

## 1.2 Characteristic Data

### Machine materials

Component	Material
Casing / nozzles	P355N / G17Mn5
Casing cover	P355QH1
Shaft	42CrMo4
Impellers	X5CrNiCuNb16-4 / 14CrMoV6-9
Balance piston	X5CrNiCuNb16-4
Thrust bearing collar	30CrNiMo8
Inner casing	S355J2G3
Diaphragm assemblies	S355J2G+N
Seal inserts	AlMg4.5Mn0.7 / X20Cr13
Bearing pedestals	GE200

### Bearing materials

Component	Material
Journal bearing	
Bearing ring	42CrMo / RSt42-1
Oil baffle rings	AlMg4.5Mn0.7
Journal bearing pads	42CrMo4 / 16MnCr5
Journal bearing pad lining	SuSb8Cu4 / PbSn6Cd
Thrust bearing	
Bearing ring	42CrMo4 / RSt42-1
Thrust bearing pads	42CrMo4 / 16MnCr5
Thrust bearing pad lining	SuSb8Cu4 / PbSn6Cd

### Component weights

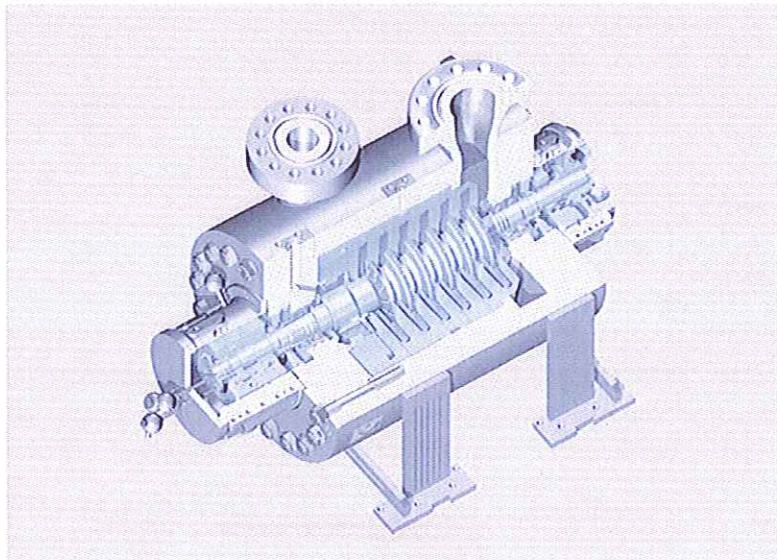
Component	Weight [kg]
Compressor, complete	12300
Casing	4465
Casing cover (DE)	1270
Casing cover (NDE)	1270
Rotor	631
Inner casing with rotor	4150

# SIEMENS

Compressor

Drawings and Lists

Type of Machine:	STC-SV
Siemens Order No.:	DU282408400
Codeword:	ATP-CHEVIOT LP
Machine No.:	100629
Siemens Document No.:	32694816



VD\_32694816\_EN\_ZV\_a

## 6 Utilization of running clearance

The requirements in terms of running clearance utilization in accordance with [1] are met.

Design data				
Total mass	W	630.40	(kg)	
Min. design running clearance	S	150.00	( $\mu\text{m}$ )	
$N_{\text{min}}, N_{\text{MC}}, N_{\text{TRIP}}$		7665	11497	12675 (rpm)

Critical speeds, separation margins		1.case	2.case	3.case	
Critical speeds	$N_C$	3560	15900		(rpm)
Amplification factor	$A_F$	3.40	15.30		
Nearest operating speed	N	7665	7665		(rpm)
Required separation margin	$S_{\text{MR}}$	7.90	25.80		(%)
Actual separation	$S_{\text{MA}}$	53.56	38.30		(%)
Check		OK	OK		

Calculated unbalance response		1.case	2.case	3.case	
Total unbalance	U	630.4	1260.8		(gmm)
Excitation location		Center	Out-Ph.		
Vibration amplitudes at $N_{\text{MC}}$					
* At probe location (0-peak)	APN	1.50	7.00		( $\mu\text{m}$ )
* At closet gap (0-peak)	AGN	1.50	5.00		( $\mu\text{m}$ )
* Relation gap/probe at NMC	VN	1.000	0.714		
Vibration amplitude at resonance					
* At probe location (0-peak)	APNC	2.10	39.00		( $\mu\text{m}$ )
* At closet gap (0-peak)	AGNC	5.00	39.00		( $\mu\text{m}$ )
* Relation gap/probe at resonance	VC	2.381	1.000		

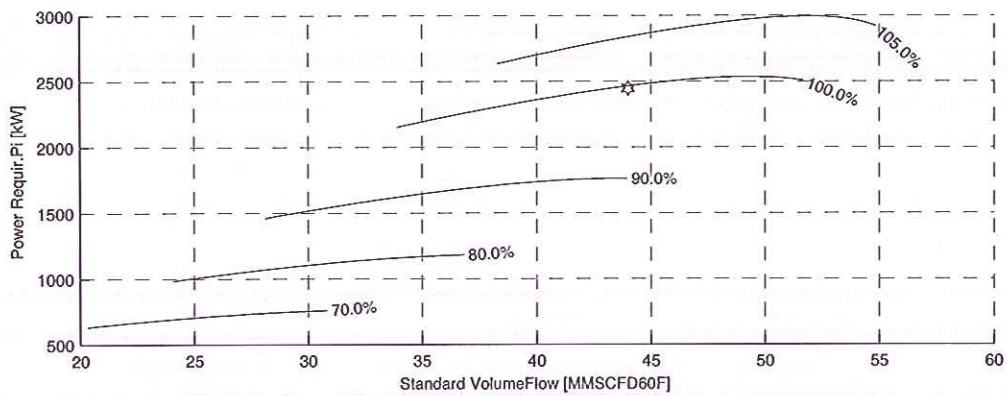
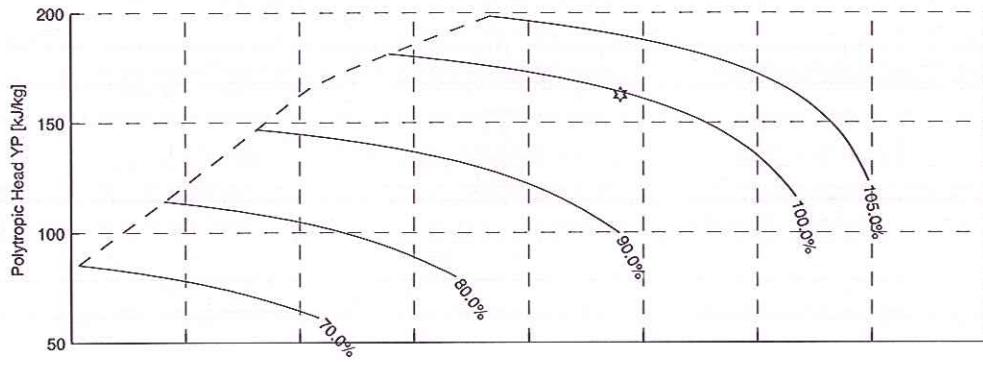
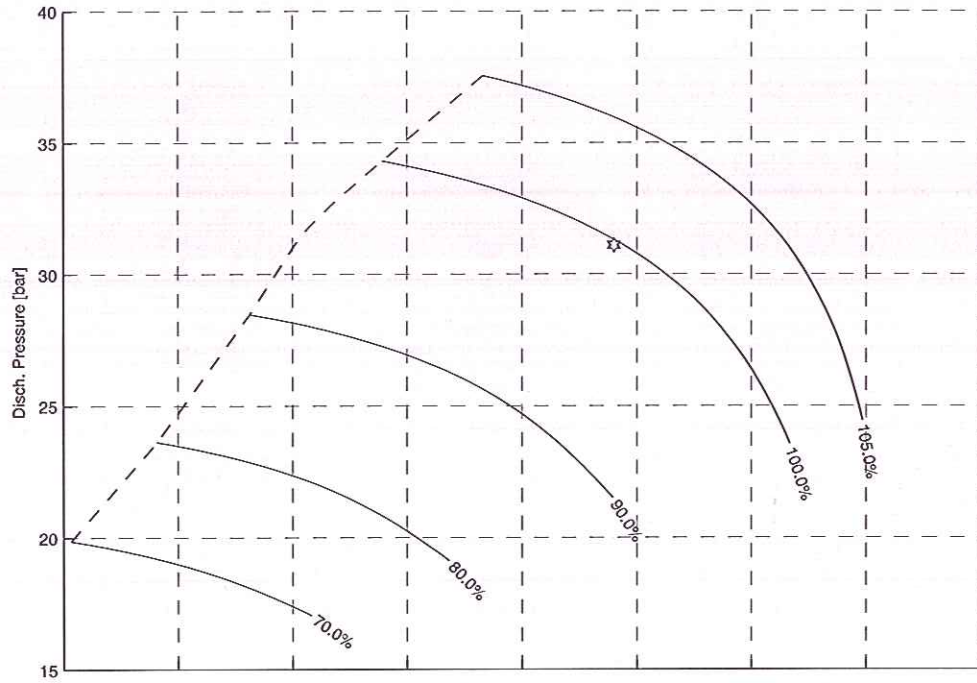
API - criteria					
Allow. total residual unbalance	U	348.2			
Allow. residual coupling unbalance	U				
Allow. vibration limit at $N_{\text{MC}}$ (0-peak)					
Unbal. to raise displ. to vibr. lim.	AL	12.8	12.8		( $\mu\text{m}$ )
Test unbalance consid. ( $2U < U_{\text{test}} < 8U$ )	$U_{\text{test}}$	5367.0	2300.2		(gmm)
Test unbalance consid. ( $2U < U_{\text{test}} < 8U$ )	$U_{\text{test}}$	2785.5	2300.2		(gmm)
Calc. vib. ampl. for $U_{\text{test}}$					
* At probe location, speed $N_{\text{MC}}$	APN-T	6.6	12.8		( $\mu\text{m}$ )
* At closet gap, speed $N_{\text{MC}}$	AGN-T	6.6	9.1		( $\mu\text{m}$ )
* At closet gap, speed $N_C$	AGNC	22.1	---		( $\mu\text{m}$ )
L.T. 75% of min. clear. S		112.5	112.5		( $\mu\text{m}$ )
Check		OK	OK		

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**SIEMENS**

Predicted Performance Map  
 171 Bar LP  
 SGT 200 Feed Gas Compressors

Client ATP Oil & Gas  
 Code ATP Cheviot  
 Project No. DU282408400  
 Type STC-SV(08-9-B)



Project du282408400:TO.1.1 based on CES\_GUJ-V 4.4.25/DCD-Release dcd 6.23.0 based on R-62.00 build Thu Sep 23 09:29:28 CEST 2010/PlotSoftware 5.2

Inlet Pressure 11.300 bar  
 Inlet Temp. 43.33 °C

Medium Nat. Gas  
 Mol. Weight 18.52 kg/kmol  
 Gas Constant 0.4488 kJ/kgK  
 Rel. Humidity 66.84 %  
 100%-Speed 10950 rpm

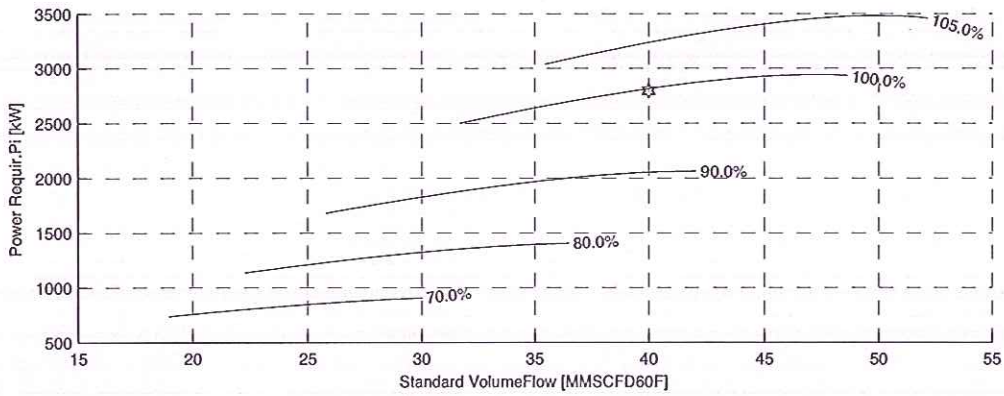
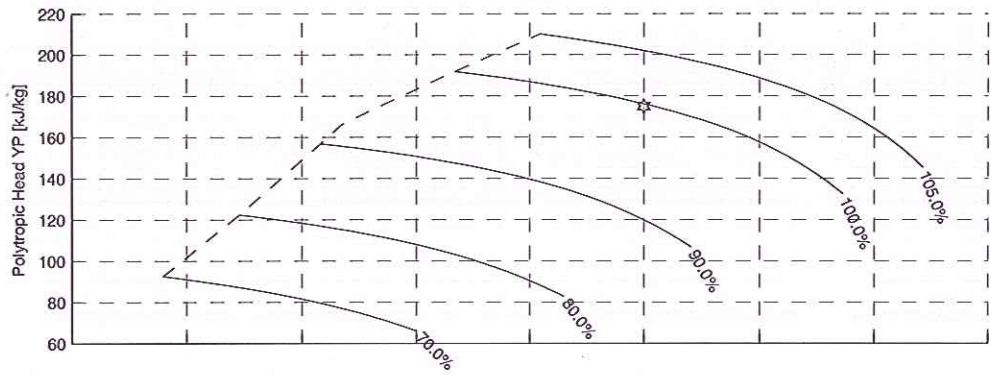
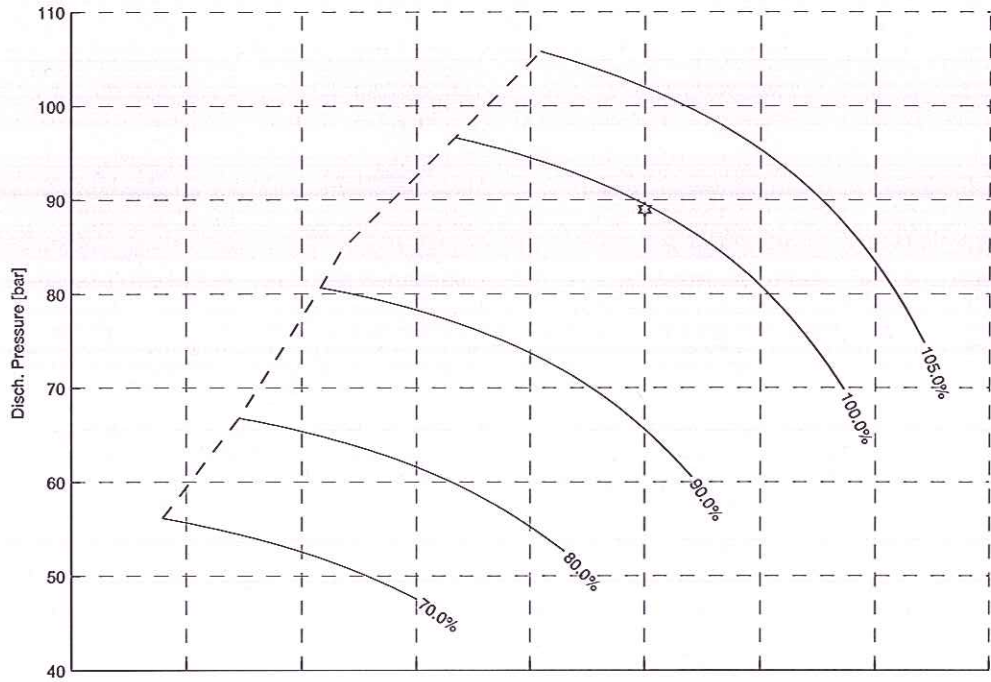
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**Predicted Performance Map**  
**171 Bar IP**  
 SGT 200 Feed Gas Compressors

Client ATP Oil & Gas  
 Code ATP Cheviot  
 Project No. DU282408400  
 Type STC-SV(08-9-B)



Project du282408400:70.1.1 based on CES\_GUI-V 4.26/DCD-Release dcd 6.23.0 based on R-62.00 build Thu Sep 23 09:29:28 CEST 2010/PlotSoftware 5.2

Inlet Pressure 30.398 bar  
 Inlet Temp. 43.33 °C

Medium Nat. Gas  
 Mol. Weight 18.53 kg/kmol  
 Gas Constant 0.4488 kJ/kgK  
 Rel. Humidity 89.90 %  
 100%-Speed 10950 rpm

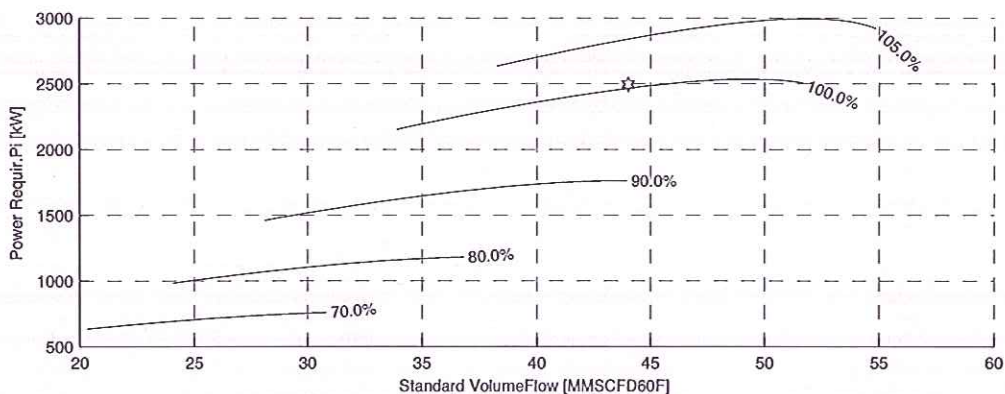
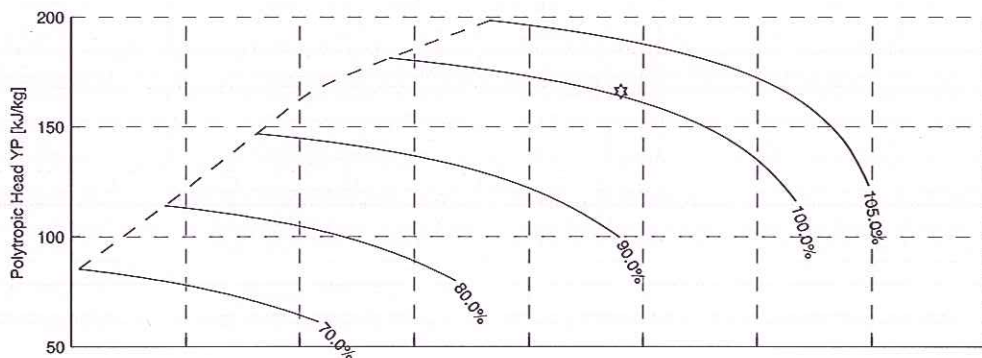
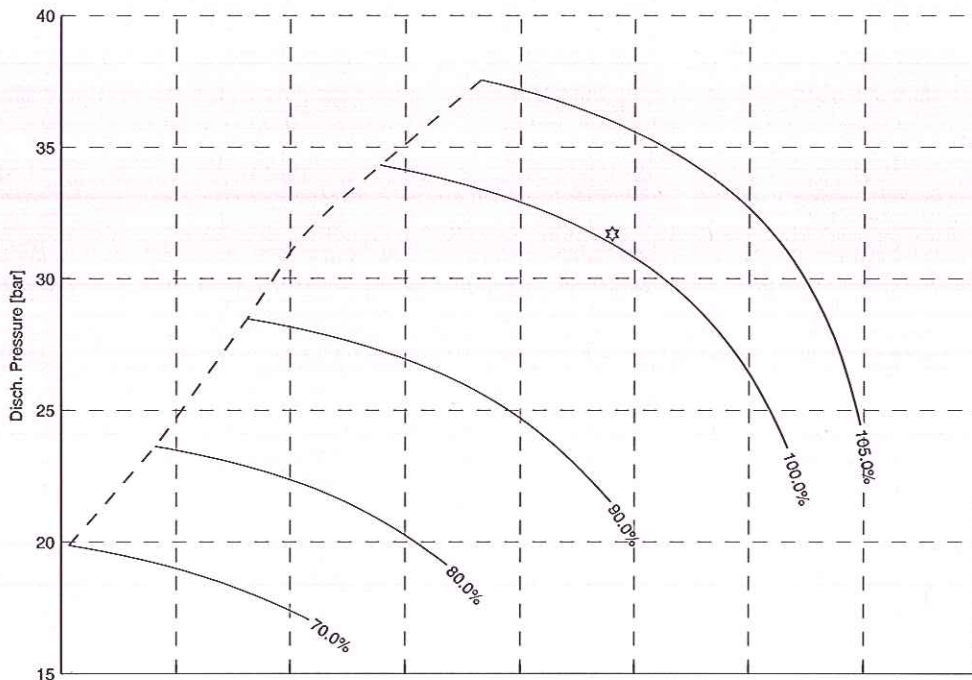
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**Predicted Performance Map**  
**185 Bar LP**  
 SGT 200 Feed Gas Compressors

Client ATP Oil & Gas  
 Code ATP Cheviot  
 Project No. DU282408400  
 Type STC-SV(08-9-B)



Project du282408400;T0.1.1 based on CES\_GUJ-V 4.4.26/ DCD-Rolcaso dcd 6.23.0 based on R-62.00 build Thu Sep 23 09:29:28 CEST 2010/ PlotSoftware 5.2

Inlet Pressure 11.300 bar  
 Inlet Temp. 43.33 °C

Medium Nat. Gas  
 Mol. Weight 18.52 kg/kmol  
 Gas Constant 0.4488 kJ/kgK  
 Rel. Humidity 66.84 %  
 100%-Speed 10950 rpm

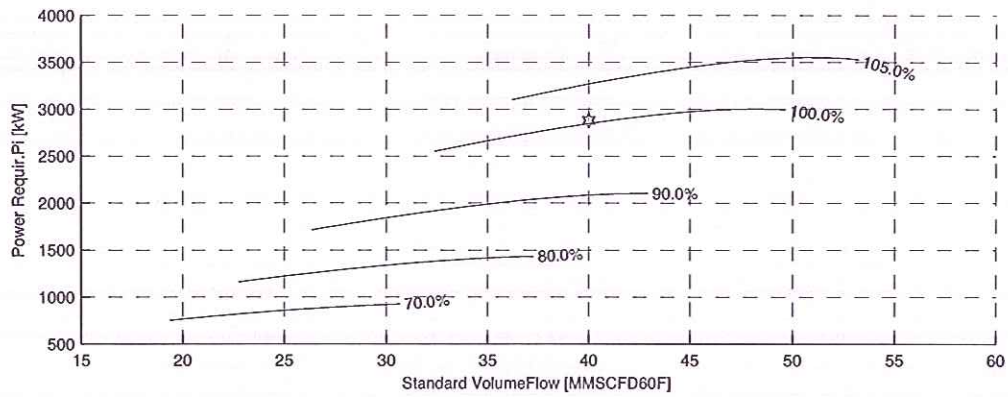
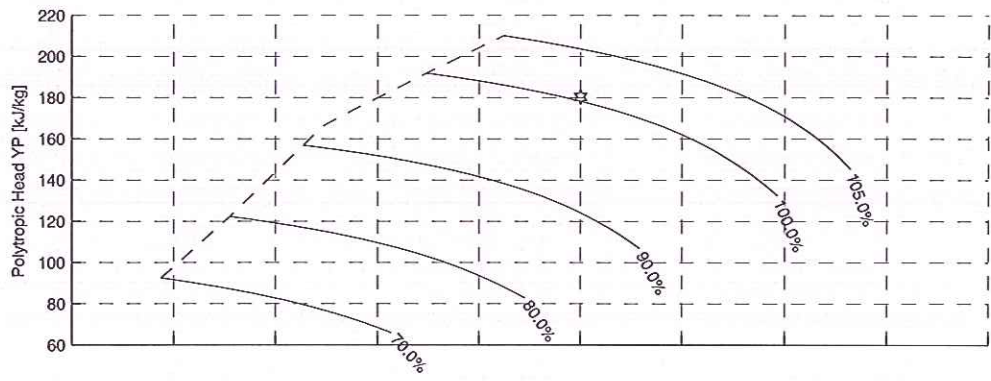
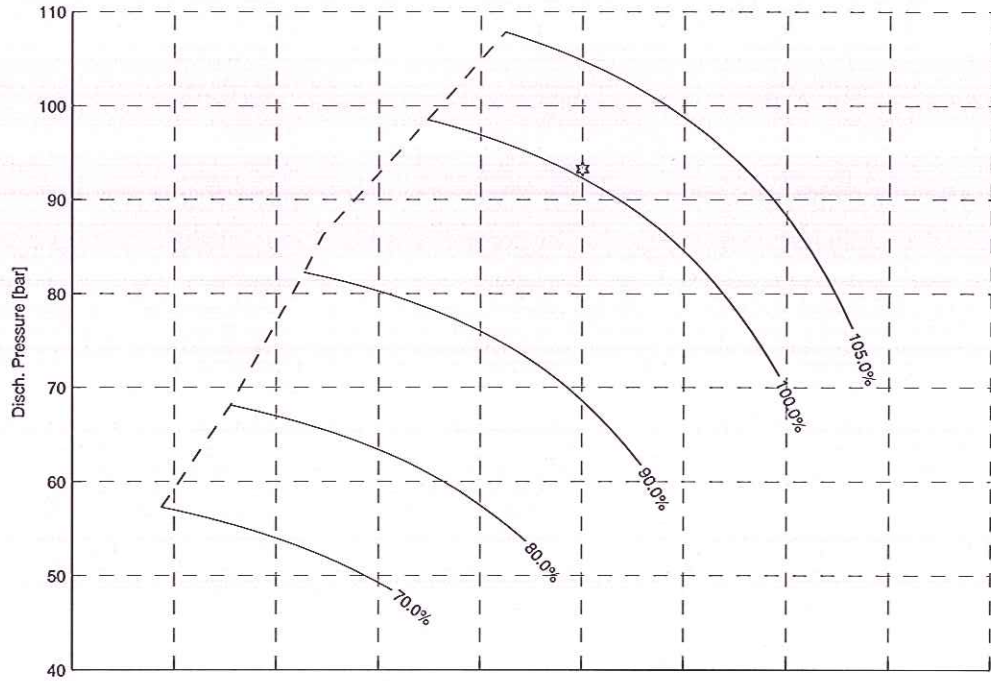
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**Predicted Performance Map**  
**185 Bar I P**  
 SGT 200 Feed Gas Compressors

Client ATP Oil & Gas  
 Code ATP Cheviot  
 Project No. DU282408400  
 Type STC-SV(08-9-B)



Project du282408400:TO.1.1 based on CES\_GUJ-V 4.4.26/DCD-Release dcd 6.23.0 based on R-62.00 build Thu Sep 23 09:29:28 CEST 2010/PlotSoftware 5.2

Inlet Pressure	30.986 bar	Medium	Nat. Gas				
Inlet Temp.	43.33 °C	Mol. Weight	18.53 kg/kmol				
		Gas Constant	0.4488 kJ/kgK				
		Rel. Humidity	91.64 %				
		100%-Speed	10950 rpm				
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				Rev.	Date	Checked	Dep.
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<b>Siemens AG</b> Energy Sector Oil & Gas Division	<b>Maschinenschild (Los 1)</b> COMPRESSOR NAMEPLATE (ITEM 1)	STC-SV-A/B STC-SH-A/B
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SIEMENS		
Type, size, model	Rated power	Min. operating speed
STC – SV (08-9-B)	5351 kW	7665 1/min
Serial number	Rated capacity	Max. continuous speed
100629	5231 m³/h	11498 1/min
Year built	Min. allowable working temperature	First critical speed (test)
2011	-6,5 °C	** 1/min
Equipment TAG no.	Max. allowable working temperature	Second critical speed (calcul.)
?	200 °C	15900 1/min
Item Description	Mass compressor compl.	Trip speed
?	* kg	12072 1/min
Buyer Purchase Order	Max. allowable Working pressure	Hydrostatic test pressure
?	115 bar g	172,5 bar g
-	-	-
Siemens AG – Energy Sector – Oil and Gas Division Wolfgang Reuter Platz – 47053 Duisburg - Germany		

\* Gewogenes Gesamtgewicht des Verdichters / WEIGHT AFTER ASSEMBLY OF COMPRESSOR.

\*\* Wird bei Probelauf ermittelt / DETERMINED DURING TEST RUN!

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Index Revision	Blatt Sheet	Datum Date	erstellt drawn	geprüft review	freigegeben checked	Entstanden aus: Original of:
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