

ZÁKAZNÍK / CUSTOMER

AIR LIQUIDE AGS GmbH

Stupeň / Level  
Realizačná dokumentácia  
Construction design

Dátum / Date  
July 2005

Kód / Code  
792.87496

1. Technická správa  
Technical report

792.87496

HS HSV s.r.o. KOŠICE  
Technický úsek



Site execution documentation prepared under No. 3821.2.002

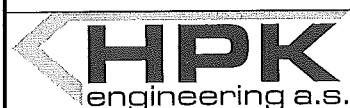


PROJEKT SKUTOČNOSTI  
VYHOTOVENIA

F								
E								
D								
C								
B								
A								
0	07/2005	Ing.Šenkovič	<i>LS</i>	Ing.Ivanecká	<i>LS</i>	Ing.Pavličko		
Rev./ Rev.	Dátum / Date	Vypracoval Originator	Sign.	Kontroloval Checked	Sign.	Schválil Approved	Sign.	Pozn. / Note

Názov zákazky / Job :

KYSLÍKOVÝ APARÁT č. 9  
AIR SEPARATION UNIT No. 9



Němcovej 30  
042 18 KOŠICE, SLOVAKIA

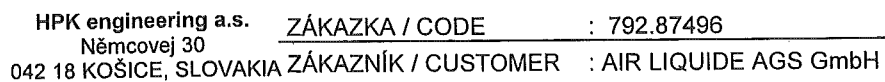
Objekt / Unit : UNIT 1- COMPRESOR BUILDING  
CONSTRUCTION DESIGN

Prev. celok / Unit : SO 002 - COMPRESSOROVÁ STANICA  
Prev. súbor / Unit : SO 002 - UNIT 1- COMPRESOR BUILDING

Profesia / Profession :  
Prev. jednotka / P. Unit:

VZDUCHOTECHNIKA  
AIR CONDITIONING

A



OBJEKT / UNIT : SO 002 - COMPRESSOROVÁ STANICA SO 002 - UNIT 1- COMPRESOR BUILDING

**REVÍZIA DOKUMENTÁCIE**  
**REVISION OF DOCUMENT**

Str. / Page  
B

OBJEKT / UNIT: SO 002 - COMPRESSOROVÁ STANICA SO 002 - UNIT 1- COMPRESOR BUILDING

Číslo revízie Rev. No	0	1	2	3	4	5	6	Str./Page  1
Dátum, podpis Date Signature	07/2005							

STAVBA / JOB : KYSLÍKOVÝ APARÁT č. 9 AIR SEPARATION UNIT No. 9

OBJEKT / UNIT: SO 002 - COMPRESSOROVÁ STANICA SO 002 - UNIT 1- COMPRESOR BUILDING

### 3. DESIGN DESCRIPTION

#### Brief description of buildings:

1. Room No.1 – The room for the main compressor and auxiliary air compressor is one hall sized 20,5x12meters with construction height of about 7.5m.

The hall houses technical equipments – compressors. These compressors build big amounts of heat radiated into the surrounding air. Suplier's data state that a maximum of 150kW heat is radiated into the area of the hall.

2. Room No.1 – The room for GAN compressors is one hall sized 12x12meters with construction height of about 4.0m.

The hall houses technical equipments – compressors. These compressors build big amounts of heat radiated into the surrounding air. Suplier's data state that a maximum of 35kW heat is radiated into the area of the hall.

#### Equipment supplier's specification of internal climate:

1. Room No.1 – Room for main compressor and auxiliary air compressor

It is necessary to have a minimum temperature of +5°C in the hall and the maximum temperature is +45°C.

2. Room No.1 – Room for GAN compressors

It is necessary to have minimum temperature of +5°C in the hall and the maximum temperature is +45°C.

#### Design descriptions:

1. Room No.1 – Room for the main compressor and auxiliary air compressor – heat gain removal

(EQUIPMENT No.1)

Air-conditioning systems are used for the removal of excessive heat radiated into the area of the room by ventilation. The amount of excessive heat built in the room depends on the output and/or operation of compressors. The maximum admissible temperature in the area is +45°C.

For the removal of this heat, there are 3 outlet fans TCBT/4-800G, with air output of 3x 6,9m<sup>3</sup>s<sup>-1</sup> for air exhaustion under the room ceiling and for blowing it outside the room.

Air intake is made with 3 intake fans TCBT/4-800G, 3x 6,9m<sup>3</sup>s<sup>-1</sup>. The intake and exhaust fans are located under the ceiling. Discharge points for air exhaustion outside the room are in the roof structure. These points are fitted with noise suppressors and tight closing flaps fitted with power units.

Číslo revízie Rev. No	0	1	2	3	4	5	6	Str./Page
Dátum, podpis Date Signature	07/2005							2

STAVBA / JOB : KYSLÍKOVÝ APARÁT č. 9 AIR SEPARATION UNIT No. 9

OBJEKT / UNIT: SO 002 - COMPRESSOROVÁ STANICA SO 002 - UNIT 1- COMPRESOR BUILDING

There are 2 noise suppressors mounted one after the other in vertical position. The desing comprises noise suppressors for short structures (400mm), which have an angled air channel inside and therefore excellent noise suppression. The flaps are used for closing the venting openings and for preventing heat losses due to ventilation when the compressor room must be heated. Heating system uses electric hot-air sets – Sahara to maintain the minimum required temperature of +5°C.

Description of regulation:

Temperature sensors mounted in the room make the twin fan set – 1 intake and 1 exhaust – start gradually as soon as the set temperature is exceeded (may be set from +35 down to +45°C). Closing flaps are always open. They are closed only if temperature in the room falls under +10°C. (In such cases all the fans are switched off.) When temperature falls by 10°C under the set maximum temperature (i.e. 25 up to 35°C) the fans switch off gradually.

Note: When temperature falls under +5°C, the electric hot-air sets – Sahara start immediately (See UK-central heating) project), and keep the temperature in the room as set through heat output control.

## 2. Room No.2 – Room for GAN compressors – exhaustion of heat gains

### (EQUIPMENT No.2)

Ai-conditioning equipments are used for removal of excessive heat radiated into the area of the room by ventilation. Excessive heat builds as a result of the operation and output of compressors. The maximum admissible temperature in the area is +45°C.

2 exhaust fans TCBT/4-560H with an air output of  $2 \times 2.80 \text{ m}^3 \text{ s}^{-1}$  are to be mounted under the room ceiling for the exhaustion of hot air and blowing it outside.

Air intake uses 2 intake fans TCBT/4-560H,  $2 \times 2.8 \text{ m}^3 \text{ s}^{-1}$ .

Both the intake and exhaust fans are mounted under the room ceiling. Passages into the outside area are built into the ceiling structure. These passages are fitted with noise suppressors and tight closing flaps fitted with power units.

There are 2 noise suppressors mounted one after the other in vertical position. The design comprises noise suppressors for short structures (400mm), which have an angled air channel inside and therefore excellent noise suppression.

The flaps are used for closing the venting openings and for preventing heat losses due to ventilation when the compressor room must be heated.

Heating system uses electric hot-air sets – Sahara to maintain the minimum required temperature of +5°C.

Description of regulation:

Temperature sensors mounted in the room make the twin fan set – 1 intake and 1

Číslo revízie Rev. No	0	1	2	3	4	5	6	Str./Page
Dátum, podpis Date, Signature	07/2005							

STAVBA / JOB : KYSLÍKOVÝ APARÁT č. 9 AIR SEPARATION UNIT No. 9

OBJEKT / UNIT: SO 002 - COMPRESSOROVÁ STANICA SO 002 - UNIT 1- COMPRESOR BUILDING

exhaust – start gradually as soon as the set temperature is exceeded (may be set from +35 down to +45°C). Closing flaps are always open. They are closed only if temperature in the room falls under +10°C. (In such cases all the fans are switched off.)  
When temperature falls by 10°C under the set maximum temperature (i.e. 25 up to 35°C) the fans switch off gradually.

Note: When temperature falls under +5°C, the electric hot-air sets – Sahara start immediately (See central heating project), and keep the temperature in the room as set through heat output control.

#### 4. TRADES

- Site – make openings in the ceiling structure at the passage points of air-conditioning pipes through the building structure and insulate them.
- Electricity dep. - make supply of required power input to each equipment, design their control, regulation, protection and earthing.
- Steel structures – fix air-conditioning units to the ceiling steel structure.

#### 5. UTILITIES

##### a, - electricity

Room No.1 – Room for the main compressor and auxiliary air compressor

##### Intake equipment:

3pcs – intake fans TCBT/4-800G, P=3x 6.90kW, P=20.70 kW, 400V, 50Hz

3pcs – closing power units of intake openings – supplied by electricity,  
P =2x 0.001kW, P=0.002kW, 230V, 50Hz

##### Exhaust equipment:

3pcs – exhaust fans TCBT/4-800G, P=3x 6.90kW, P=20.70 kW, 400V, 50Hz

3pcs – closing power units of intake openings – supplied by electricity dep.,  
P =2x 0.001kW, P=0.002kW, 230V, 50Hz

Room No.2 – Room for GAN compressors

##### Intake equipment:

2pcs – exhaust fans TCBT/4-560H, P=2x 1.52kW, P=3.04 kW, 400V, 50Hz

2pcs – closing power units of intake openings – supplied by electricity dep.,  
P =2x 0.001kW, P=0.002kW, 230V, 50Hz

##### Exhaust equipment:

2pcs – exhaust fans TCBT/4-560H, P=2x 1.52kW, P=3.04 kW, 400V, 50Hz

2pcs – closing power units of intake openings – supplied by electricity dep.,  
P =2x 0.001kW, P=0.002kW, 230V, 50Hz

-----  
**Total:**

**P= 47.488 kW**

Číslo revízie Rev. No	0	1	2	3	4	5	6	Str./Page
Dátum, podpis Date, Signature	07/2005							



HPK engineering a.s.  
Němcovej 30  
042 18 KOŠICE, SLOVAKIA

ZÁKAZKA / CODE : 792.87496

ZÁKAZNÍK / CUSTOMER: AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT č. 9 AIR SEPARATION UNIT No. 9

OBJEKT / UNIT: SO 002 - COMPRESSOROVÁ STANICA SO 002 - UNIT 1- COMPRESOR BUILDING

**b, Heat**

The designed air conditioning system does not need any thermal energy.

**6. TECHNICAL GUARANTEES**

- The outputs of designed elements will be within the tolerance values specified by the manufacturers of the given equipments.

**7. Conclusion**

This design documentation has been prepared in accordance with related standards, prescriptions and literature used for designing air-conditioning systems.

Each air-conditioning unit and its details are in the drawings and machinery and pipings are specified in appropriate sheets.

In Košice, July, 2005

Prepared by :  
Ing. Šenkovič

Číslo revízie Rev. No	0	1	2	3	4	5	6	Str./Page
Dátum, podpis Date, Signature	07/2005							