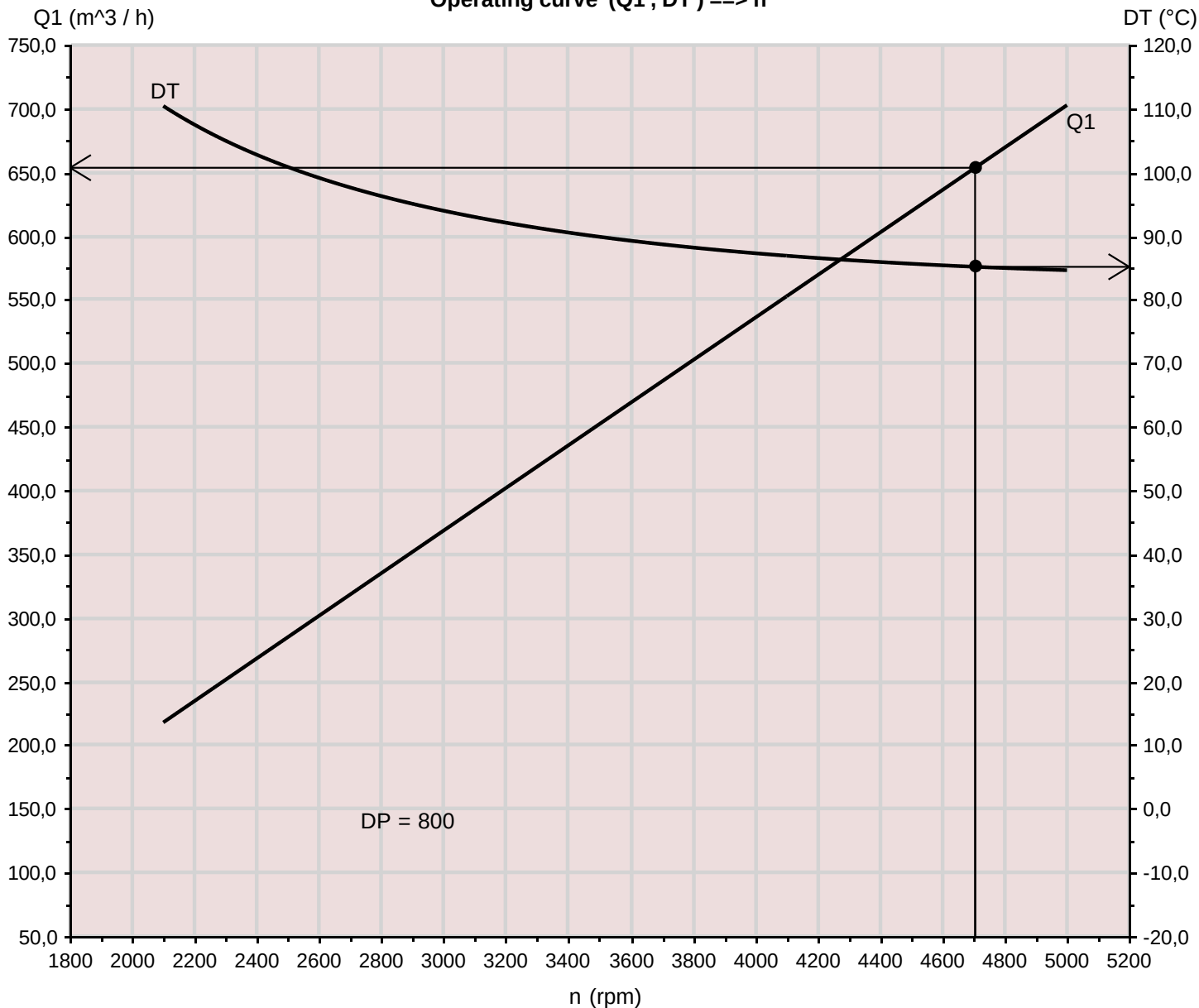
|                                  |                   |                         |         |                         |        |
|----------------------------------|-------------------|-------------------------|---------|-------------------------|--------|
| Fluid                            | : Atmospheric air |                         |         |                         |        |
| Spec. W.ght (kg/m <sup>3</sup> ) | : 1.199           | Spec. Heat Cp (kJ/kg°C) | : 1.010 | Spec. Heat Cv (kJ/kg°C) | : .723 |
| Altitude (m)                     | : 0               | Pressure (mbar)         | : 1,013 | Temperature (°C)        | : 20   |
| Relative humidity (%)            | : 50              |                         |         |                         |        |

## OPERATION POINT

|                              |            |                     |           |                                 |            |
|------------------------------|------------|---------------------|-----------|---------------------------------|------------|
| Inlet press. (mbar a)        | P1 : 1,013 | Inlet temp.(°C)     | T1 : 30   | Spec.W.ght (kg/m <sup>3</sup> ) | SW : 1.160 |
| Delivery (m <sup>3</sup> /h) | Q1 : 654   | Dif.pressure (mbar) | DP : 800  | Cp / Cv                         | : 1.4      |
| Temp.rise(°C)                | DT : 85    | Speed (rpm)         | n : 4,706 | n/nmax (%)                      | : 94       |

FAD measured as per ISO1217, performances tolerances as per Robuschi procedure TE1.S.0015 (Q1 =±5%\*nm<sub>x</sub>/n; N=±5%)

**Operating curve (Q1 , DT ) ==> n**



**MODEL : ES 45 /2 P**

Quantity : 1

**GENERAL DATA**

|          |                 |         |                                |
|----------|-----------------|---------|--------------------------------|
| Ref.     | : Med støykasse | Plant   | : Førresfjorden                |
| Customer | : Steinsvik     | Item    | : Att: Steffen                 |
|          |                 | Service | : Pressure pneumatic conveying |

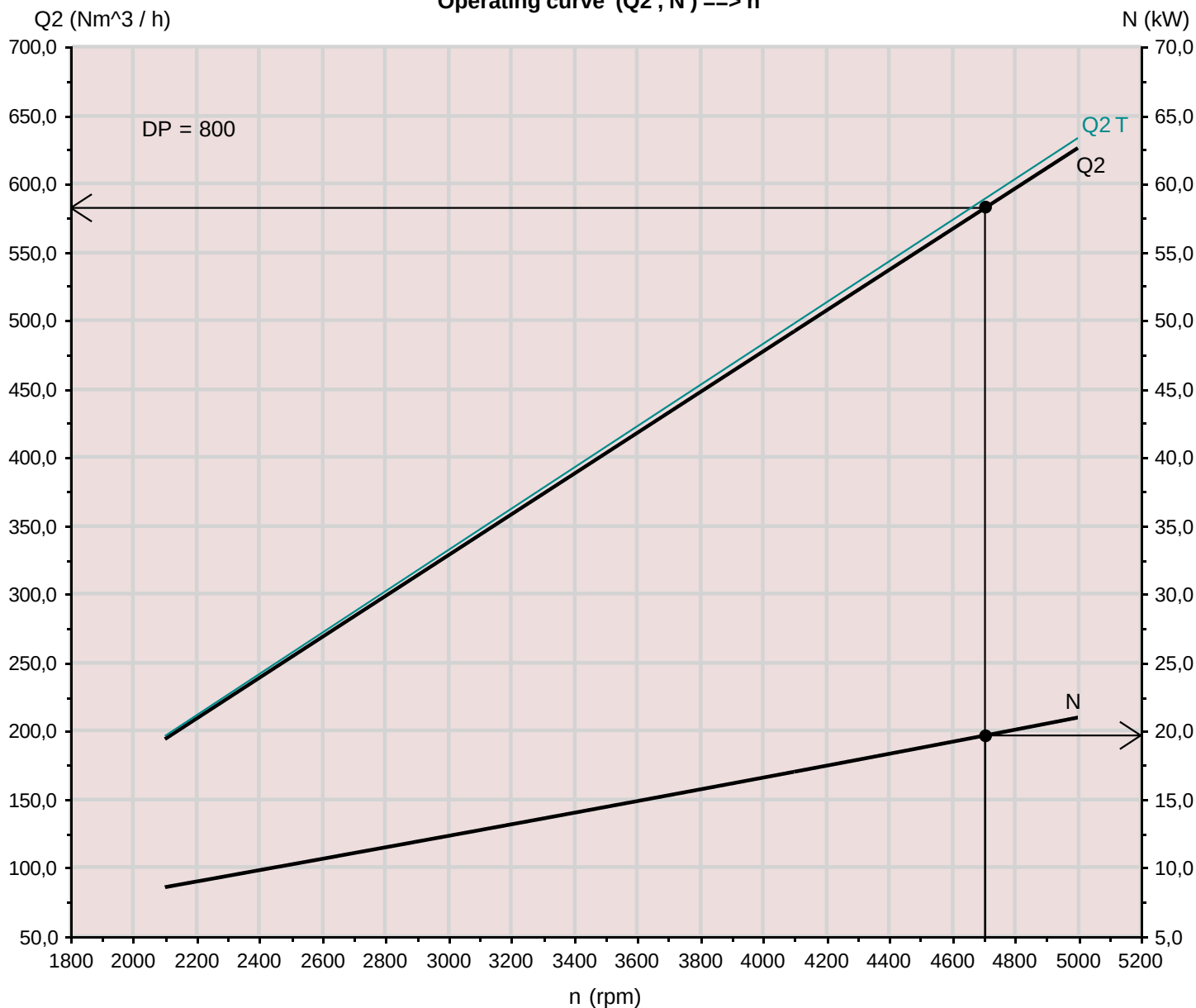
**FLUID**

|                                  |                   |                         |         |                         |        |
|----------------------------------|-------------------|-------------------------|---------|-------------------------|--------|
| Fluid                            | : Atmospheric air |                         |         |                         |        |
| Spec. W.ght (kg/m <sup>3</sup> ) | : 1.199           | Spec. Heat Cp (kJ/kg°C) | : 1.010 | Spec. Heat Cv (kJ/kg°C) | : .723 |
| Altitude (m)                     | : 0               | Pressure (mbar)         | : 1,013 | Temperature (°C)        | : 20   |
| Relative humidity (%)            | : 50              |                         |         |                         |        |

**OPERATION POINT**

|                               |            |                     |           |                                 |            |
|-------------------------------|------------|---------------------|-----------|---------------------------------|------------|
| Inlet press. (mbar a)         | P1 : 1,013 | Inlet temp.(°C)     | T1 : 30   | Spec.W.ght (kg/m <sup>3</sup> ) | SW : 1.160 |
| Delivery (Nm <sup>3</sup> /h) | Q2 : 582   | Dif.pressure (mbar) | DP : 800  | Cp / Cv                         | : 1.4      |
| Abs.ed Power (kW)             | N : 19.7   | Speed (rpm)         | n : 4,706 | n/nmax (%)                      | : 94       |

FAD measured as per ISO1217, performances tolerances as per Robuschi procedure TE1.S.0015 (Q1 =±5%\*nm<sub>x</sub>/n; N=±5%)

**Operating curve (Q2 , N) ==> n**

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**MODEL : ES 45 /2 P**

Quantity : 1

## GENERAL DATA

|          |                 |         |                                |
|----------|-----------------|---------|--------------------------------|
| Ref.     | : Med støykasse | Plant   | : Førresfjorden                |
| Customer | : Steinsvik     | Item    | : Att: Steffen                 |
|          |                 | Service | : Pressure pneumatic conveying |

## FLUID

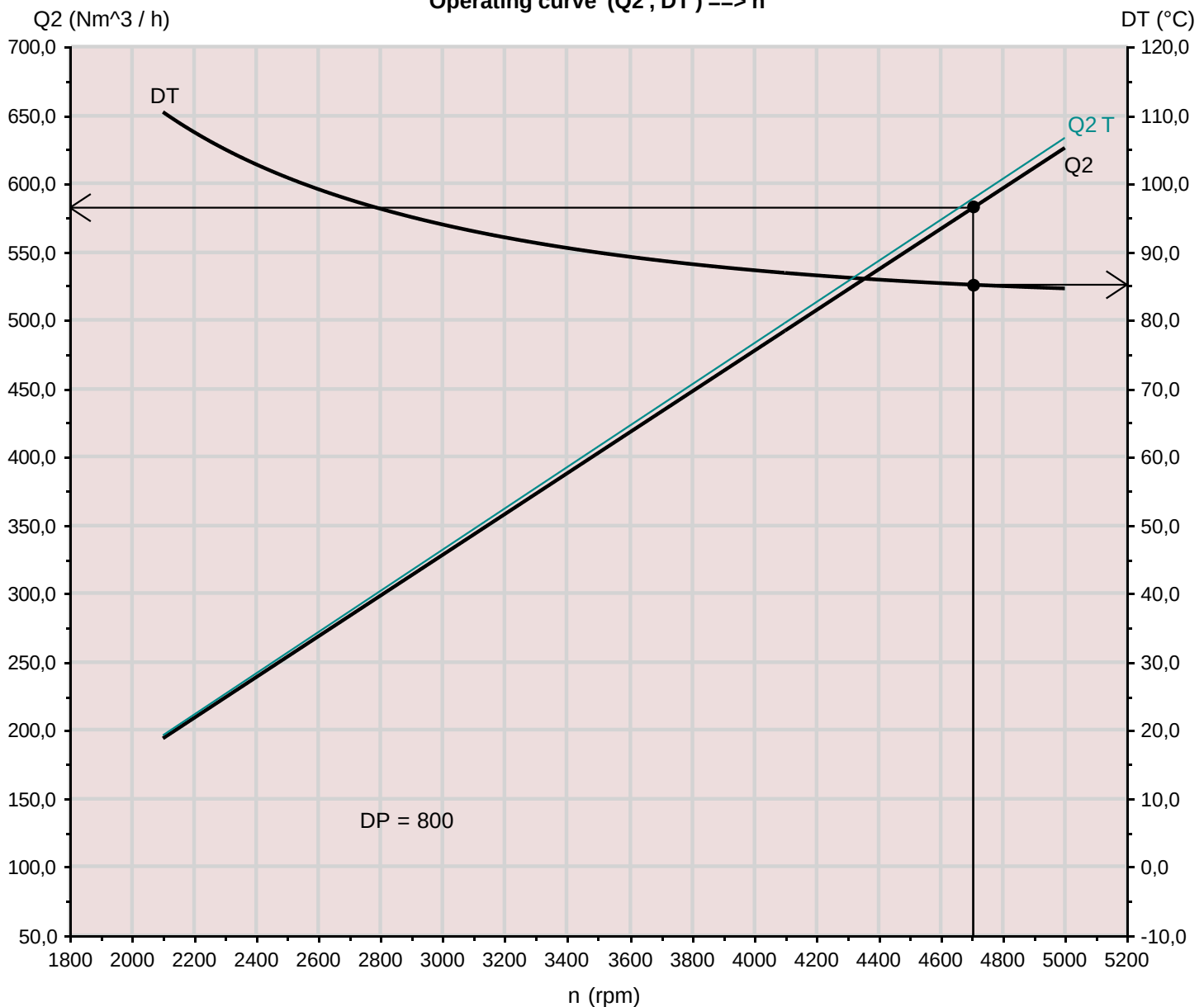
|                                  |                   |                         |         |                         |        |
|----------------------------------|-------------------|-------------------------|---------|-------------------------|--------|
| Fluid                            | : Atmospheric air |                         |         |                         |        |
| Spec. W.ght (kg/m <sup>3</sup> ) | : 1.199           | Spec. Heat Cp (kJ/kg°C) | : 1.010 | Spec. Heat Cv (kJ/kg°C) | : .723 |
| Altitude (m)                     | : 0               | Pressure (mbar)         | : 1,013 | Temperature (°C)        | : 20   |
| Relative humidity (%)            | : 50              |                         |         |                         |        |

## OPERATION POINT

|                               |            |                     |           |                                 |            |
|-------------------------------|------------|---------------------|-----------|---------------------------------|------------|
| Inlet press. (mbar a)         | P1 : 1,013 | Inlet temp.(°C)     | T1 : 30   | Spec.W.ght (kg/m <sup>3</sup> ) | SW : 1.160 |
| Delivery (Nm <sup>3</sup> /h) | Q2 : 582   | Dif.pressure (mbar) | DP : 800  | Cp / Cv                         | : 1.4      |
| Temp.rise(°C)                 | DT : 85    | Speed (rpm)         | n : 4,706 | n/nmax (%)                      | : 94       |

FAD measured as per ISO1217, performances tolerances as per Robuschi procedure TE1.S.0015 (Q1 =±5%\*nm<sub>x</sub>/n; N=±5%)

**Operating curve (Q2 , DT ) ==> n**



**MODEL : ES 45 /2 P**

Quantity : 1

**GENERAL DATA**

|          |                 |         |                                |
|----------|-----------------|---------|--------------------------------|
| Ref.     | : Med støykasse | Plant   | : Førresfjorden                |
| Customer | : Steinsvik     | Item    | : Att: Steffen                 |
|          |                 | Service | : Pressure pneumatic conveying |

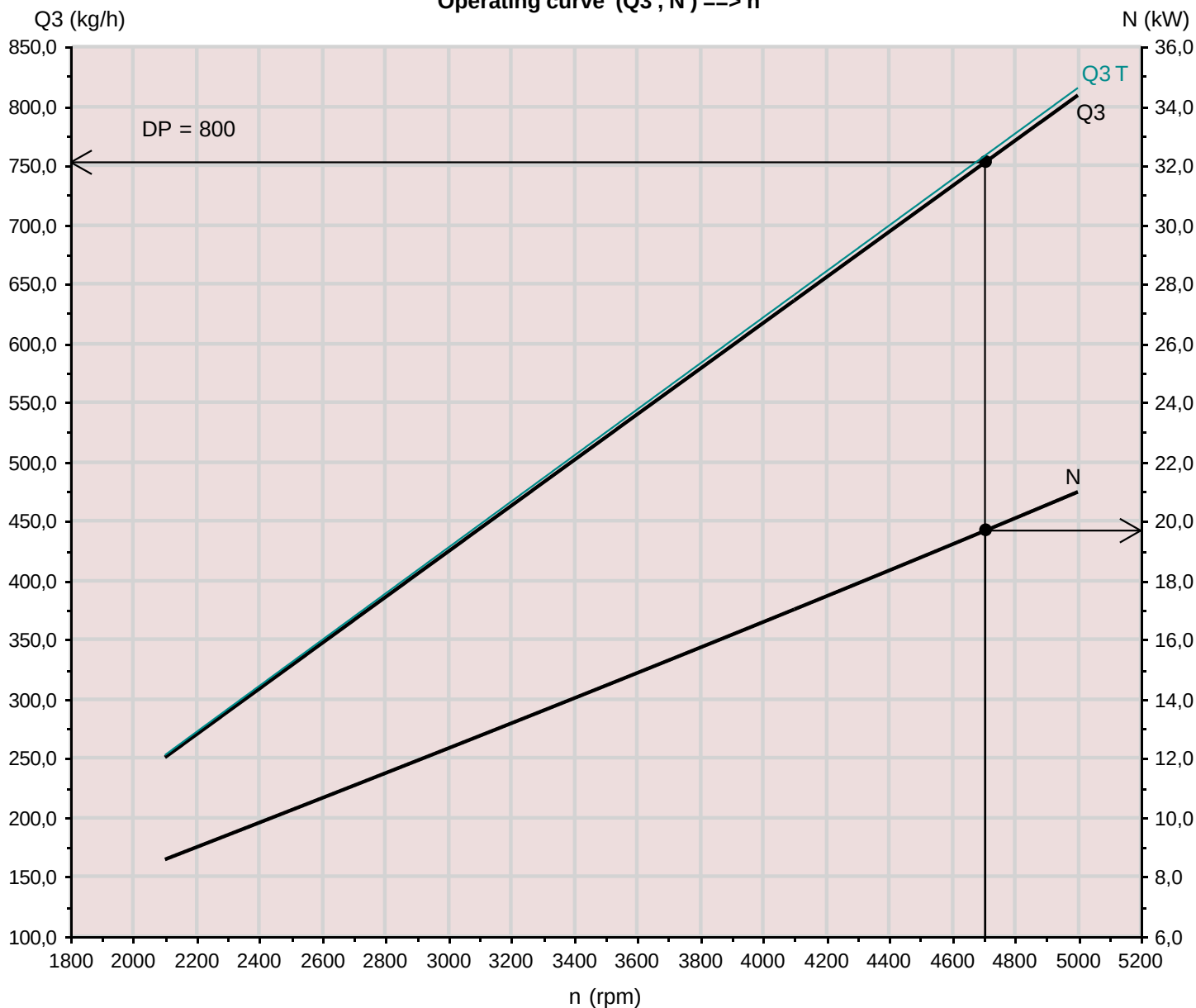
**FLUID**

|                                  |                   |                         |         |                         |        |
|----------------------------------|-------------------|-------------------------|---------|-------------------------|--------|
| Fluid                            | : Atmospheric air |                         |         |                         |        |
| Spec. W.ght (kg/m <sup>3</sup> ) | : 1.199           | Spec. Heat Cp (kJ/kg°C) | : 1.010 | Spec. Heat Cv (kJ/kg°C) | : .723 |
| Altitude (m)                     | : 0               | Pressure (mbar)         | : 1,013 | Temperature (°C)        | : 20   |
| Relative humidity (%)            | : 50              |                         |         |                         |        |

**OPERATION POINT**

|                       |            |                     |           |                                 |            |
|-----------------------|------------|---------------------|-----------|---------------------------------|------------|
| Inlet press. (mbar a) | P1 : 1,013 | Inlet temp.(°C)     | T1 : 30   | Spec.W.ght (kg/m <sup>3</sup> ) | SW : 1.160 |
| Delivery (kg/h)       | Q3 : 753   | Dif.pressure (mbar) | DP : 800  | Cp / Cv                         | : 1.4      |
| Abs.ed Power (kW)     | N : 19.7   | Speed (rpm)         | n : 4,706 | n/nmax (%)                      | : 94       |

FAD measured as per ISO1217, performances tolerances as per Robuschi procedure TE1.S.0015 (Q1 =±5%\*nm<sub>x</sub>/n; N=±5%)

**Operating curve (Q3 , N) ==> n**

**MODEL : ES 45 /2 P**

Quantity : 1

**GENERAL DATA**

|          |                 |         |                                |
|----------|-----------------|---------|--------------------------------|
| Ref.     | : Med støykasse | Plant   | : Førresfjorden                |
| Customer | : Steinsvik     | Item    | : Att: Steffen                 |
|          |                 | Service | : Pressure pneumatic conveying |

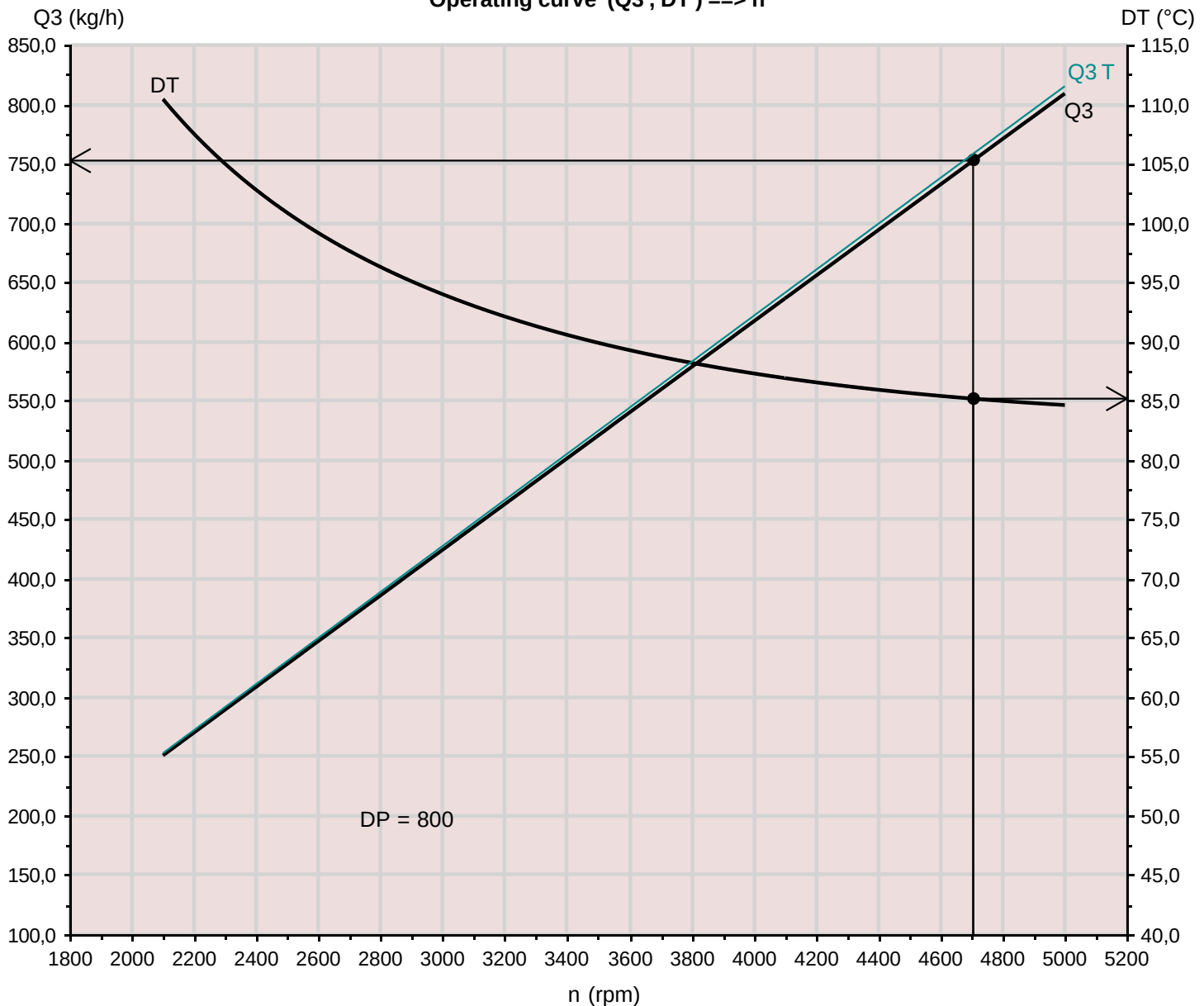
**FLUID**

|                                  |                   |                         |         |                         |        |
|----------------------------------|-------------------|-------------------------|---------|-------------------------|--------|
| Fluid                            | : Atmospheric air |                         |         |                         |        |
| Spec. W.ght (kg/m <sup>3</sup> ) | : 1.199           | Spec. Heat Cp (kJ/kg°C) | : 1.010 | Spec. Heat Cv (kJ/kg°C) | : .723 |
| Altitude (m)                     | : 0               | Pressure (mbar)         | : 1,013 | Temperature (°C)        | : 20   |
| Relative humidity (%)            | : 50              |                         |         |                         |        |

**OPERATION POINT**

|                       |            |                     |           |                                 |            |
|-----------------------|------------|---------------------|-----------|---------------------------------|------------|
| Inlet press. (mbar a) | P1 : 1,013 | Inlet temp.(°C)     | T1 : 30   | Spec.W.ght (kg/m <sup>3</sup> ) | SW : 1.160 |
| Delivery (kg/h)       | Q3 : 753   | Dif.pressure (mbar) | DP : 800  | Cp / Cv                         | : 1.4      |
| Temp.rise(°C)         | DT : 85    | Speed (rpm)         | n : 4,706 | n/nmax (%)                      | : 94       |

FAD measured as per ISO1217, performances tolerances as per Robuschi procedure TE1.S.0015 (Q1 =±5%\*nm<sub>x</sub>/n; N=±5%)

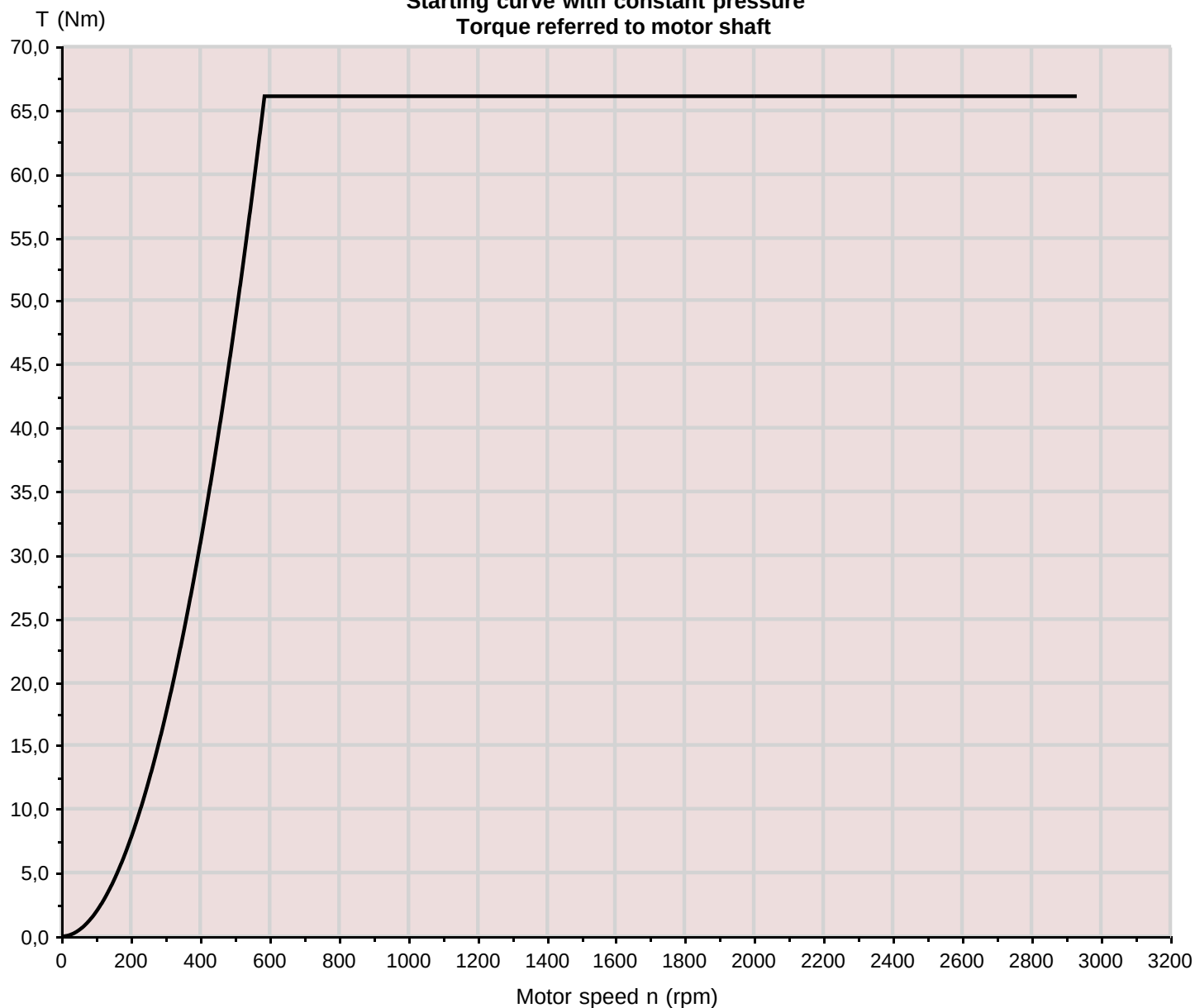
**Operating curve (Q3 , DT ) ==> n**

**MODEL : ES 45 /2 P**

Quantity : 1

**GENERAL DATA**Ref. : Med støykasse  
Customer : SteinsvikPlant : Førresfjorden  
Item : Att: Steffen  
Service : Pressure pneumatic conveying**TECHNICAL DATA**

|                 |              |               |        |             |         |                       |        |
|-----------------|--------------|---------------|--------|-------------|---------|-----------------------|--------|
| Blower          | : ES 45 /2 P | Power (kW)    | : 19.7 | Speed (rpm) | : 4,706 | J (kgm <sup>2</sup> ) | : .033 |
| Motor           | : 180M       | Power (kW)    | : 22.0 | Speed (rpm) | : 2,930 | J (kgm <sup>2</sup> ) | : .048 |
| Motor Pulley    | : 3 XPA      | Diameter (mm) | : 212  |             |         | J (kgm <sup>2</sup> ) | : .000 |
| Blower Pulley   | : 3 XPA      | Diameter (mm) | : 132  |             |         | J (kgm <sup>2</sup> ) | : .000 |
| Mot. Coupling   | :            | Size          | :      |             |         | J (kgm <sup>2</sup> ) | : .000 |
| Gear box        | :            |               |        |             |         | J (kgm <sup>2</sup> ) | : .000 |
| Blower coupling | :            | Size          | :      |             |         | J (kgm <sup>2</sup> ) | : .000 |

**Torque at motor shaft T (Nm) : 66.1****V-belt load (N): 935****J tot. (kgm<sup>2</sup>) : .133****Starting curve with constant pressure**  
**Torque referred to motor shaft**



**MODEL : ES 45 /2 P**

Quantity : 1

**GENERAL DATA**Ref. : Med støykasse  
Customer : SteinsvikPlant : Førresfjorden  
Item : Att: Steffen  
Service : Pressure pneumatic conveying**TECHNICAL DATA**

|                 |              |               |        |             |         |                       |        |
|-----------------|--------------|---------------|--------|-------------|---------|-----------------------|--------|
| Blower          | : ES 45 /2 P | Power (kW)    | : 19.7 | Speed (rpm) | : 4,706 | J (kgm <sup>2</sup> ) | : .033 |
| Motor           | : 180M       | Power (kW)    | : 22.0 | Speed (rpm) | : 2,930 | J (kgm <sup>2</sup> ) | : .048 |
| Motor Pulley    | : 3 XPA      | Diameter (mm) | : 212  |             |         | J (kgm <sup>2</sup> ) | : .000 |
| Blower Pulley   | : 3 XPA      | Diameter (mm) | : 132  |             |         | J (kgm <sup>2</sup> ) | : .000 |
| Mot. Coupling   | :            | Size          | :      |             |         | J (kgm <sup>2</sup> ) | : .000 |
| Gear box        | :            |               |        |             |         | J (kgm <sup>2</sup> ) | : .000 |
| Blower coupling | :            | Size          | :      |             |         | J (kgm <sup>2</sup> ) | : .000 |

**Torque at motor shaft T (Nm) : 66.1****V-belt load (N): 935****J tot. (kgm<sup>2</sup>) : .133****Starting curve with variable pressure**  
**Torque referred to motor shaft**