

Stupeň / Level

Projekt pre realizáciu stavby  
Construction Design

Dátum / Date

jún 2005

Kód / Code

Ra 06.07.05

2. Technologická časť  
Technologic part

**FREIGABE  
FOR CONSTRUCTION**
Písomná časť - Text part:

- |    |   |             |
|----|---|-------------|
| 1. | Technická správa – Technical report                           | 792.87479-2 |
| 2. | Technická správa (anglicky) – Technical report (english)      | 792.87479-2 |
| 3. | Statický výpočet – Statical calculation                       | 792.87700-2 |
| 4. | Výkaz materiálu - Material specification                      | 792.87480-2 |
| 5. | Výkaz materiálu (anglicky) - Material specification (english) | 792.87480-2 |

Výkresová časť – Drawing part:

- |    |   |                 |
|----|---|-----------------|
| 6. | OK na streche budovy turbín<br>Steel structure on the roof of turbines building | 792.87437/003-A |
|----|---|-----------------|

Projekt pre realizáciu stavby spracovaný pod z. č. 3821.2.001-R1



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Názov zákazky / Job :

**KYSLÍKOVÝ APARÁT č. 9**  
**AIR SEPARATION UNIT No. 9**
Němcovej 30  
042 18 KOŠICE, SLOVAKIA
**UNIT 6 – AIR SEPARATION  
CONSTRUCTION DESIGN**

Objekt / Unit :

Prev. celok / Unit : **SO 001 - NÍZKOTEPLTNÝ BLOK**

Prev. súbor / Unit :

**AIR SEPARATION**Profesia / Profession :  
Prev. jednotka / P. Unit:
**OCEĽOVÁ KONŠTRUKCIA**  
**STEEL STRUCTURE**

A

STAVBA / JOB : KYSLÍKOVÝ APARÁT č. 9

AIR SEPARATION UNIT No. 9

OBJEKT / UNIT: SO 001 - NÍZKOTEPLTNÝ BLOK

UNIT 6 - AIR SEPARATION

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

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OBJEKT / UNIT : SO 001 - NÍZKOTEPLTNÝ BLOK		UNIT 6 - AIR SEPARATION				
ZOZNAM DOKUMENTÁCIE LIST OF DOCUMENTATION						
Ident. č. Serial No.		Číslo a dátum revízie / Revision Date				
	Názov / Title :	A	D		1	4
		B	E		2	5
	Číslo výkresu / Code :	C	F	0	3	6
	<b>Písomná časť:</b>					
	<b>Text part:</b>					
1	Technická správa					
	Technical report					
	792.87479-2			06/2005		
2	Technická správa (anglicky)					
	Technical report (english)					
	792.87479-2			06/2005		
3	Statický výpočet					
	Statical calculation					
	792.87700-2			06/2005		
4	Výkaz materiálu					
	Material specification					
	792.87480A-2			06/2005		
5	Výkaz materiálu (anglicky)					
	Material specification (english)					
	792.87480A-2			06/2005		
	<b>Výkresová časť:</b>					
	<b>Drawing part:</b>					
1	OK na streche budovy turbín				06/2005	
	Steel structure on the roof of turbines building					
	792.87437/001-A			06/2005		

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ZÁKAZNÍK / CUSTOMER

AIR LIQUIDE AGS GmbH

Stupeň / Level

Projekt pre realizáciu stavby  
Construction Design

Dátum / Date

June 2005

Kód / Code

2. Technická správa (anglicky)  
Technical report (english)792.8747-2<sup>9</sup>FREIGABE  
FOR CONSTRUCTION

14.6.2005

Projekt pre realizáciu stavby spracovaný pod z. č. 3821.2.001



AIR LIQUIDE

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042 18 KOŠICE, SLOVAKIA

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UNIT 6 – AIR SEPARATION  
CONSTRUCTION DESIGNSO 001 - NÍZKOTEPLTNÝ BLOK  
AIR SEPARATION

Profesia / Profession :

Prev. jednotka / P. Unit:

OCEĽOVÁ KONŠTRUKCIA  
STEEL STRUCTURE

A



STAVBA / JOB : KYSLÍKOVÝ APARÁT č. 9


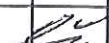
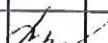
AIR SEPARATION UNIT No. 9

OBJEKT / UNIT: SO 001 - NÍZKOTEPLTNÝ BLOK

## AIR SEPARATION

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

ZÁKAZKA / CODE :

ZÁKAZNÍK / CUSTOMER: AIR LIQUIDE AGS GmbH

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

OBJEKT / UNIT: SO 001 - NÍZKOTEPLTNÝ BLOK AIR SEPARATION

1. TABLE OF CONTENTS
2. STANDARDS
3. GENERAL
4. DESCRIPTION OF STRUCTURE
5. PROTECTION AGAINST CORROSION
6. MANUFACTURING AND ERECTION

## 2. STANDARDS

This part of the project has been prepared in accordance with the following standards

STN 73 0035	Load of building structures
STN 73 1401	Designing steel structures
STN 73 2601	Manufacturing steel structures
ON 73 2615	Guidelines for anchorage of steel structures
STN 743282	Steel ladders
STN 03 8260	Protection of steel structures against atmospheric corrosion
EN ISO12944	Paints – Anticorrosive protection of steel structures using protective painting systems

## 3. GENERAL

This part the construction design solves the design of the steel structure for piping on the roof of turbines building.

The technological data furnished by AIR LIQUIDE were the basic documents for preparation of the construction design. Load caused by technological equipment is according to drawing No. 792.87279.A and drawing PBHTW by fy Hegmanns.

## 4. DESCRIPTION OF STRUCTURE

The steel structure for piping (PBHTW) has measurements 3,25 x 7,71 m in plan and height about 8 m. It consists from columns, girders for piping and platforms with gratings in the levels +9,659 m and +11,831 m (+ 11,927 m). The stability of the structure is ensured by frames and bracings. The platforms are appointed with railing and toe plates, they are accessible with ladders from the roof of turbines building.

The steel structure is located on frame cross-beams in the roof with assistance of columns of closed section. The frames are bolted to these prepared columns.

## 5. PROTECTION AGAINST CORROSION

The protection against corrosion for the exterior within industrial environment with the corrosion aggressiveness degree C4-high is designed to have the following composition:

- purification of the surface up to the degree St2
- base coat epoxy 100 µm
- top coat: 80 µm

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OBJEKT / UNIT: SO 001 - NÍZKOTEPLTNÝ BLOK AIR SEPARATION

- finishing coat epoxy 60  $\mu\text{m}$   
Gratings are galvanised, without painting.  
Color shade of the paintings has been proposed in the civil part (AS) of the project.

## 6. MANUFACTURING AND ERECTION

The structures have been categorized to the manufacturing group B and C (ladders) according to STN 73 2601.

They have been designed of rolled sections, material 11373 and 11375, strength class of steel S 235.

Steel consumption: 5400 kg, of which gratings 690 kg.  
Coating area: 138  $\text{m}^2$ .

Košice, June 2005

Ing. Ďurašková

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AIR LIQUIDE AGS GmbH

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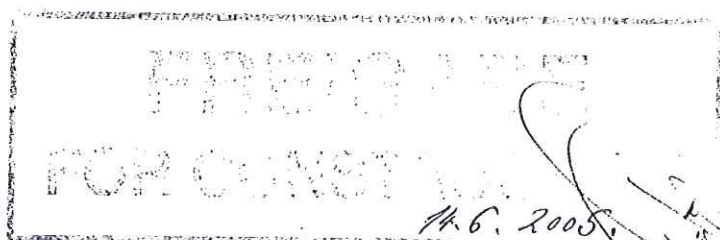
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Projekt pre realizáciu stavby  
Construction Design

jún 2005

3. Statický výpočet  
Statical calculation

792.87700-2



Projekt pre realizáciu stavby spracovaný pod z. č. 3821.2.001

AIR LIQUIDE<sup>TM</sup>

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AIR SEPARATION UNIT No. 9Němcovej 30  
042 18 KOŠICE, SLOVAKIA

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UNIT 6 – AIR SEPARATION  
CONSTRUCTION DESIGN

SO 001 - NÍZKOTEPLTNÝ BLOK

AIR SEPARATION

Profesia / Profession :  
Prev. jednotka / P. Unit:OCEĽOVÁ KONŠTRUKCIA  
STEEL STRUCTURE

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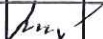
AIR SEPARATION UNIT No. 9

OBJEKT / UNIT: S0 001 - NÍZKOTEPLTNÝ BLOK

UNIT 6 - AIR SEPARATION

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HPK engineering a.s.  
Němcovej 30  
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## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

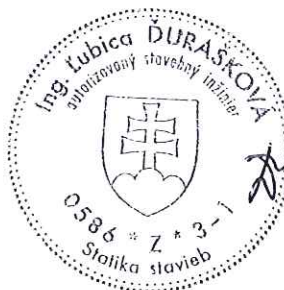
OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

### Obsah statického výpočtu

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Vypracovala: Ing. Ďurašková



Košice, máj 2005

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Němcovej 30  
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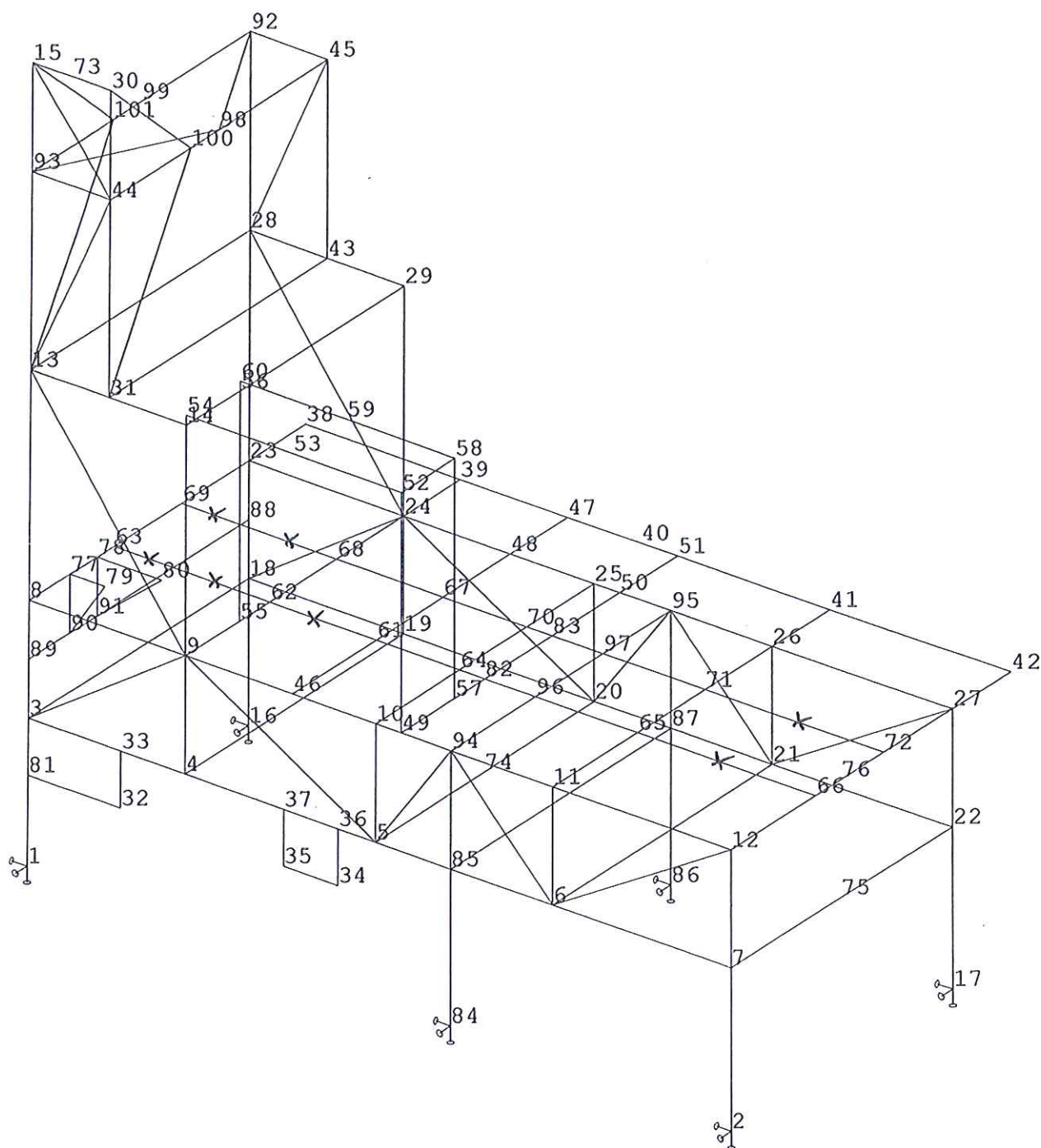
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### OK pre potrubia na streche budovy turbín

### Steel structure for piping on the roof of turbines building



Označenie uzlov

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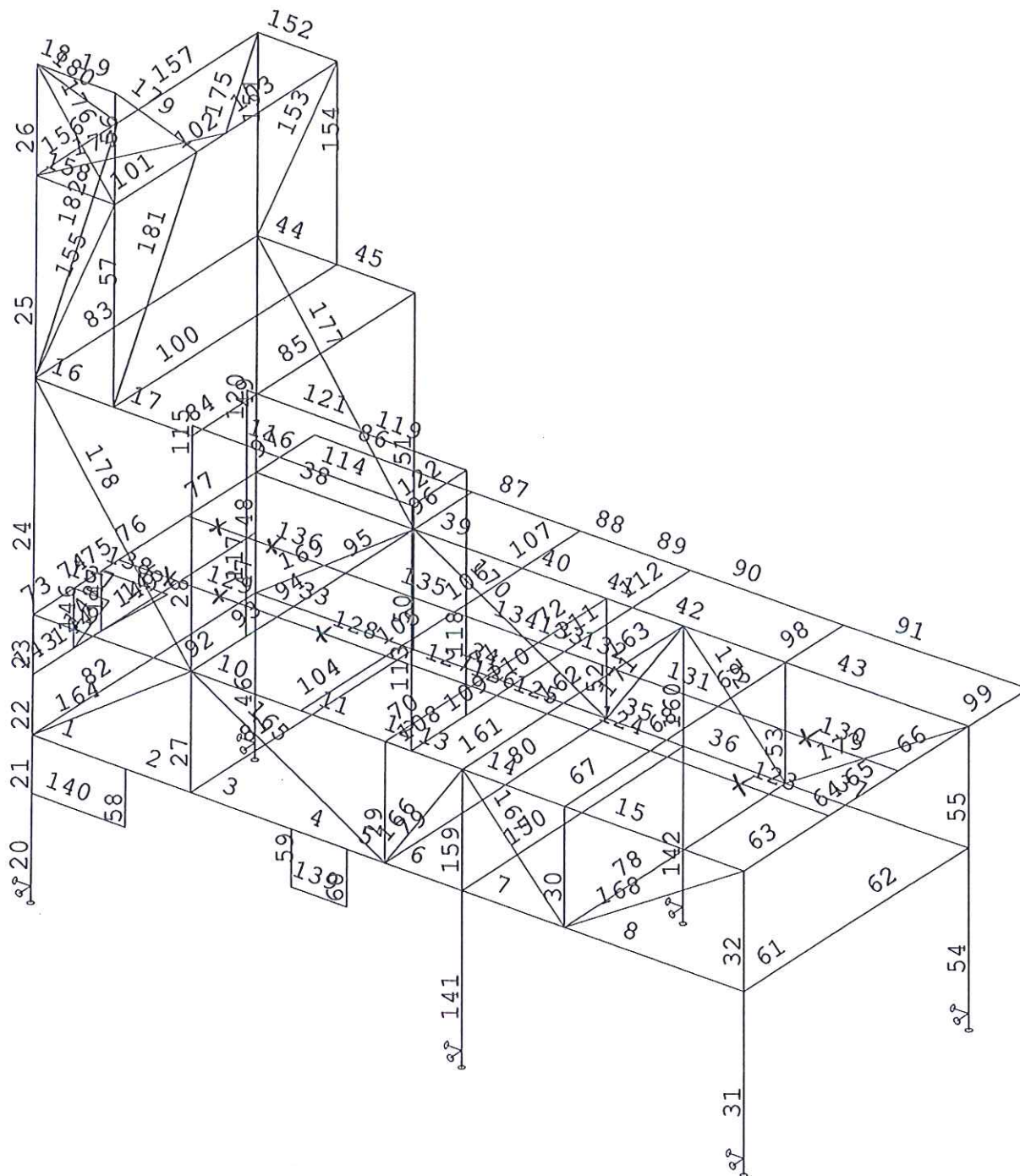


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OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION



Označenie prútov

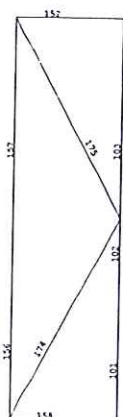
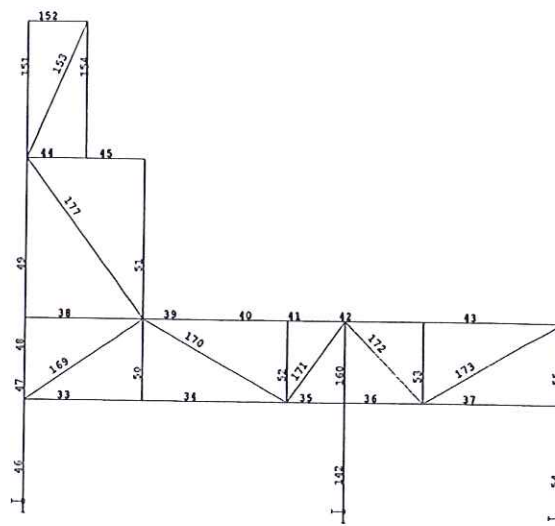
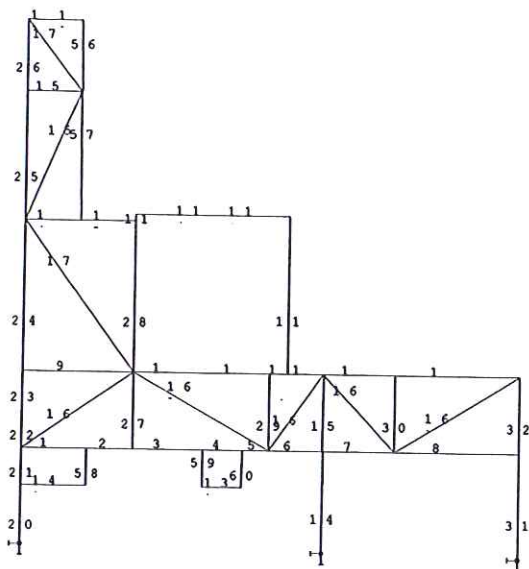
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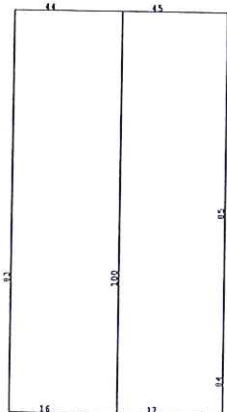
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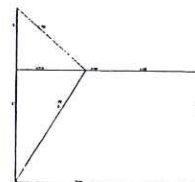
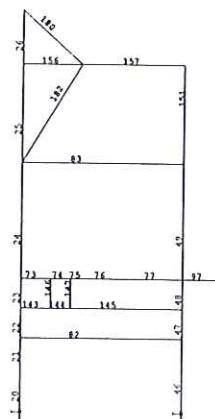
### Rovinné rezy




$\sim +13,800$  m



$\sim +11,800$  m



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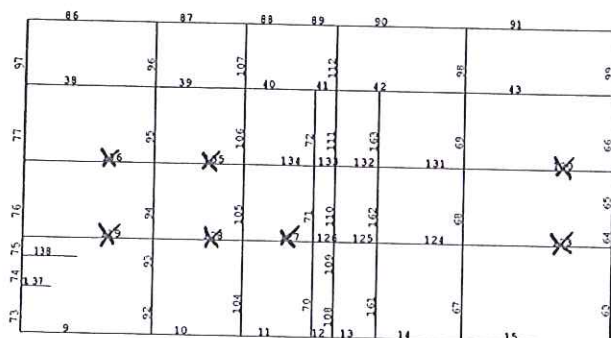


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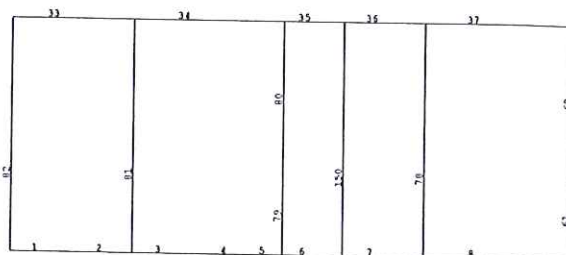
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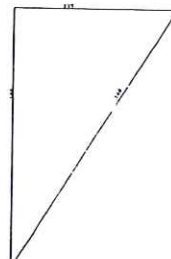
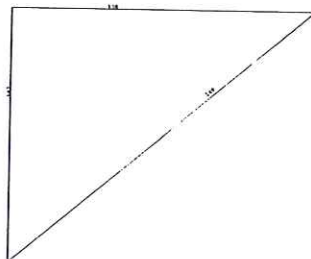
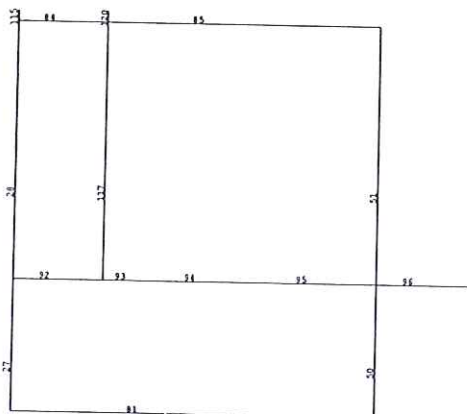


~ +9,630 m



~ +8,430

Konzoly



### Základné údaje

Typ konštrukcie : Rám XYZ

Počet uzlov :	101
Počet prútov :	182
Počet makier 1D:	94
Počet líní :	0
Počet 2D makier :	0
Počet prierezov :	7
Počet stavov :	4
Počet materiálov:	1

### Materiál

Názov		
S 235		
Výpočtová pevnosť	360.000 MPa	
Medza klzu	235.000 MPa	
Modul E	210000.00 MPa	
Poissonov súč.	0.30	
Merná hmotnosť	7850.000 kg/m <sup>3</sup>	
Rozťažnosť	0.012 mm/m.K	

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OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

### Výpis materiálu - Skupina prútov : 1/182

čís.	Názov	akosť	jednotková hmotnosť kg/m	dĺžka m	tiaž kg
1	HEB120	S 235	26.70	9.84	262.65
2	HEA100	S 235	16.64	121.19	2016.81
3	HEB140	S 235	33.72	25.89	872.97
4	HEA140	S 235	24.65	20.07	494.71
5	L80/8	S 235	9.66	26.12	252.16
6	L100/8	S 235	12.17	18.50	225.08
7	HEB160	S 235	42.59	15.20	647.31

Celková hmotnosť konštrukcie : 4771.69 kg  
Náterová plocha : 145.33 m<sup>2</sup>

### Uzly

uzol	X m	Y m	Z m	uzol	X m	Y m	Z m	uzol	X m	Y m	Z m
1	0.000	0.000	0.000	35	2.795	0.000	0.920	69	0.000	2.250	2.696
2	7.710	0.000	-0.154	36	3.395	0.000	1.496	70	3.810	2.250	2.696
3	0.000	0.000	1.496	37	2.795	0.000	1.496	71	5.760	2.250	2.696
4	1.710	0.000	1.496	38	0.000	4.100	2.696	72	7.710	2.250	2.696
5	3.810	0.000	1.496	39	1.710	4.100	2.696	73	0.430	0.000	8.150
6	5.760	0.000	1.496	40	3.690	4.100	2.696	74	3.810	1.625	1.496
7	7.710	0.000	1.496	41	5.760	4.100	2.696	75	7.710	1.625	1.496
8	0.000	0.000	2.696	42	7.710	4.100	2.696	76	7.710	1.625	2.696
9	1.710	0.000	2.696	43	0.860	3.250	5.042	77	0.000	0.600	2.696
10	3.810	0.000	2.696	44	0.860	0.000	7.050	78	0.000	1.000	2.696
11	5.760	0.000	2.696	45	0.860	3.250	7.050	79	0.380	0.600	2.696
12	7.710	0.000	2.696	46	2.890	0.000	2.696	80	0.710	1.000	2.696
13	0.000	0.000	5.042	47	2.890	4.100	2.696	81	0.000	0.000	0.920
14	1.710	0.000	5.042	48	2.890	3.250	2.696	82	4.090	1.250	2.696
15	0.000	0.000	8.150	49	4.090	0.000	2.696	83	4.090	2.250	2.696
16	0.000	3.250	0.000	50	4.090	3.250	2.696	84	4.645	0.000	-0.093
17	7.710	3.250	-0.154	51	4.090	4.100	2.696	85	4.645	0.000	1.496
18	0.000	3.250	1.496	52	4.090	0.000	5.142	86	4.645	3.250	-0.093
19	1.710	3.250	1.496	53	2.890	0.000	5.142	87	4.645	3.250	1.496
20	3.810	3.250	1.496	54	1.710	0.000	5.142	88	0.000	3.250	2.096
21	5.760	3.250	1.496	55	1.710	0.800	2.696	89	0.000	0.000	2.096
22	7.710	3.250	1.496	56	1.710	0.800	5.042	90	0.000	0.600	2.096
23	0.000	3.250	2.696	57	4.090	0.800	2.696	91	0.000	1.000	2.096
24	1.710	3.250	2.696	58	4.090	0.800	5.142	92	0.000	3.250	7.050
25	3.810	3.250	2.696	59	2.890	0.800	5.142	93	0.000	0.000	7.050
26	5.760	3.250	2.696	60	1.710	0.800	5.142	94	4.645	0.000	2.696
27	7.710	3.250	2.696	61	2.890	1.250	2.696	95	4.645	3.250	2.696
28	0.000	3.250	5.042	62	1.710	1.250	2.696	96	4.645	1.250	2.696
29	1.710	3.250	5.042	63	0.000	1.250	2.696	97	4.645	2.250	2.696
30	0.860	0.000	8.150	64	3.810	1.250	2.696	98	0.860	1.624	7.050
31	0.860	0.000	5.042	65	5.760	1.250	2.696	99	0.000	1.625	7.050
32	1.010	0.000	0.920	66	7.710	1.250	2.696	100	0.860	1.199	7.050
33	1.010	0.000	1.496	67	2.890	2.250	2.696	101	0.000	1.199	7.050
34	3.395	0.000	0.920	68	1.710	2.250	2.696				

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

### Prúty

makro	prút	uzol 1	uzol 2	dĺžka m	Rx deg	prierez	akosť
1	1	3	33	1.010	0.00	4 - HEA140	S 235
	2	33	4	0.700	0.00	4 - HEA140	S 235
	3	4	37	1.085	0.00	4 - HEA140	S 235
	4	37	36	0.600	0.00	4 - HEA140	S 235
	5	36	5	0.415	0.00	4 - HEA140	S 235
	6	5	85	0.835	0.00	4 - HEA140	S 235
	7	85	6	1.115	0.00	2 - HEA100	S 235
	8	6	7	1.950	0.00	2 - HEA100	S 235
2	9	8	9	1.710	0.00	2 - HEA100	S 235
	10	9	46	1.180	0.00	2 - HEA100	S 235
	11	46	10	0.920	0.00	2 - HEA100	S 235
	12	10	49	0.280	0.00	2 - HEA100	S 235
	13	49	94	0.555	180.00	2 - HEA100	S 235
	14	94	11	1.115	180.00	2 - HEA100	S 235
	15	11	12	1.950	180.00	2 - HEA100	S 235
3	16	13	31	0.860	0.00	4 - HEA140	S 235
	17	31	14	0.850	0.00	4 - HEA140	S 235
4	18	15	73	0.430	0.00	4 - HEA140	S 235
	19	73	30	0.430	0.00	4 - HEA140	S 235
5	20	1	81	0.920	0.00	7 - HEB160	S 235
	21	81	3	0.576	0.00	7 - HEB160	S 235
	22	3	89	0.600	0.00	7 - HEB160	S 235
	23	89	8	0.600	0.00	7 - HEB160	S 235
	24	8	13	2.346	0.00	7 - HEB160	S 235
	25	13	93	2.008	0.00	7 - HEB160	S 235
	26	93	15	1.100	0.00	7 - HEB160	S 235
6	27	4	9	1.200	0.00	3 - HEB140	S 235
	28	9	14	2.346	0.00	3 - HEB140	S 235
7	29	5	10	1.200	0.00	3 - HEB140	S 235
8	30	6	11	1.200	0.00	1 - HEB120	S 235
9	31	2	7	1.650	0.00	3 - HEB140	S 235
	32	7	12	1.200	0.00	3 - HEB140	S 235
10	33	18	19	1.710	180.00	4 - HEA140	S 235
	34	19	20	2.100	180.00	4 - HEA140	S 235
	35	20	87	0.835	0.00	4 - HEA140	S 235
	36	87	21	1.115	0.00	2 - HEA100	S 235
	37	21	22	1.950	0.00	2 - HEA100	S 235
11	38	23	24	1.710	0.00	2 - HEA100	S 235
	39	24	48	1.180	0.00	2 - HEA100	S 235
	40	48	25	0.920	0.00	2 - HEA100	S 235
	41	25	50	0.280	0.00	2 - HEA100	S 235
	42	50	26	1.670	180.00	2 - HEA100	S 235
	43	26	27	1.950	180.00	2 - HEA100	S 235
12	44	28	43	0.860	0.00	4 - HEA140	S 235
	45	43	29	0.850	0.00	4 - HEA140	S 235
13	46	16	18	1.496	0.00	7 - HEB160	S 235
	47	18	88	0.600	0.00	7 - HEB160	S 235

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

makro	prút	uzol 1	uzol 2	dĺžka m	Rx deg	prierez	akosť
	48	88	23	0.600	0.00	7 - HEB160	S 235
	49	23	28	2.346	0.00	7 - HEB160	S 235
14	50	19	24	1.200	0.00	3 - HEB140	S 235
	51	24	29	2.346	0.00	3 - HEB140	S 235
15	52	20	25	1.200	0.00	3 - HEB140	S 235
16	53	21	26	1.200	0.00	1 - HEB120	S 235
17	54	17	22	1.650	0.00	3 - HEB140	S 235
	55	22	27	1.200	0.00	3 - HEB140	S 235
18	56	30	44	1.100	0.00	3 - HEB140	S 235
19	57	44	31	2.008	0.00	3 - HEB140	S 235
20	58	32	33	0.576	0.00	2 - HEA100	S 235
21	59	37	35	0.576	0.00	2 - HEA100	S 235
22	60	34	36	0.576	0.00	2 - HEA100	S 235
23	61	7	75	1.625	0.00	2 - HEA100	S 235
	62	75	22	1.625	0.00	2 - HEA100	S 235
24	63	12	66	1.250	0.00	4 - HEA140	S 235
	64	66	76	0.375	0.00	4 - HEA140	S 235
	65	76	72	0.625	0.00	4 - HEA140	S 235
	66	72	27	1.000	0.00	4 - HEA140	S 235
25	67	11	65	1.250	0.00	2 - HEA100	S 235
	68	65	71	1.000	0.00	2 - HEA100	S 235
	69	71	26	1.000	0.00	2 - HEA100	S 235
26	70	10	64	1.250	0.00	2 - HEA100	S 235
	71	64	70	1.000	0.00	2 - HEA100	S 235
	72	70	25	1.000	0.00	2 - HEA100	S 235
27	73	8	77	0.600	0.00	2 - HEA100	S 235
	74	77	78	0.400	0.00	2 - HEA100	S 235
	75	78	63	0.250	0.00	2 - HEA100	S 235
	76	63	69	1.000	0.00	2 - HEA100	S 235
	77	69	23	1.000	0.00	2 - HEA100	S 235
28	78	6	21	3.250	0.00	2 - HEA100	S 235
29	79	5	74	1.625	0.00	4 - HEA140	S 235
	80	74	20	1.625	0.00	4 - HEA140	S 235
30	81	4	19	3.250	0.00	2 - HEA100	S 235
31	82	3	18	3.250	180.00	2 - HEA100	S 235
32	83	13	28	3.250	180.00	2 - HEA100	S 235
33	84	14	56	0.800	0.00	2 - HEA100	S 235
	85	56	29	2.450	0.00	2 - HEA100	S 235
34	86	38	39	1.710	180.00	2 - HEA100	S 235
35	87	39	47	1.180	0.00	2 - HEA100	S 235
	88	47	40	0.800	180.00	2 - HEA100	S 235
36	89	40	51	0.400	180.00	2 - HEA100	S 235
	90	51	41	1.670	180.00	2 - HEA100	S 235
37	91	41	42	1.950	180.00	2 - HEA100	S 235
38	92	9	55	0.800	0.00	2 - HEA100	S 235
	93	55	62	0.450	0.00	2 - HEA100	S 235
	94	62	68	1.000	0.00	2 - HEA100	S 235
	95	68	24	1.000	0.00	2 - HEA100	S 235

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE :

3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER :

AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

makro	prút	uzol 1	uzol 2	dĺžka m	Rx deg	prierez	akosť
	96	24	39	0.850	0.00	2 - HEA100	S 235
39	97	23	38	0.850	0.00	2 - HEA100	S 235
40	98	26	41	0.850	0.00	2 - HEA100	S 235
41	99	27	42	0.850	0.00	2 - HEA100	S 235
42	100	31	43	3.250	180.00	2 - HEA100	S 235
43	101	44	100	1.199	0.00	2 - HEA100	S 235
	102	100	98	0.425	0.00	2 - HEA100	S 235
	103	98	45	1.626	0.00	2 - HEA100	S 235
44	104	46	61	1.250	0.00	2 - HEA100	S 235
	105	61	67	1.000	0.00	2 - HEA100	S 235
	106	67	48	1.000	0.00	2 - HEA100	S 235
	107	48	47	0.850	0.00	2 - HEA100	S 235
45	108	49	57	0.800	0.00	2 - HEA100	S 235
	109	57	82	0.450	0.00	2 - HEA100	S 235
	110	82	83	1.000	0.00	2 - HEA100	S 235
	111	83	50	1.000	0.00	2 - HEA100	S 235
46	112	50	51	0.850	0.00	2 - HEA100	S 235
47	113	49	52	2.446	0.00	1 - HEB120	S 235
48	114	53	52	1.200	0.00	2 - HEA100	S 235
49	115	14	54	0.100	0.00	1 - HEB120	S 235
50	116	53	54	1.180	0.00	2 - HEA100	S 235
51	117	55	56	2.346	0.00	1 - HEB120	S 235
52	118	57	58	2.446	0.00	1 - HEB120	S 235
53	119	59	58	1.200	0.00	2 - HEA100	S 235
54	120	56	60	0.100	0.00	1 - HEB120	S 235
55	121	59	60	1.180	0.00	2 - HEA100	S 235
56	122	52	58	0.800	0.00	2 - HEA100	S 235
57	<del>123</del>	66	65	1.950	180.00	2 - HEA100	S 235
	124	65	96	1.115	180.00	2 - HEA100	S 235
	125	96	82	0.555	180.00	2 - HEA100	S 235
	126	82	64	0.280	0.00	2 - HEA100	S 235
	127	64	61	0.920	0.00	2 - HEA100	S 235
	<del>128</del>	61	62	1.180	0.00	2 - HEA100	S 235
	<del>129</del>	62	63	1.710	0.00	2 - HEA100	S 235
58	<del>130</del>	72	71	1.950	180.00	2 - HEA100	S 235
	131	71	97	1.115	180.00	2 - HEA100	S 235
	132	97	83	0.555	180.00	2 - HEA100	S 235
	133	83	70	0.280	0.00	2 - HEA100	S 235
	134	70	67	0.920	0.00	2 - HEA100	S 235
	135	67	68	1.180	0.00	2 - HEA100	S 235
	<del>136</del>	68	69	1.710	0.00	2 - HEA100	S 235
59	137	77	79	0.380	0.00	2 - HEA100	S 235
60	138	78	80	0.710	0.00	2 - HEA100	S 235
61	139	35	34	0.600	0.00	2 - HEA100	S 235
62	140	81	32	1.010	0.00	2 - HEA100	S 235
63	141	84	85	1.589	0.00	3 - HEB140	S 235
64	142	86	87	1.589	0.00	3 - HEB140	S 235
65	143	89	90	0.600	0.00	2 - HEA100	S 235

ZRUŠENÉ NOSNÍKY  
NEJASŤ VPLYV  
NA ÚNOSNOSŤ A NI  
TUHOSŤ KONŠTRUKCIE

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6  
ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

makro	prút	uzol 1	uzol 2	dĺžka m	Rx deg	prierez	akosť
	144	90	91	0.400	0.00	2 - HEA100	S 235
	145	91	88	2.250	0.00	2 - HEA100	S 235
66	146	77	90	0.600	0.00	2 - HEA100	S 235
67	147	78	91	0.600	0.00	2 - HEA100	S 235
68	148	79	90	0.710	0.00	5 - L80/8	S 235
69	149	80	91	0.930	0.00	5 - L80/8	S 235
70	150	85	87	3.250	0.00	2 - HEA100	S 235
71	151	92	28	2.008	0.00	7 - HEB160	S 235
72	152	92	45	0.860	0.00	2 - HEA100	S 235
73	153	45	28	2.184	0.00	5 - L80/8	S 235
74	154	45	43	2.008	0.00	3 - HEB140	S 235
75	155	44	13	2.184	0.00	5 - L80/8	S 235
76	156	93	99	1.625	0.00	2 - HEA100	S 235
	157	99	92	1.625	0.00	2 - HEA100	S 235
77	158	93	44	0.860	0.00	2 - HEA100	S 235
78	159	85	94	1.200	0.00	3 - HEB140	S 235
79	160	87	95	1.200	0.00	3 - HEB140	S 235
80	161	94	96	1.250	0.00	2 - HEA100	S 235
	162	96	97	1.000	0.00	2 - HEA100	S 235
	163	97	95	1.000	0.00	2 - HEA100	S 235
81	164	3	9	2.089	0.00	6 - L100/8	S 235
	165	9	5	2.419	0.00	6 - L100/8	S 235
	166	5	94	1.462	0.00	5 - L80/8	S 235
	167	94	6	1.638	0.00	5 - L80/8	S 235
	168	6	12	2.290	0.00	5 - L80/8	S 235
82	169	18	24	2.089	0.00	6 - L100/8	S 235
83	170	24	20	2.419	0.00	6 - L100/8	S 235
84	171	20	95	1.462	0.00	5 - L80/8	S 235
85	172	95	21	1.638	0.00	5 - L80/8	S 235
86	173	21	27	2.290	0.00	5 - L80/8	S 235
87	174	93	98	1.838	0.00	6 - L100/8	S 235
	175	98	92	1.839	0.00	6 - L100/8	S 235
88	176	15	44	1.396	0.00	5 - L80/8	S 235
89	177	28	24	2.903	0.00	6 - L100/8	S 235
90	178	13	9	2.903	0.00	6 - L100/8	S 235
91	179	30	100	1.627	0.00	5 - L80/8	S 235
92	180	15	101	1.627	0.00	5 - L80/8	S 235
93	181	100	31	2.339	0.00	5 - L80/8	S 235
94	182	101	13	2.339	0.00	5 - L80/8	S 235

### Podpery

podpera	uzol	typ	Veľkosť
1	1	XYZ	0.20
2	2	XYZ	0.20
3	16	XYZ	0.20
4	17	XYZ	0.20
5	84	XYZ	0.20
6	86	XYZ	0.20

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

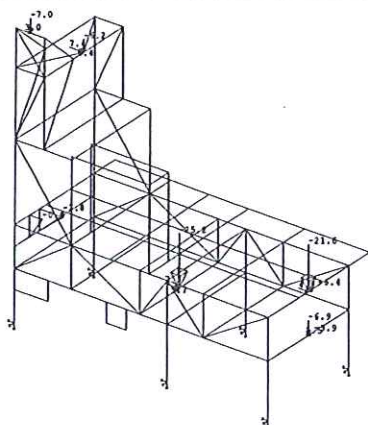
OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

### Zaťažovacie stavy

Stav	Názov	koef	Popis
1	Vlast. hmotnosť	1.10	Vlastná tiaž. Smer -Z
2	TG-AIR LIQUIDE	1.30	Premenné - P
3	TG plošiny	1.30	Premenné - P Krátkodobé
4	Rošty na plošinách	1.10	Stále - Zaťaženie

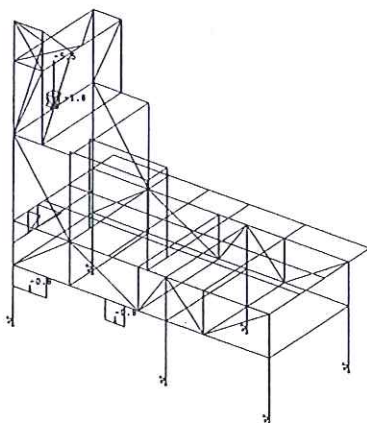
### Zaťažovací stavčís. 2 - uzlové zaťaženie

uzol	Fx kN	Fy kN	Fz kN	Mx kNm	My kNm	Mz kNm
73	3.00	0.00	-7.00	0.00	0.00	0.00
74	7.30	5.70	-25.20	0.00	0.00	0.00
75	1.50	-3.90	-6.90	0.00	0.00	0.00
76	4.90	-6.40	-21.60	0.00	0.00	0.00
79	0.00	0.00	-0.60	0.00	0.00	0.00
80	0.00	0.00	-2.80	0.00	0.00	0.00
98	7.40	4.40	-6.20	0.00	0.00	0.00



### Zaťažovací stavčís. 2 - osamelé zaťaženie

prút	typ	dx m	exY m	exZ m		X	Y	Z
83	сила kN	1.62abs	0.00	0.00	glo	1.10	-1.80	-5.50
139	сила kN	0.50rel	0.00	0.00	glo	0.00	0.00	-0.80
140	сила kN	0.50rel	0.00	0.00	glo	0.00	0.00	-0.80



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Němcovej 30  
042 18 KOŠICE, SLOVAKIA

## STATICKÝ VÝPOČET

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ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

### Zaťažovací stavčís. 3 - spojité zaťaženie

prút	typ	dx m	exY m	exZ m		X zač kon	Y zač kon	Z zač kon
11	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.88 -1.88
14	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.88 -1.88
38	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
40	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-2.77 -2.77
42	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-2.77 -2.77
43	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
85	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
86	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
88	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
90	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
91	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
100	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
87	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
39	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-2.77 -2.77
114	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.20 -1.20
116	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.20 -1.20
119	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.20 -1.20
121	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.20 -1.20
126	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-3.38 -3.38
127	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-3.38 -3.38
133	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-3.00 -3.00
134	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-3.00 -3.00
135	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.50 -1.50
125	сила kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-3.38 -3.38
132	сила	0.00 rel	0.00	0.00	glo	0.00	0.00	-3.00

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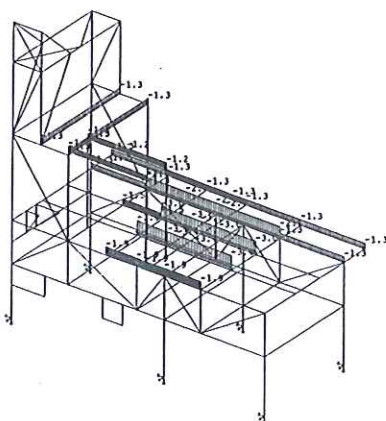
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prút	typ	dx m	exY m	exZ m		X zač kon	Y zač kon	Z zač kon
	kN/m	1.00			dlž	0.00	0.00	-3.00
12	sil kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.88 -1.88
41	sil kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-2.77 -2.77
84	sil kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
89	sil kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.28 -1.28
13	sil kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-1.88 -1.88
124	sil kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-3.38 -3.38
131	sil kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-3.00 -3.00





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## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	typ	dx m	exY m	exZ m		X zač kon	Y zač kon	Z zač kon
90	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.13 -0.13
91	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.13 -0.13
100	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.13 -0.13
87	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.13 -0.13
39	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.28 -0.28
114	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.12 -0.12
116	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.12 -0.12
119	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.12 -0.12
121	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.12 -0.12
126	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.34 -0.34
127	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.34 -0.34
133	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.30 -0.30
134	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.30 -0.30
135	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.30 -0.30
125	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.34 -0.34
132	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.30 -0.30
12	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.19 -0.19
41	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.28 -0.28
84	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.13 -0.13
89	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.13 -0.13
13	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.19 -0.19
124	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.34 -0.34
131	sila kN/m	0.00 rel 1.00	0.00	0.00	glo dlž	0.00 0.00	0.00 0.00	-0.30 -0.30

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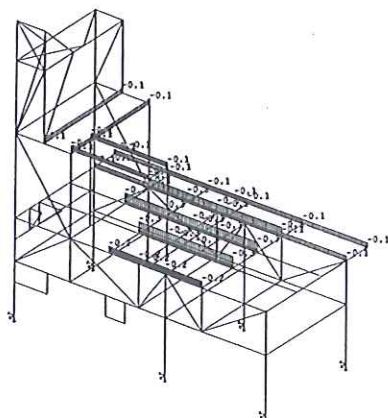
## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLÝ BLOK / UNIT 6 AIR SEPARATION



### Kombinácie

Kombi	Norma	Stav	koef
1.	STN - únosnosť	1 Vlast. hmotnosť	1.00
		2 TG-AIR LIQUIDE	1.00
		3 TG plošiny	1.00
		4 Rošty na plošinách	1.00
2.	STN - použiteľnosť	1 Vlast. hmotnosť	1.00
		2 TG-AIR LIQUIDE	1.00
		3 TG plošiny	1.00
		4 Rošty na plošinách	1.00

Základné pravidlá pre generovanie kombinácií na únosnosť.

1 : 1.10\*ZS1 / 1.10\*ZS4

2 : 1.10\*ZS1 / 1.30\*ZS2 / 1.30\*ZS3 / 1.10\*ZS4

Základné pravidlá pre generovanie kombinácií na použiteľnosť.

1 : 1.00\*ZS1 / 1.00\*ZS4

2 : 1.00\*ZS1 / 1.00\*ZS2 / 1.00\*ZS3 / 1.00\*ZS4

Výpis nebezpečných kombinácií na únosnosť

1/ 1 : +1.10\*ZS1+1.10\*ZS4

2 : +1.10\*ZS1+1.30\*ZS2+1.10\*ZS4

3/ 2 : +1.10\*ZS1+1.30\*ZS3+1.10\*ZS4

4/ 2 : +1.10\*ZS1+1.30\*ZS2+1.30\*ZS3+1.10\*ZS4

Výpis nebezpečných kombinácií na použiteľnosť

1/ 1 : +1.00\*ZS1+1.00\*ZS4

2/ 2 : +1.00\*ZS1+1.00\*ZS2+1.00\*ZS4

3/ 2 : +1.00\*ZS1+1.00\*ZS3+1.00\*ZS4

4/ 2 : +1.00\*ZS1+1.00\*ZS2+1.00\*ZS3+1.00\*ZS4

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## STATICKÝ VÝPOČET

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STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

### Reakcie v podperách - hodnoty v uzloch.

Lineárny statický - nebezpečné alebo všetky kombinácie

Skupina uzlov :1/101

Skupina zaťažovacích stavov :1/4

podpera	uzol	stav	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
1	1	1	0.30	0.04	12.41	0.00	0.00	0.00
		2	-3.62	-1.12	0.27	0.00	0.00	0.00
		3	0.31	-0.02	5.24	0.00	0.00	0.00
		4	0.03	-0.00	0.55	0.00	0.00	0.00
2	2	1	-0.09	0.01	2.34	0.00	0.00	0.00
		2	-1.53	2.12	16.34	0.00	0.00	0.00
		3	-0.13	0.04	0.07	0.00	0.00	0.00
		4	-0.01	0.00	0.00	0.00	0.00	0.00
3	16	1	0.25	-0.01	10.55	0.00	0.00	0.00
		2	-7.53	-1.09	1.73	0.00	0.00	0.00
		3	0.75	-0.03	12.20	0.00	0.00	0.00
		4	0.08	-0.00	1.28	0.00	0.00	0.00
4	17	1	0.01	-0.02	2.68	0.00	0.00	0.00
		2	-3.46	2.13	12.73	0.00	0.00	0.00
		3	0.14	-0.04	3.36	0.00	0.00	0.00
		4	0.02	-0.00	0.33	0.00	0.00	0.00
5	84	1	-0.16	-0.01	9.77	0.00	0.00	0.00
		2	-2.39	0.01	25.05	0.00	0.00	0.00
		3	-0.25	-0.15	15.81	0.00	0.00	0.00
		4	-0.03	-0.01	1.61	0.00	0.00	0.00
6	86	1	-0.32	-0.01	9.97	0.00	0.00	0.00
		2	-6.67	-0.06	21.28	0.00	0.00	0.00
		3	-0.82	0.20	28.51	0.00	0.00	0.00
		4	-0.09	0.02	2.95	0.00	0.00	0.00

### Reakcie v podperách - hodnoty v uzloch. Lokálny extrém

Lineárny statický - nebezpečné alebo všetky kombinácie

Skupina uzlov :1/101

Skupina kombinácií na únosnosť :1/4

podpera	uzol	kombi	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
1	1	3	0.77	0.01	21.06	0.00	0.00	0.00
		2	-4.33	-1.42	14.60	0.00	0.00	0.00
		1	0.37	0.04	14.25	0.00	0.00	0.00
		4	-3.93	-1.44	21.41	0.00	0.00	0.00
2	2	1	-0.11	0.01	2.57	0.00	0.00	0.00
		4	-2.27	2.82	23.91	0.00	0.00	0.00
3	16	3	1.33	-0.05	28.87	0.00	0.00	0.00
		2	-9.43	-1.43	15.27	0.00	0.00	0.00
		1	0.36	-0.01	13.01	0.00	0.00	0.00
		4	-8.46	-1.47	31.13	0.00	0.00	0.00
4	17	3	0.21	-0.08	7.67	0.00	0.00	0.00
		2	-4.46	2.74	19.85	0.00	0.00	0.00
		4	-4.29	2.69	24.21	0.00	0.00	0.00

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## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOŠICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

podpera	uzol	kombi	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
		1	0.03	-0.03	3.30	0.00	0.00	0.00
5	84		-0.20	-0.02	12.52	0.00	0.00	0.00
		4	-3.64	-0.20	65.64	0.00	0.00	0.00
		2	-3.31	-0.01	45.09	0.00	0.00	0.00
		3	-0.53	-0.21	33.07	0.00	0.00	0.00
6	86	1	-0.45	0.01	14.22	0.00	0.00	0.00
		4	-10.18	0.20	78.94	0.00	0.00	0.00
		3	-1.51	0.27	51.28	0.00	0.00	0.00
		2	-9.12	-0.06	41.88	0.00	0.00	0.00

### Vnútorne sily na prúte(och). Extrém prúta

Lineárny statický - nebezpečné alebo všetky kombinácie

Skupina prútov : 1/182

Skupina kombinácií na únosnosť : 1/4

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
1	4	4	0.000	41.61	0.21	1.58	-0.00	-0.82	-0.07
		2		32.87	0.04	1.13	-0.00	-0.47	0.02
		4	1.010	41.61	0.21	1.30	-0.00	0.64	0.14
		3	0.000	15.16	0.20	1.02	-0.00	-0.66	-0.12
2		4		44.44	0.20	-0.58	-0.01	1.66	0.13
		3		14.36	0.20	1.15	0.00	-0.02	0.08
		2	0.700	36.15	0.03	-1.52	-0.01	0.71	0.09
			0.000	36.15	0.03	-1.33	-0.01	1.71	0.06
		4	0.700	44.44	0.20	-0.77	-0.01	1.19	0.27
3			0.000	46.70	-1.05	0.38	0.01	0.58	0.49
		2		37.75	-0.95	0.42	0.01	0.40	0.35
		3	1.085	15.45	-0.12	-0.02	-0.00	0.35	0.04
			0.000	15.45	-0.12	0.27	-0.00	0.21	0.17
		4	1.085	46.70	-1.05	0.08	0.01	0.83	-0.65
4		2		37.75	-0.95	0.12	0.01	0.70	-0.68
		4	0.000	45.96	-1.06	-0.53	0.00	0.52	-0.65
			0.600	45.96	-1.06	-0.70	0.00	0.15	-1.28
		2	0.000	37.13	-0.95	-0.49	0.00	0.44	-0.68
		3		15.19	-0.12	-0.15	-0.00	0.22	0.04
5		4		46.70	-1.05	-1.44	0.01	0.42	-1.28
			0.415	46.70	-1.05	-1.55	0.01	-0.20	-1.72
		2	0.000	37.75	-0.95	-1.40	0.01	0.31	-1.25
		3		15.45	-0.12	-0.50	-0.00	0.19	-0.04
		2	0.415	37.75	-0.95	-1.51	0.01	-0.29	-1.64
6		4	0.000	-12.54	-1.81	-8.68	-0.02	2.48	1.07
			0.835	-12.54	-1.81	-8.91	-0.02	-4.86	-0.44
		2	0.000	-11.34	-1.72	-6.87	-0.02	1.83	1.08
7	2	4		-8.48	1.36	0.31	-0.00	-0.03	-0.92
		3		-2.59	0.22	0.49	0.00	-0.27	-0.13
		2	1.115	-7.20	1.17	-0.13	-0.00	0.09	0.49
			0.000	-7.20	1.17	0.07	-0.00	0.12	-0.82
		4	1.115	-8.48	1.36	0.11	-0.00	0.20	0.59

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Němcovej 30  
042 18 KOŠICE, SLOVAKIA

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

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OBJEKT / UNIT : SO 001 NÍZKOTEPLNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
8			0.000	-4.17	-0.08	-0.32	-0.00	0.27	0.00
		1		-0.10	-0.00	0.13	0.00	-0.02	0.00
		4	1.950	-4.17	-0.08	-0.68	-0.00	-0.71	-0.15
		3	0.000	-0.41	-0.04	0.06	0.00	0.05	0.05
		2		-3.86	-0.05	-0.25	-0.00	0.20	-0.04
9		4		-1.80	-0.34	0.69	0.00	-0.59	0.34
		3		-0.33	0.03	0.36	0.00	-0.23	-0.03
		2		-1.51	-0.36	0.58	-0.00	-0.49	0.36
		1	1.710	-0.03	0.01	-0.06	0.00	0.03	0.01
		4		-1.80	-0.34	0.38	0.00	0.33	-0.24
		2		-1.51	-0.36	0.27	-0.00	0.24	-0.26
10		4	0.000	-23.39	0.28	0.34	0.00	0.34	-0.24
		3		-8.46	0.13	0.89	0.00	-0.34	-0.09
		2	1.180	-17.98	0.18	-0.49	-0.00	0.17	0.04
			0.000	-17.98	0.18	-0.27	-0.00	0.62	-0.17
		4	1.180	-23.39	0.28	0.12	0.00	0.61	0.09
11			0.000	-23.49	-0.28	-0.89	-0.01	0.61	0.12
		3		-8.31	0.07	-0.51	-0.00	0.59	-0.03
		2		-18.20	-0.34	-0.67	-0.01	0.17	0.14
		4	0.920	-23.49	-0.28	-3.49	-0.01	-1.41	-0.14
		2		-18.20	-0.34	-1.03	-0.01	-0.61	-0.17
12		4	0.000	-20.22	0.39	0.02	0.04	-0.04	-0.10
		3		-6.97	0.41	3.51	0.02	-0.55	-0.03
		2	0.280	-15.76	0.06	-2.71	0.02	-0.34	-0.06
			0.000	-15.76	0.06	-2.60	0.02	0.40	-0.08
		3	0.280	-6.97	0.41	2.71	0.02	0.32	0.08
13		4	0.000	-22.00	0.68	6.58	-0.01	-2.18	-0.04
			0.555	-22.00	0.68	8.15	-0.01	1.91	0.34
		3	0.000	-7.78	0.15	3.56	-0.01	-1.24	-0.08
14				-0.87	0.12	-2.05	0.00	0.59	-0.06
		2		-0.19	-0.74	-0.69	0.00	0.43	0.58
		3	1.115	-0.87	0.12	1.10	0.00	0.06	0.07
		4	0.000	-0.85	-0.64	-2.37	0.00	0.87	0.53
		3	0.743	-0.87	0.12	0.05	0.00	-0.16	0.03
		2	1.115	-0.19	-0.74	-0.26	0.00	-0.10	-0.24
15			0.000	1.20	-0.98	-0.26	0.00	0.08	0.87
		3		-1.03	-0.04	-0.18	-0.00	0.06	0.05
		4		0.54	-1.01	-0.27	0.00	0.10	0.91
		1	1.950	-0.37	-0.00	0.18	-0.00	0.05	-0.00
		2	1.418	1.20	-0.98	-0.00	0.00	-0.11	-0.51
		4	1.950	0.54	-1.01	0.08	0.00	-0.09	-1.06
16	4		0.000	-1.91	-1.24	10.40	-0.00	-2.95	0.53
		3		-0.22	-0.23	1.87	0.00	-0.56	0.15
		2		-1.89	-1.03	9.63	-0.00	-2.71	0.40
		4	0.860	-1.91	-1.24	10.17	-0.00	5.90	-0.53
17			0.000	-5.33	1.21	-19.09	-0.00	11.11	-0.58
			0.850	-5.33	1.21	-19.32	-0.00	-5.21	0.45
		3	0.000	-0.73	0.07	-3.00	0.00	1.58	0.14

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05/2005

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
18		2		-5.05	1.17	-17.51	-0.00	10.41	-0.69
		4		4.11	-0.09	4.54	0.00	-0.57	0.02
		3		0.08	0.03	0.12	-0.00	-0.01	-0.02
		2		4.06	-0.11	4.54	0.00	-0.58	0.03
19		4	0.430	4.11	-0.09	4.42	0.00	1.35	-0.02
			0.000	0.21	-0.09	-4.68	0.00	1.35	-0.02
		3		0.08	0.03	0.00	-0.00	0.02	-0.00
		2		0.16	-0.11	-4.68	0.00	1.35	-0.01
20	7		0.430	0.16	-0.11	-4.79	0.00	-0.68	-0.06
		3		0.08	0.03	-0.11	-0.00	-0.00	0.01
		4	0.000	-21.41	-1.44	3.93	-0.00	0.00	-0.00
		1		-14.25	0.04	-0.37	-0.00	-0.00	0.00
21		2		-14.60	-1.42	4.33	-0.00	0.00	-0.00
		3		-21.06	0.01	-0.77	-0.00	-0.00	0.00
		2	0.920	-14.16	-1.42	4.33	-0.00	3.99	-1.30
		3		-20.63	0.01	-0.77	-0.00	-0.71	0.01
22		1		-13.82	0.04	-0.37	-0.00	-0.34	0.04
		4		-20.97	-1.44	3.93	-0.00	3.62	-1.33
			0.000	-21.52	-1.43	1.11	0.01	3.05	-1.32
		1		-13.44	0.04	-0.03	-0.00	-0.14	0.04
23		2		-15.02	-1.41	1.05	0.01	3.22	-1.30
		3		-19.94	0.01	0.03	-0.00	-0.32	0.01
		2	0.576	-14.75	-1.41	1.05	0.01	3.83	-2.11
		1		-13.17	0.04	-0.03	-0.00	-0.16	0.06
24		4		-21.25	-1.43	1.11	0.01	3.68	-2.15
		2	0.600	4.57	-0.09	-5.47	-0.24	0.91	-0.69
		3	0.000	-8.25	0.24	-0.76	-0.02	0.46	0.09
		1		-7.89	0.42	-0.35	-0.01	0.23	-0.03
25		4		3.93	-0.27	-5.88	-0.25	4.43	-0.51
		3	0.600	-7.97	0.24	-0.76	-0.02	0.00	0.24
		2		6.21	2.28	-2.01	0.28	-0.24	0.54
		3	0.000	-7.54	0.24	-0.62	0.01	0.01	0.12
26		2		5.93	2.28	-2.01	0.28	0.96	-0.82
		4		5.35	2.27	-2.41	0.28	0.94	-0.69
			0.600	5.63	2.27	-2.41	0.28	-0.50	0.67
		2	2.346	9.07	0.20	-2.48	0.00	-5.53	0.77
27		3	0.000	-6.93	-0.32	-0.30	-0.00	-0.13	0.38
		2		7.98	0.20	-2.48	0.00	0.30	0.31
		4		7.04	-0.11	-2.55	-0.00	0.14	0.68
			2.346	8.13	-0.11	-2.55	-0.00	-5.85	0.42
28		3		-5.83	-0.32	-0.30	-0.00	-0.83	-0.38
		4	2.008	3.31	-0.21	2.26	-0.00	1.27	-0.82
		1	0.000	-2.12	0.10	0.08	0.00	-0.15	-0.09
		4		2.37	-0.21	2.26	-0.00	-3.27	-0.39
29		3		-1.99	0.06	0.13	0.00	-0.24	-0.16
		2		2.24	-0.17	2.21	-0.01	-3.18	-0.32
		1	2.008	-1.18	0.10	0.08	0.00	0.02	0.12
		2	1.100	2.07	-0.22	-1.18	-0.01	-0.49	0.10

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
		3	0.000	-0.77	-0.02	-0.02	0.00	-0.00	0.06
		2		1.55	-0.22	-1.18	-0.01	0.80	0.35
		4	1.100	2.07	-0.20	-1.16	-0.01	-0.49	0.13
27	3	2	1.200	2.50	0.32	-1.73	0.01	-1.77	0.50
		3	0.000	-0.52	0.66	-1.06	-0.00	0.51	0.06
		4		1.17	0.65	-2.38	0.01	0.61	0.28
		2		2.06	0.32	-1.73	0.01	0.31	0.12
		4	1.200	1.61	0.65	-2.38	0.01	-2.25	1.05
		1	0.000	0.37	0.33	-0.41	-0.00	0.21	-0.09
28		4		-23.84	0.07	3.28	0.00	-2.92	0.05
		3		-9.31	0.72	0.34	-0.00	-0.39	-0.73
		2		-18.29	-0.46	3.20	0.00	-2.78	0.60
		4	2.346	-22.97	0.07	3.28	0.00	4.77	0.22
		3		-8.44	0.72	0.34	-0.00	0.40	0.97
29			0.000	-10.91	2.39	1.24	0.00	-0.97	-0.44
		4		-9.45	12.53	3.36	-0.01	-2.66	-10.56
		2		-1.44	10.77	2.61	-0.01	-2.12	-10.33
		4	1.200	-9.00	12.53	3.36	-0.01	1.37	4.48
30	1		0.000	-4.80	1.69	-0.14	0.00	0.05	-0.20
		2		-1.96	1.06	-0.16	0.00	0.01	-0.29
		3		-4.06	0.95	-0.11	-0.00	0.13	-0.01
		2	1.200	-1.61	1.06	-0.16	0.00	-0.19	0.99
		4		-4.45	1.69	-0.14	0.00	-0.11	1.83
31	3		0.000	-23.91	2.82	2.27	0.00	-0.00	-0.00
			1.650	-23.29	2.82	2.27	0.00	3.74	4.65
32			0.000	-15.96	10.08	-2.62	-0.01	3.03	-2.19
		2		-15.88	10.58	-2.45	-0.01	2.84	-2.39
		3		-1.54	-0.30	-0.15	0.00	0.28	0.10
		1		-1.46	0.21	0.01	0.00	0.08	-0.10
		2	1.200	-15.44	10.58	-2.45	-0.01	-0.11	10.32
33	4	4	0.000	42.94	0.37	0.75	-0.00	-2.04	-0.33
		2		30.65	0.54	1.75	-0.00	-2.97	-0.43
		3		17.91	-0.20	-1.63	0.00	1.34	0.12
		2	1.710	30.65	0.54	2.22	-0.00	0.43	0.50
34		4	0.000	44.78	-0.21	-0.79	-0.01	-0.26	0.14
		3		20.05	0.12	-0.53	0.00	-0.14	-0.17
		2		30.85	-0.31	-0.58	-0.01	-0.14	0.29
		1	2.100	6.13	0.01	0.26	0.00	-0.07	0.01
		4		44.78	-0.21	-0.22	-0.01	-1.33	-0.29
		2		30.85	-0.31	-0.01	-0.01	-0.75	-0.35
35		4	0.000	-30.43	4.49	-21.67	0.02	8.30	-3.50
		2		-22.65	4.55	-15.95	0.02	5.61	-3.46
		3		-10.98	-0.07	-7.64	-0.00	3.60	-0.04
		4	0.835	-30.43	4.49	-21.89	0.02	-9.89	0.25
		2		-22.65	4.55	-16.18	0.02	-7.80	0.34
36	2	4	0.000	-16.61	0.46	-2.83	-0.00	1.44	-0.36
		3		-9.73	0.19	0.06	-0.00	-0.33	-0.13
		2	1.115	-9.66	0.30	-3.05	0.00	-1.60	0.08

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3821.2.001.OK – UNIT 6

ZÁKAZNÍK/ CUSTOMER :

**AIR LIQUIDE AGS GmbH**

STAVBA / JOB :	KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE
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OBJEKT / UNIT :	SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION
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prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
			0.000	-9.66	0.30	-2.85	0.00	1.69	-0.25
		4	1.115	-16.61	0.46	-3.04	-0.00	-1.84	0.16
37		3	0.000	0.96	-0.05	0.15	-0.00	-0.01	0.08
		2		-8.67	0.81	-0.52	-0.00	0.18	-0.53
		1		0.20	-0.00	0.18	0.00	-0.05	0.01
		4	1.950	-7.92	0.76	-0.91	-0.01	-1.20	1.02
			0.000	-7.92	0.76	-0.55	-0.01	0.22	-0.46
		2	1.950	-8.67	0.81	-0.88	-0.00	-1.18	1.05
38		3	0.000	0.33	-0.01	1.79	0.00	-0.60	0.01
		2		-9.83	-0.31	0.64	-0.00	-0.48	0.26
		1		0.13	0.00	0.34	-0.00	-0.14	-0.00
		4		-9.64	-0.32	2.09	-0.00	-0.94	0.27
		3	1.710	0.33	-0.01	-1.60	0.00	-0.44	-0.01
			0.855	0.33	-0.01	0.10	0.00	0.21	-0.00
		4	1.710	-9.64	-0.32	-1.30	-0.00	-0.26	-0.28
39		2	0.000	0.34	0.13	0.48	-0.00	0.21	-0.10
		3		-8.09	0.09	5.95	-0.00	-2.15	-0.06
		4		-5.84	0.20	5.54	-0.00	-1.63	-0.15
		2	1.180	0.34	0.13	-0.09	-0.00	0.44	0.05
		4		-5.84	0.20	0.71	-0.00	2.06	0.09
40		3	0.000	-7.96	0.13	-3.76	-0.00	2.02	-0.05
		4		-7.72	0.69	-4.27	-0.00	2.06	-0.26
			0.920	-7.72	0.69	-8.04	-0.00	-3.60	0.38
		2	0.000	-1.66	0.59	-1.36	0.00	0.44	-0.22
41				3.42	0.26	-0.94	-0.00	1.42	-0.22
		3		-4.35	-0.37	9.92	0.01	-1.90	0.08
		2	0.280	3.42	0.26	-1.08	-0.00	1.14	-0.15
		4		-0.12	-0.02	6.30	0.00	1.64	-0.17
42		2	0.000	1.66	-0.78	1.34	-0.00	-1.14	0.72
		3		-4.44	0.09	-1.65	0.00	-0.72	-0.07
		4	1.670	-1.94	-0.70	6.56	-0.00	3.60	-0.52
			0.000	-1.94	-0.70	-0.28	-0.00	-1.64	0.65
		2	1.670	1.66	-0.78	2.16	-0.00	1.78	-0.59
43			0.000	3.29	-1.63	-0.66	-0.01	0.42	1.53
		3		-3.07	-0.01	-2.17	-0.00	0.93	0.01
		4		0.80	-1.64	-2.47	-0.01	1.19	1.54
		3	1.950	-3.07	-0.01	1.70	-0.00	0.47	-0.01
		4	1.241	0.80	-1.64	-0.01	-0.01	-0.35	-0.50
			1.950	0.80	-1.64	1.40	-0.01	0.14	-1.66
44	4	2	0.000	0.25	0.44	4.88	0.00	-1.36	-0.65
		3		-0.37	-0.14	1.74	-0.01	-0.54	0.15
		4		-0.02	0.29	5.80	-0.00	-1.66	-0.52
			0.860	-0.02	0.29	5.57	-0.00	3.23	-0.27
45			0.000	-1.69	0.50	-9.79	-0.01	5.84	-0.36
		2		-1.37	0.98	-8.60	-0.01	5.09	-0.52
		3		-0.56	-0.60	-2.11	0.00	1.36	0.20
		4	0.850	-1.69	0.50	-10.03	-0.01	-2.58	0.07
		2		-1.37	0.98	-8.83	-0.01	-2.32	0.32

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
46	7	4	0.000	-31.13	-1.47	8.46	0.00	0.00	0.00
		2		-15.27	-1.43	9.43	0.00	0.00	0.00
		3		-28.87	-0.05	-1.33	0.00	0.00	0.00
		2	1.496	-14.56	-1.43	9.43	0.00	14.11	-2.14
		3		-28.17	-0.05	-1.33	0.00	-1.99	-0.08
		4		-30.42	-1.47	8.46	0.00	12.65	-2.19
47			0.000	-13.29	-2.49	-10.25	0.19	10.00	-0.25
		2		-7.88	-2.23	-10.17	0.19	10.44	-0.35
		3	0.600	-12.16	-0.72	-0.17	0.00	-0.59	-0.13
			0.000	-12.44	-0.72	-0.17	0.00	-0.49	0.30
		4	0.600	-13.01	-2.49	-10.25	0.19	3.85	-1.75
48		3	0.000	-11.51	0.62	-0.13	-0.01	-0.59	0.46
		2		-5.64	-1.44	-9.09	-0.17	4.35	0.50
		4		-10.83	-0.34	-9.17	-0.17	3.86	0.71
			0.600	-10.55	-0.34	-9.17	-0.17	-1.64	0.50
		3		-11.23	0.62	-0.13	-0.01	-0.67	0.84
		2		-5.35	-1.44	-9.09	-0.17	-1.11	-0.36
49		3	0.000	-6.86	-0.22	-0.29	-0.00	-0.06	0.15
		4		-4.20	-1.53	-0.91	-0.00	-0.69	1.67
		1		-4.70	-0.08	-0.15	-0.00	0.01	0.08
		4	2.346	-3.10	-1.53	-0.91	-0.00	-2.84	-1.90
50	3	2	1.200	3.71	-0.19	-0.06	0.01	-0.65	0.21
		3	0.000	-0.21	-0.02	-2.17	-0.00	0.90	0.37
		4		2.58	0.03	-1.72	0.01	0.10	0.60
		1		0.48	-0.23	-0.51	0.00	0.24	0.21
		2		3.26	-0.19	-0.06	0.01	-0.57	0.44
		4	1.200	3.02	0.03	-1.72	0.01	-1.97	0.64
		1		0.93	-0.23	-0.51	0.00	-0.38	-0.07
51		4	0.000	-14.64	-1.60	1.69	0.00	-1.38	1.43
		2		-10.86	-0.88	1.57	0.00	-1.37	0.97
		3		-6.44	-1.00	0.30	-0.00	-0.17	0.72
		4	2.346	-13.77	-1.60	1.69	0.00	2.58	-2.32
52		3	0.000	-21.67	-2.54	3.60	0.00	-3.04	0.62
		4		-19.90	-9.22	8.66	0.01	-7.07	8.31
			1.200	-19.46	-9.22	8.66	0.01	3.32	-2.75
53	1		0.000	-19.39	-0.38	3.88	-0.01	-2.24	0.15
			1.200	-19.04	-0.38	3.88	-0.01	2.42	-0.31
		3	0.000	-16.26	-0.30	1.55	-0.00	-0.55	0.32
		2	1.200	-6.15	-0.31	2.65	-0.01	1.37	-0.36
54	3	4	0.000	-24.21	2.69	4.29	0.00	-0.00	-0.00
		2		-19.85	2.74	4.46	0.00	-0.00	-0.00
		3		-7.67	-0.08	-0.21	-0.00	-0.00	0.00
		2	1.650	-19.24	2.74	4.46	0.00	7.37	4.53
		3		-7.05	-0.08	-0.21	-0.00	-0.34	-0.14
55		4	0.000	-19.78	-8.96	-4.87	0.01	5.87	5.19
		3		-6.46	0.19	0.77	0.00	-0.41	0.13
		2		-15.51	-9.38	-5.46	0.01	6.18	5.19
			1.200	-15.07	-9.38	-5.46	0.01	-0.37	-6.06

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042 18 KOŠICE, SLOVAKIA

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6  
ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
56		4	1.100	-5.39	0.48	0.14	-0.01	0.88	0.33
		2	0.000	-4.82	0.69	0.09	-0.01	0.73	-0.20
		3		-0.35	-0.19	0.09	0.00	-0.01	-0.01
		4		-4.98	0.48	0.14	-0.01	0.72	-0.19
		2	1.100	-5.23	0.69	0.09	-0.01	0.83	0.55
		3		-0.76	-0.19	0.09	0.00	0.09	-0.22
57		2	2.008	-25.19	-0.72	-3.28	-0.01	-4.90	-1.12
		3	0.000	-0.52	0.88	-0.39	0.00	0.17	-0.49
		2		-24.45	-0.72	-3.28	-0.01	1.69	0.34
		4		-24.40	0.03	-3.45	-0.00	1.76	-0.08
			2.008	-25.15	0.03	-3.45	-0.00	-5.16	-0.01
		3		-1.26	0.88	-0.39	0.00	-0.61	1.27
58	2	2	0.576	2.19	-0.01	3.28	0.00	1.17	-0.01
		3	0.000	-0.50	0.00	-0.80	-0.00	0.21	-0.00
		2		2.08	-0.01	3.28	0.00	-0.72	-0.00
		3	0.576	-0.40	0.00	-0.80	-0.00	-0.25	0.00
59		2	0.000	0.62	-0.01	0.61	-0.00	-0.26	0.01
		3		0.14	0.00	0.26	0.00	-0.12	-0.00
		4		0.61	-0.01	0.74	-0.00	-0.32	0.01
			0.576	0.51	-0.01	0.74	-0.00	0.11	0.00
60				0.75	0.01	0.74	0.00	0.28	0.01
		2	0.000	0.64	0.01	0.61	0.00	-0.13	0.00
		3		0.08	-0.00	0.26	0.00	-0.04	-0.00
		4		0.64	0.01	0.74	0.00	-0.15	0.00
		2	0.576	0.74	0.01	0.61	0.00	0.22	0.01
		3		0.19	-0.00	0.26	0.00	0.11	-0.00
61		2	0.000	7.86	0.70	6.71	-0.00	-6.95	-0.15
		3		-0.32	0.01	0.22	-0.00	-0.00	-0.02
		4		7.34	0.71	6.65	-0.00	-6.83	-0.17
		3	1.625	-0.32	0.01	-0.08	-0.00	0.11	0.00
		4		7.34	0.71	6.36	-0.00	3.74	0.99
62		2	0.000	12.93	-1.25	-2.55	-0.00	3.72	0.98
		3		-0.32	0.01	-0.08	-0.00	0.11	0.00
		4	1.625	12.41	-1.24	-2.91	-0.00	-0.75	-1.03
			0.000	12.41	-1.24	-2.61	-0.00	3.74	0.99
		2	1.625	12.93	-1.25	-2.85	-0.00	-0.67	-1.06
63	4	3	0.000	0.27	-0.01	0.08	0.00	0.27	0.02
		2		-11.78	-1.59	15.47	-0.01	-10.47	1.29
		1		-0.22	0.01	0.49	0.00	-0.16	0.00
		4		-11.29	-1.61	15.06	-0.01	-10.04	1.30
		3	1.250	0.27	-0.01	-0.26	0.00	0.15	0.00
		2		-11.78	-1.59	15.14	-0.01	8.66	-0.70
		4		-11.29	-1.61	14.72	-0.01	8.57	-0.71
64		3	0.000	0.22	-0.08	-0.37	-0.00	0.15	0.05
		2		-13.23	2.04	15.43	0.00	8.66	0.78
		3	0.375	0.22	-0.08	-0.48	-0.00	-0.01	0.02
		2		-13.23	2.04	15.33	0.00	14.42	1.54
		4		-12.78	1.99	14.96	-0.00	14.20	1.55





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Němcovej 30  
042 18 KOŠICE, SLOVAKIA

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
65		3	0.000	0.22	-0.08	-0.48	-0.00	-0.01	0.02
		2		-4.91	-4.33	-12.75	0.00	14.42	1.54
		4		-4.46	-4.38	-13.12	-0.00	14.20	1.55
			0.625	-4.46	-4.38	-13.29	-0.00	5.94	-1.18
		3		0.22	-0.08	-0.65	-0.00	-0.36	-0.03
66			0.000	0.18	-0.08	-0.61	-0.00	-0.36	0.01
		2		-6.74	-2.27	-12.55	0.01	6.41	0.75
		4		-6.32	-2.33	-12.76	0.01	5.95	0.76
			1.000	-6.32	-2.33	-13.03	0.01	-6.95	-1.57
67	2		0.000	-1.32	-1.52	3.40	-0.00	-1.83	1.09
		3		-0.79	0.05	2.43	0.00	-1.13	-0.03
		2		-0.83	-1.56	1.60	-0.00	-0.99	1.11
		4	1.250	-1.32	-1.52	3.17	-0.00	2.27	-0.81
		2		-0.83	-1.56	1.37	-0.00	0.87	-0.83
68		4	0.000	-1.53	-2.89	-0.76	0.00	2.28	1.48
		3		-0.57	0.01	-0.81	-0.00	1.76	-0.01
		2		-1.22	-2.91	-0.03	0.00	0.88	1.50
		3	1.000	-0.57	0.01	-0.99	-0.00	0.86	-0.00
		2		-1.22	-2.91	-0.21	0.00	0.76	-1.41
69		4	0.000	-2.07	-2.96	-5.36	-0.00	1.42	1.48
		3		-0.50	0.01	-4.25	-0.00	0.86	-0.01
		2		-1.83	-2.98	-1.96	0.00	0.76	1.50
		4	1.000	-2.07	-2.96	-5.54	-0.00	-4.03	-1.48
70			0.000	-11.86	0.09	5.49	0.00	-4.44	-0.03
		2		-10.37	0.18	2.57	0.00	-2.57	-0.08
		3		-2.05	-0.10	3.85	0.00	-2.41	0.07
		4	1.250	-11.86	0.09	5.26	0.00	2.28	0.09
		2		-10.37	0.18	2.34	0.00	0.50	0.14
71		4	0.000	-10.51	-1.03	-1.06	0.00	2.26	0.55
			1.000	-10.51	-1.03	-1.24	0.00	1.12	-0.47
72			0.000	-8.51	-1.05	-3.79	-0.00	1.12	0.53
		3		-2.03	0.02	-3.59	-0.00	1.25	-0.01
		2		-7.01	-1.07	-0.84	-0.00	0.08	0.54
		4	1.000	-8.51	-1.05	-3.97	-0.00	-2.76	-0.53
		2		-7.01	-1.07	-1.02	-0.00	-0.85	-0.54
73		4	0.000	-2.72	1.94	0.71	-0.05	0.02	-0.62
		2		-2.44	1.99	1.18	-0.05	-0.23	-0.64
		3	0.600	-0.53	0.01	-0.15	-0.00	0.06	0.02
		2		-2.44	1.99	1.07	-0.05	0.45	0.55
74			0.000	-2.64	1.50	0.02	-0.03	0.65	0.11
		3		-0.25	-0.04	0.10	-0.00	0.16	0.01
		1		-0.55	0.01	0.28	-0.00	0.02	0.01
		4	0.400	-2.34	1.46	-0.24	-0.03	0.70	0.70
			0.000	-2.34	1.46	-0.17	-0.03	0.78	0.12
		2	0.400	-2.64	1.50	-0.06	-0.03	0.64	0.71
		3		-0.25	-0.04	0.02	-0.00	0.18	-0.00
75		4	0.000	1.97	-2.61	-1.76	0.15	2.08	0.46
		1		-0.44	-0.12	0.15	0.00	0.15	0.00

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## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
		4	0.250	1.97	-2.61	-1.80	0.15	1.63	-0.19
		2	0.000	0.72	-2.55	-1.28	0.16	1.72	0.47
		3		0.81	-0.18	-0.32	-0.01	0.51	-0.00
76		4		1.93	0.25	-1.98	0.00	1.64	-0.16
		1		-0.42	-0.01	-0.06	0.00	0.18	-0.00
		2		0.66	0.27	-1.55	-0.00	1.39	-0.16
		3		0.85	-0.03	-0.49	0.00	0.43	-0.00
		4	1.000	1.93	0.25	-2.16	0.00	-0.43	0.09
		2		0.66	0.27	-1.73	-0.00	-0.25	0.12
77		4	0.000	1.95	-0.44	-2.19	0.00	-0.43	0.12
		1		-0.41	0.01	-0.36	0.00	0.03	-0.00
		3		0.84	0.09	-0.56	0.00	-0.15	-0.05
		2		0.70	-0.53	-1.99	0.00	-0.25	0.17
		4	1.000	1.95	-0.44	-2.37	0.00	-2.71	-0.32
		2		0.70	-0.53	-2.17	0.00	-2.33	-0.36
78		3	0.000	0.71	-0.03	0.18	-0.00	-0.00	0.04
		2		-0.00	-0.47	0.39	-0.00	-0.37	0.75
		4		0.41	-0.49	0.30	-0.00	-0.26	0.78
		3	3.250	0.71	-0.03	-0.42	-0.00	-0.39	-0.06
		1	1.539	0.30	-0.01	-0.01	-0.00	0.09	-0.00
		4	3.250	0.41	-0.49	-0.29	-0.00	-0.25	-0.82
79	4		0.000	12.58	4.43	17.60	0.00	-11.16	-2.97
		2		10.74	4.41	17.63	0.00	-10.94	-2.94
		3	1.625	2.49	0.02	-0.05	0.00	-0.17	0.00
		2		10.74	4.41	17.19	0.00	17.35	4.22
		4		12.58	4.43	17.16	0.00	17.07	4.23
80			0.000	5.17	-5.06	-15.60	0.00	17.07	4.23
		3		2.49	0.02	-0.05	0.00	-0.17	0.00
		2		3.33	-5.08	-15.57	0.00	17.35	4.22
		4	1.625	5.17	-5.06	-16.04	0.00	-8.64	-4.00
		2		3.33	-5.08	-16.01	0.00	-8.30	-4.03
81	2	3	0.000	0.33	-0.03	0.16	-0.00	0.06	0.05
		2		-0.66	0.14	0.12	-0.00	0.14	-0.25
		1		0.28	-0.01	0.26	-0.00	-0.09	0.01
		4	3.250	-0.61	0.11	-0.57	-0.00	-0.60	0.16
			0.000	-0.61	0.11	0.02	-0.00	0.29	-0.21
			0.171	-0.61	0.11	-0.01	-0.00	0.29	-0.19
		2	3.250	-0.66	0.14	-0.47	-0.00	-0.43	0.20
82		4	0.000	1.40	-0.08	0.79	-0.00	-1.60	0.13
		3		0.46	0.07	-0.16	-0.00	-0.07	-0.11
		2		1.37	-0.13	0.69	-0.00	-1.44	0.22
		4	3.250	1.40	-0.08	1.38	-0.00	1.92	-0.12
		1	0.000	0.42	0.01	-0.25	-0.00	0.09	-0.02
		2	3.250	1.37	-0.13	1.29	-0.00	1.77	-0.21
83		4	1.624	1.08	0.70	4.74	0.00	-3.16	-0.61
		2	0.000	-1.30	-0.66	-2.86	0.00	1.24	0.46
			2.908	1.04	0.77	4.83	0.00	2.89	0.38
		4	0.171	-1.26	-0.73	-2.68	0.00	0.54	0.45

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## STATICKÝ VÝPOČET

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OBJEKT / UNIT : SO 001 NÍZKOTEPLNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
			3.250	1.08	0.70	5.03	0.00	4.78	0.53
		3	0.000	0.21	-0.08	-0.07	-0.00	-0.22	0.13
		4	1.624	-1.26	-0.73	-2.41	0.00	-3.16	-0.61
		2	3.250	1.04	0.77	4.89	0.00	4.55	0.64
			1.624	-1.30	-0.66	-2.56	0.00	-3.15	-0.61
84		4	0.000	-1.33	-0.60	1.82	-0.00	-0.21	0.40
		3		-0.96	-0.37	3.09	-0.00	-0.95	0.09
		2	0.800	-0.62	-0.34	-0.63	-0.00	0.07	0.08
		3		-0.96	-0.37	1.50	-0.00	0.88	-0.20
85		2	0.000	0.10	-0.20	-0.37	0.00	0.77	0.18
		3		-1.60	0.26	1.62	0.00	0.35	-0.32
		4	2.450	-1.10	0.00	-3.75	0.00	-2.33	-0.06
			0.000	-1.10	0.00	1.11	0.00	0.90	-0.08
			0.525	-1.10	0.00	0.07	0.00	1.21	-0.07
		3	2.450	-1.60	0.26	-3.23	0.00	-1.62	0.31
86		2	0.000	0.99	0.45	-0.34	-0.00	0.00	-0.38
		3		-0.07	-0.02	-1.68	0.00	0.00	0.02
			1.710	-0.07	-0.02	1.70	0.00	0.02	-0.01
		4	0.000	0.94	0.44	-1.74	0.00	0.00	-0.37
			0.855	0.94	0.44	-0.04	0.00	-0.76	0.01
		2	1.710	0.99	0.45	0.21	-0.00	-0.11	0.39
87			0.000	2.18	-0.16	0.23	-0.00	0.11	0.08
		3		-0.25	0.10	1.15	-0.00	-0.02	-0.07
		4		1.99	-0.08	1.22	-0.00	0.07	0.02
		3	1.180	-0.25	0.10	-1.19	-0.00	-0.04	0.05
		4	0.590	1.99	-0.08	0.05	-0.00	0.44	-0.02
		2	1.180	2.18	-0.16	-0.15	-0.00	0.16	-0.11
88			0.000	2.99	0.42	-0.34	-0.00	-0.16	-0.20
		3		-0.42	-0.04	-0.85	0.00	0.05	0.02
			0.800	-0.42	-0.04	0.74	0.00	0.00	-0.02
		4	0.000	2.66	0.39	-1.04	0.00	-0.13	-0.18
			0.600	2.66	0.39	0.15	0.00	-0.39	0.05
		2	0.800	2.99	0.42	-0.08	-0.00	-0.33	0.14
89			0.000	2.99	0.42	-0.08	-0.00	-0.33	0.14
		3		-0.42	-0.04	0.74	0.00	0.00	-0.02
			0.400	-0.42	-0.04	1.53	0.00	0.45	-0.03
		2	0.200	2.99	0.42	-0.01	-0.00	-0.34	0.23
			0.400	2.99	0.42	0.05	-0.00	-0.33	0.31
90			0.000	3.24	-0.25	0.06	-0.00	-0.33	0.31
		3		-0.28	0.10	-1.58	0.00	0.45	-0.09
		4	1.670	3.02	-0.17	2.03	0.00	0.69	-0.04
			0.668	3.02	-0.17	0.05	0.00	-0.35	0.13
		2	1.670	3.24	-0.25	0.60	-0.00	0.22	-0.11
91			0.000	1.28	-0.92	-0.42	-0.01	0.21	0.91
		3		-0.10	0.01	-2.23	-0.00	0.58	0.00
			1.950	-0.10	0.01	1.64	-0.00	0.00	0.02
		4	0.000	1.20	-0.92	-2.28	-0.01	0.68	0.91
		3	1.064	-0.10	0.01	-0.12	-0.00	-0.67	0.01





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Němcovej 30  
042 18 KOŠICE, SLOVAKIA

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
92		2	1.950	1.28	-0.92	0.21	-0.01	0.00	-0.89
		3	0.000	0.15	-0.24	3.85	0.00	-1.65	0.12
93		2		-0.56	0.59	0.37	-0.00	-0.01	-0.37
		3	0.800	0.15	-0.24	3.70	0.00	1.37	-0.07
			0.000	0.61	0.10	0.47	-0.01	0.84	-0.07
		2		-1.15	0.33	-0.52	0.01	0.90	0.10
94		4		-0.54	0.44	-0.42	-0.00	1.57	0.04
		1		-0.00	-0.01	0.38	-0.00	0.17	-0.01
		2	0.450	-1.15	0.33	-0.60	0.01	0.65	0.25
		3	0.000	0.71	-0.16	-0.33	-0.00	1.04	0.08
95		2		-0.86	-0.46	-0.64	-0.00	0.65	0.30
		4		-0.16	-0.57	-0.94	-0.00	1.37	0.35
			1.000	-0.16	-0.57	-1.12	-0.00	0.33	-0.22
		2		-0.86	-0.46	-0.83	-0.00	-0.09	-0.16
96		3	0.000	0.82	0.07	-3.33	0.00	0.62	-0.04
		2		-0.19	-0.79	-1.19	-0.00	-0.08	0.32
		4	1.000	0.61	-0.72	-3.83	0.00	-3.40	-0.43
		2		-0.19	-0.79	-1.38	-0.00	-1.37	-0.47
97		4	0.000	-0.37	1.05	3.02	0.00	-2.50	-0.49
		2		-0.29	1.19	0.60	0.00	-0.44	-0.55
		3		-0.09	-0.18	3.01	0.00	-2.49	0.08
			0.850	-0.09	-0.18	2.85	0.00	0.01	-0.07
98		2		-0.29	1.19	0.44	0.00	0.00	0.46
			0.000	0.45	0.99	0.50	-0.00	-0.36	-0.46
		3		-0.02	-0.07	1.84	-0.00	-1.50	0.04
		4		0.44	0.94	1.89	-0.00	-1.54	-0.43
99		2	0.850	0.45	0.99	0.34	-0.00	0.00	0.38
		4	0.000	-0.75	-1.81	4.47	0.00	-3.72	0.59
		3		-0.09	0.19	4.12	-0.00	-3.43	-0.08
		2		-0.67	-1.96	1.18	0.01	-0.93	0.65
100		4	0.850	-0.75	-1.81	4.31	0.00	0.01	-0.95
		2		-0.67	-1.96	1.03	0.01	0.01	-1.02
			0.000	0.92	-1.28	0.37	0.00	-0.25	0.20
		3		-0.01	0.10	1.79	0.00	-1.46	-0.06
101		4		0.92	-1.20	1.74	0.01	-1.42	0.15
		2	0.850	0.92	-1.28	0.21	0.00	-0.01	-0.89
		4	0.000	3.36	0.05	-2.14	0.00	-0.19	-0.08
		2		2.42	0.14	0.62	0.00	-1.51	-0.22
102		3		1.35	-0.10	-3.24	-0.00	1.48	0.16
		4	3.250	3.36	0.05	4.30	0.00	3.31	0.09
		2		2.42	0.14	1.67	0.00	2.22	0.23
			0.000	1.47	0.05	1.38	-0.00	-0.30	-0.05
103		3		-1.07	-0.00	0.44	-0.00	-0.24	0.00
		4		0.50	0.05	1.58	-0.00	-0.47	-0.05
			1.199	0.50	0.05	1.37	-0.00	1.30	0.01
		2		1.47	0.05	1.16	-0.00	1.22	0.01
104		3	0.000	-1.08	0.00	0.18	0.00	0.04	0.00
		4		-0.76	0.15	3.10	-0.03	1.91	0.05

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6  
ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
		2		-0.05	0.15	3.11	-0.03	1.94	0.05
			0.425	-0.05	0.15	3.03	-0.03	3.25	0.11
		4		-0.76	0.15	3.02	-0.03	3.21	0.12
103			0.000	-3.53	-0.09	-4.23	0.01	3.14	0.10
			1.626	-3.53	-0.09	-4.53	0.01	-3.99	-0.05
		2	0.000	-2.94	-0.09	-4.19	0.01	3.20	0.10
		3		-0.87	-0.00	-0.11	-0.00	0.05	0.00
104		4		-0.56	0.10	1.01	-0.00	-0.01	-0.03
		2		-0.51	0.21	0.18	0.00	-0.01	-0.10
		3		-0.06	-0.14	1.19	-0.00	-0.01	0.10
		2	1.250	-0.51	0.21	-0.05	0.00	0.08	0.16
		3		-0.06	-0.14	0.96	-0.00	1.34	-0.08
105		4	0.000	-0.47	-0.89	-0.35	-0.00	1.11	0.49
		2		-0.46	-0.76	0.06	-0.00	0.08	0.43
		3	1.000	-0.03	-0.17	-0.63	0.00	0.80	-0.09
			0.000	-0.03	-0.17	-0.45	0.00	1.34	0.08
		4	1.000	-0.47	-0.89	-0.53	-0.00	0.67	-0.40
106		3	0.000	0.02	-0.04	-2.51	0.00	0.79	0.02
		2		-0.20	-1.18	-0.44	-0.00	0.04	0.53
		4		-0.18	-1.21	-2.48	0.00	0.67	0.54
		3	1.000	0.02	-0.04	-2.69	0.00	-1.81	-0.02
		4		-0.18	-1.21	-2.67	0.00	-1.91	-0.67
107			0.000	0.31	0.67	2.32	-0.00	-1.91	-0.32
		2		0.26	0.81	0.65	-0.00	-0.48	-0.38
		3		0.06	-0.17	2.20	-0.00	-1.81	0.08
		2	0.850	0.26	0.81	0.49	-0.00	0.00	0.31
108		4	0.000	-0.88	0.18	2.13	-0.00	-0.32	-0.03
		3		-0.24	0.03	2.47	-0.00	-0.47	0.00
			0.800	-0.24	0.03	2.32	-0.00	1.45	0.03
		4		-0.88	0.18	1.98	-0.00	1.33	0.11
		2	0.000	-0.70	0.17	0.41	-0.00	0.03	-0.04
109		4		-1.00	-0.32	-1.25	0.01	1.62	0.11
		3		-0.21	-0.18	0.11	0.00	1.55	0.03
		2	0.450	-0.86	-0.19	-1.89	0.01	-0.29	0.01
		3		-0.21	-0.18	0.03	0.00	1.59	-0.05
110		4	0.000	-1.65	-1.21	-0.10	0.00	1.05	0.63
		2		-1.05	-1.17	0.33	0.00	-0.28	0.62
		3	1.000	-0.81	-0.07	-0.62	0.00	1.06	-0.04
			0.000	-0.81	-0.07	-0.44	0.00	1.60	0.03
		4	1.000	-1.65	-1.21	-0.29	0.00	0.86	-0.58
111			0.000	-1.27	-1.46	-3.06	-0.00	0.85	0.71
		3		-0.13	0.05	-3.67	-0.00	1.06	-0.02
		2		-1.19	-1.51	0.07	0.00	-0.04	0.73
		3	1.000	-0.13	0.05	-3.85	-0.00	-2.70	0.03
		2		-1.19	-1.51	-0.11	0.00	-0.06	-0.78
112		3	0.000	0.14	0.14	3.27	0.00	-2.71	-0.07
		2		-0.67	0.25	0.15	0.00	-0.06	-0.21
		4		-0.56	0.36	2.78	0.00	-2.30	-0.26





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

## STATICKÝ VÝPOČET

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ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
		2	0.850	-0.67	0.25	-0.01	0.00	-0.00	-0.00
		3		0.14	0.14	3.11	0.00	-0.00	0.05
113	1		0.000	-3.81	0.33	0.78	-0.00	-0.92	-0.44
		2		-1.23	-0.05	1.04	-0.00	-1.70	0.06
		4		-3.68	0.19	1.60	-0.00	-2.32	-0.27
			2.446	-2.96	0.19	1.60	-0.00	1.59	0.19
		3		-3.09	0.33	0.78	-0.00	0.98	0.36
114	2	2	0.000	-1.51	0.09	-0.35	-0.00	-0.19	0.07
		3		-0.02	-0.17	-0.11	0.00	0.51	-0.10
		4	1.200	-1.45	-0.04	-2.66	0.00	-1.58	-0.06
		2		-1.51	0.09	-0.73	-0.00	-0.84	0.18
		3		-0.02	-0.17	-2.36	0.00	-0.98	-0.30
115	1		0.000	-2.13	-0.17	-0.02	-0.11	-0.66	0.02
		2		-0.05	0.09	-1.51	0.04	0.16	-0.01
		3	0.100	-2.10	-0.17	-0.02	-0.11	-0.66	0.00
116	2	2	0.000	-1.51	0.09	0.35	-0.00	-0.19	-0.07
		3		-0.02	-0.17	0.11	0.00	0.51	0.10
		4		-1.45	-0.04	0.40	0.00	0.25	0.01
		3	1.180	-0.02	-0.17	-2.10	0.00	-0.66	-0.11
117	1	1	2.346	0.10	0.12	-0.03	-0.00	-0.08	0.13
		4	0.000	-3.38	-0.25	-0.04	-0.00	0.00	0.30
		3		-3.23	0.46	-0.34	-0.00	0.01	-0.53
		2		-0.74	-0.59	0.26	-0.00	-0.01	0.67
			2.346	-0.05	-0.59	0.26	-0.00	0.60	-0.71
		3		-2.54	0.46	-0.34	-0.00	-0.79	0.55
118		4	0.000	-3.23	-0.12	0.50	-0.00	-0.01	0.29
		3		-2.21	0.02	0.21	-0.00	-0.00	0.10
		2		-2.07	-0.16	0.35	0.00	-0.01	0.25
		4	2.446	-2.51	-0.12	0.50	-0.00	1.22	-0.01
		2		-1.35	-0.16	0.35	0.00	0.85	-0.15
119	2		0.000	0.12	0.12	-0.61	-0.00	0.11	0.05
		3		-0.96	-0.18	0.18	0.00	0.63	-0.09
		4	1.200	-0.65	-0.02	-2.67	0.00	-1.22	-0.05
			0.000	-0.65	-0.02	-0.42	0.00	0.63	-0.03
		2	1.200	0.12	0.12	-0.99	-0.00	-0.85	0.20
		3		-0.96	-0.18	-2.07	0.00	-0.51	-0.31
120	1	2	0.100	0.24	0.12	0.12	0.10	0.61	-0.00
		3	0.000	-2.42	-0.18	-0.96	-0.12	-0.79	0.02
		2		0.21	0.12	0.12	0.10	0.60	-0.01
		3	0.100	-2.39	-0.18	-0.96	-0.12	-0.89	0.00
121	2	2	0.000	0.12	0.12	0.61	-0.00	0.11	-0.05
		3		-0.96	-0.18	-0.18	0.00	0.63	0.09
			1.180	-0.96	-0.18	-2.39	0.00	-0.89	-0.12
		4	0.169	-0.65	-0.02	0.11	0.00	0.68	0.02
		2	1.180	0.12	0.12	0.24	-0.00	0.61	0.10
122		3	0.000	-0.15	0.75	0.73	0.00	-0.36	-0.30
		2		-0.04	-0.47	-0.21	0.00	0.08	0.18
			0.800	-0.04	-0.47	-0.36	0.00	-0.15	-0.20

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Němcovej 30  
042 18 KOŠICE, SLOVAKIA

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
		4	0.000	-0.14	0.14	0.31	0.00	-0.19	-0.06
		3	0.800	-0.15	0.75	0.58	0.00	0.17	0.30
123		2	0.000	3.62	-1.46	0.29	0.00	-0.01	1.48
		3		-0.06	-0.05	-0.11	-0.00	0.01	0.04
		4		3.60	-1.50	0.34	0.00	-0.01	1.51
			1.950	3.60	-1.50	0.70	0.00	1.00	-1.41
		1	0.000	-0.04	-0.01	-0.16	-0.00	0.00	0.01
			0.886	-0.04	-0.01	0.01	-0.00	-0.06	0.00
124		2	0.000	2.27	-1.85	-0.75	0.00	0.91	0.96
		3		-0.11	0.17	-2.76	-0.00	0.14	-0.09
			1.115	-0.11	0.17	2.75	-0.00	0.13	0.10
		4	0.000	2.24	-1.71	-3.23	-0.00	1.00	0.89
		3	0.558	-0.11	0.17	-0.01	-0.00	-0.63	0.00
		2	1.115	2.27	-1.85	-0.13	0.00	0.42	-1.10
125		4	0.000	1.15	-1.13	-2.37	0.00	0.47	0.18
		1		-0.05	0.03	-0.48	0.00	0.09	-0.01
		3		0.06	0.08	-1.95	0.00	0.13	-0.02
		2		1.05	-1.19	-0.90	0.00	0.42	0.19
		3	0.555	0.06	0.08	0.79	0.00	-0.19	0.03
			0.370	0.06	0.08	-0.12	0.00	-0.25	0.01
		2	0.555	1.05	-1.19	-0.59	0.00	0.00	-0.47
126		4	0.000	0.26	1.77	-1.60	-0.01	0.08	-0.22
		1		-0.04	0.12	-0.35	-0.00	0.10	-0.02
		4	0.280	0.26	1.77	-2.99	-0.01	-0.56	0.28
		3	0.000	0.16	0.51	-0.32	-0.01	0.19	-0.11
127				0.14	0.17	2.83	0.00	-0.10	-0.08
		2		-1.06	0.29	0.88	0.00	-0.49	-0.12
		4		-0.86	0.43	3.33	0.00	-0.56	-0.18
		3	0.920	0.14	0.17	-1.72	0.00	0.41	0.08
			0.552	0.14	0.17	0.10	0.00	0.71	0.02
		4	0.920	-0.86	0.43	-1.22	0.00	0.41	0.21
128		3	0.000	0.11	0.14	-0.31	0.00	0.42	-0.08
		2		-2.03	0.23	0.26	0.00	0.09	-0.12
		4		-1.84	0.34	-0.08	0.00	0.41	-0.18
		3	1.180	0.11	0.14	-0.53	0.00	-0.08	0.08
		4		-1.84	0.34	-0.30	0.00	0.18	0.22
129			0.000	-2.85	-0.04	0.14	0.00	0.18	0.11
		3		-0.15	0.04	0.19	0.00	-0.07	-0.02
		2		-2.82	-0.06	0.09	-0.00	0.26	0.11
			1.710	-2.82	-0.06	-0.22	-0.00	0.16	0.02
			0.513	-2.82	-0.06	0.00	-0.00	0.29	0.08
130			0.000	2.06	-1.83	0.37	-0.00	-0.01	1.91
		3		-0.00	-0.04	0.03	0.00	0.00	0.04
		4		2.04	-1.86	0.53	-0.00	-0.01	1.94
			1.950	2.04	-1.86	0.89	-0.00	1.37	-1.68
		1	0.000	0.02	-0.01	-0.12	0.00	0.00	0.01
			0.709	0.02	-0.01	0.01	0.00	-0.04	0.00
131		2	0.000	1.99	-2.44	-1.02	-0.00	1.06	1.26

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# STATICKÝ VÝPOČET



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

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6  
ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE  
OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
		3		-0.00	0.03	-2.86	0.00	0.41	-0.05
			1.115	-0.00	0.03	2.06	0.00	-0.04	-0.02
		4	0.000	1.96	-2.40	-3.53	-0.00	1.37	1.21
		3	0.558	-0.00	0.03	-0.40	0.00	-0.50	-0.04
		4	1.115	1.96	-2.40	1.39	-0.00	0.18	-1.46
132		2	0.000	2.02	-3.11	-0.47	-0.00	0.25	0.81
		3		-0.75	-0.50	-0.84	-0.00	-0.03	0.23
		4		1.44	-3.46	-1.15	-0.00	0.18	0.97
		3	0.555	-0.75	-0.50	1.61	-0.00	0.18	-0.05
			0.185	-0.75	-0.50	-0.02	-0.00	-0.11	0.14
		4	0.555	1.44	-3.46	1.30	-0.00	0.22	-0.95
133		2	0.000	1.68	3.24	0.26	0.00	-0.07	-0.37
		3		-0.63	-0.18	1.44	0.00	-0.18	0.02
		4		1.19	3.09	1.47	0.00	-0.22	-0.35
		3	0.280	-0.63	-0.18	0.20	0.00	0.05	-0.02
		2		1.68	3.24	0.12	0.00	-0.01	0.54
134			0.000	1.55	0.97	0.45	0.00	-0.02	-0.42
		3		-0.49	0.14	2.69	-0.00	0.04	-0.08
		4		1.16	1.08	2.78	-0.00	0.01	-0.48
		3	0.920	-0.49	0.14	-1.37	-0.00	0.65	0.06
		4	0.552	1.16	1.08	0.34	-0.00	0.87	0.11
			0.920	1.16	1.08	-1.28	-0.00	0.70	0.51
135		2	0.000	1.13	0.72	0.29	0.00	0.19	-0.39
		3		-0.36	0.10	0.51	0.00	0.66	-0.06
		4		0.84	0.79	0.67	0.00	0.70	-0.43
		3	1.180	-0.36	0.10	-2.40	0.00	-0.46	0.06
		4	0.337	0.84	0.79	-0.16	0.00	0.78	-0.17
			1.180	0.84	0.79	-2.24	0.00	-0.23	0.50
136		2	0.000	0.80	0.04	0.05	0.00	0.18	-0.02
		3		-0.13	-0.01	0.42	-0.00	-0.46	0.01
		2	1.710	0.80	0.04	-0.26	0.00	-0.00	0.05
			0.342	0.80	0.04	-0.01	0.00	0.18	-0.01
137		4	0.000	0.48	-1.03	0.12	-0.02	-0.03	0.39
		2		0.48	-1.05	0.13	-0.02	-0.03	0.40
		3	0.380	0.04	-0.03	-0.03	-0.00	0.00	0.00
		2		0.48	-1.05	0.06	-0.02	0.01	0.00
138		4	0.000	4.11	-0.32	0.33	-0.00	-0.17	0.22
		3		0.11	0.00	0.08	0.00	-0.01	-0.00
		2		4.10	-0.33	0.33	-0.00	-0.17	0.23
		3	0.710	0.11	0.00	-0.05	0.00	0.00	0.00
		4		4.11	-0.32	0.20	-0.00	0.02	-0.00
		2		4.10	-0.33	0.20	-0.00	0.02	-0.00
139		4	0.000	0.74	0.01	0.51	0.00	-0.11	-0.00
		2		0.61	0.01	0.51	0.00	-0.09	-0.00
		3		0.26	-0.00	0.03	-0.00	-0.02	0.00
		4	0.600	0.74	0.01	-0.64	0.00	-0.15	-0.00
		2	0.300	0.61	0.01	0.46	0.00	0.05	-0.00
140			0.000	3.28	-0.01	-0.86	-0.00	0.77	0.01



# STATICKÝ VÝPOČET



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Němcovej 30  
042 18 KOŠICE, SLOVAKIA

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6  
ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE  
OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
		3		-0.80	0.00	0.69	-0.00	-0.39	-0.00
		2	1.010	3.28	-0.01	-2.08	-0.00	-0.72	-0.00
		4	0.000	2.82	-0.01	-0.55	-0.00	0.57	0.01
141	3			-65.64	-0.20	3.64	0.00	0.00	-0.00
		3		-33.07	-0.21	0.53	0.00	0.00	0.00
		4	1.589	-65.05	-0.20	3.64	0.00	5.79	-0.31
		3		-32.48	-0.21	0.53	0.00	0.84	-0.34
142		4	0.000	-78.94	0.20	10.18	0.00	0.00	0.00
		3		-51.28	0.27	1.51	0.00	0.00	0.00
		2		-41.88	-0.06	9.12	0.00	0.00	0.00
		4	1.589	-78.35	0.20	10.18	0.00	16.18	0.32
		3		-50.69	0.27	1.51	0.00	2.40	0.43
		2		-41.29	-0.06	9.12	0.00	14.49	-0.10
143	2	4	0.000	2.54	-3.47	1.14	-0.05	-0.02	0.52
		1		-0.17	-0.14	0.66	-0.00	-0.23	0.02
		2		2.37	-3.46	1.36	-0.05	-0.14	0.52
			0.600	2.37	-3.46	1.25	-0.05	0.65	-1.56
144			0.000	2.56	-2.98	1.28	-0.03	0.33	-1.12
		3		-0.28	-0.10	-0.17	-0.00	0.19	-0.05
		4		2.16	-2.99	0.77	-0.03	0.49	-1.12
		3	0.400	-0.28	-0.10	-0.25	-0.00	0.10	-0.09
		2		2.56	-2.98	1.20	-0.03	0.83	-2.31
		4		2.16	-2.99	0.70	-0.03	0.78	-2.32
145		1	0.000	0.02	0.04	-0.02	0.00	0.18	-0.07
		4		-2.15	1.08	-1.77	0.02	1.99	-2.08
			2.250	-2.15	1.08	-2.18	0.02	-2.45	0.36
		2	0.000	-0.79	1.08	-1.55	0.02	1.76	-2.06
			2.250	-0.79	1.08	-1.96	0.02	-2.19	0.36
146			0.000	0.93	-0.85	0.01	0.04	-0.01	0.22
		3	0.600	-0.39	-0.31	0.00	0.00	0.00	-0.09
		1	0.000	-0.00	0.25	0.01	0.00	-0.00	-0.07
		4		0.65	-1.41	0.00	0.04	-0.01	0.39
			0.600	0.54	-1.41	0.00	0.04	-0.01	-0.46
147			0.000	1.19	-4.62	-0.04	0.02	0.01	1.38
		1	0.600	-0.14	-0.12	0.02	0.00	0.01	-0.04
		3	0.000	0.27	-1.06	0.03	0.00	-0.01	0.33
		2		0.89	-3.69	-0.05	0.02	0.01	1.09
			0.600	0.78	-3.69	-0.05	0.02	-0.02	-1.13
		4		1.08	-4.62	-0.04	0.02	-0.02	-1.39
148	5		0.710	-0.94	1.03	-0.02	0.01	-0.01	0.72
		2	0.000	-0.86	1.05	0.02	0.01	-0.01	-0.01
		3	0.710	-0.11	0.03	-0.02	0.00	-0.00	0.02
		4	0.000	-0.87	1.03	0.02	0.01	-0.01	-0.01
		3	0.355	-0.08	0.03	-0.00	0.00	0.00	0.01
		2	0.710	-0.93	1.05	-0.02	0.01	-0.01	0.73
149		4	0.930	-5.42	0.32	-0.05	0.00	-0.03	0.29
		2	0.000	-5.35	0.33	0.02	0.00	-0.02	-0.01
		3		-0.12	-0.00	0.03	0.00	-0.00	0.00

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Němcovej 30  
042 18 KOŠICE, SLOVAKIA

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
		1		-0.11	0.01	0.03	0.00	-0.00	-0.00
		4		-5.36	0.32	0.02	0.00	-0.02	-0.00
		1	0.372	-0.14	0.01	0.00	0.00	0.00	0.00
		2	0.930	-5.42	0.33	-0.05	0.00	-0.03	0.30
150	2	4	0.000	6.16	-0.32	0.44	0.00	-0.46	0.48
		2		3.90	-0.31	0.50	0.00	-0.48	0.46
		3	3.250	2.87	-0.01	-0.38	0.00	-0.39	-0.02
			0.000	2.87	-0.01	0.21	0.00	-0.10	0.02
		2	2.737	3.90	-0.31	-0.00	0.00	0.20	-0.39
		4	3.250	6.16	-0.32	-0.16	0.00	-0.01	-0.57
151	7		2.008	-1.83	-2.84	-0.57	-0.00	-1.36	-2.71
			0.000	-0.89	-2.84	-0.57	-0.00	-0.21	2.99
		3		-0.58	-0.30	-0.09	0.00	-0.03	0.44
		2		-0.86	-2.79	-0.50	-0.00	-0.21	2.87
			2.008	-1.81	-2.79	-0.50	-0.00	-1.22	-2.73
152	2	3	0.000	0.15	0.01	-0.03	0.00	0.03	-0.00
		2		-3.45	0.15	-1.31	-0.00	0.59	-0.03
		4		-3.34	0.15	-1.36	-0.00	0.60	-0.03
		1		0.05	0.00	0.02	0.00	0.01	-0.00
		4	0.860	-3.34	0.15	-1.51	-0.00	-0.63	0.10
		2		-3.45	0.15	-1.46	-0.00	-0.60	0.10
153	5		0.000	5.29	-0.13	0.03	-0.00	-0.03	0.16
		3	2.184	-1.25	0.01	-0.05	0.00	-0.03	0.02
			0.000	-1.03	0.01	0.04	0.00	-0.02	-0.01
		1		-0.38	-0.00	0.04	0.00	-0.02	0.01
		4	2.184	4.43	-0.12	-0.06	-0.00	-0.07	-0.11
		1	1.092	-0.49	-0.00	-0.00	0.00	0.01	0.00
		2	2.184	5.08	-0.13	-0.06	-0.00	-0.07	-0.13
154	3	3	0.000	0.33	-0.89	-0.30	0.00	0.09	0.38
		2	2.008	-11.57	-2.96	-1.48	-0.01	-2.35	-2.23
		4	0.000	-10.33	-3.57	-1.63	-0.00	0.65	3.85
		2		-10.83	-2.96	-1.48	-0.01	0.62	3.71
		4	2.008	-11.07	-3.57	-1.63	-0.00	-2.61	-3.31
155	5	2	0.000	10.07	0.02	-0.02	-0.00	-0.00	-0.04
		3	2.184	-1.35	-0.00	-0.05	0.00	-0.03	0.01
			0.000	-1.13	-0.00	0.04	0.00	-0.02	0.01
		1		-0.63	0.00	0.04	0.00	-0.02	0.00
		4	2.184	9.36	0.02	-0.11	-0.00	-0.14	0.02
		1	1.008	-0.73	0.00	0.00	0.00	0.01	0.00
156	2	2	0.000	-10.31	-0.00	-0.48	0.00	1.16	0.01
		3		-0.19	0.00	0.18	-0.00	0.05	-0.00
		1		-0.21	-0.00	0.24	-0.00	-0.05	0.00
		4	1.625	-10.29	-0.00	-0.84	0.00	0.14	0.01
			0.000	-10.29	-0.00	-0.54	0.00	1.26	0.01
157		2		-10.31	-0.00	-0.78	0.00	0.15	0.01
		4	1.625	-10.29	-0.00	-1.14	0.00	-1.47	0.00
		1	0.000	-0.21	-0.00	-0.06	-0.00	0.11	-0.00
			1.625	-0.21	-0.00	-0.35	-0.00	-0.23	-0.00

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLIKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
158		3	0.000	0.10	-0.01	0.02	-0.00	0.00	0.00
		2		-2.05	-0.05	-1.39	0.00	0.54	0.01
		4		-2.04	-0.05	-1.41	0.00	0.54	0.02
		1		0.09	-0.00	0.04	-0.00	0.00	0.00
		4	0.860	-2.04	-0.05	-1.57	0.00	-0.74	-0.03
159	3		0.000	-55.40	2.79	-0.10	0.00	0.95	-0.79
		3		-28.89	2.34	0.67	-0.00	-0.29	-0.44
		2		-36.83	1.00	-0.52	0.00	1.14	-0.52
		4	1.200	-54.96	2.79	-0.10	0.00	0.84	2.55
160			0.000	-59.13	-1.93	-3.96	-0.05	4.85	0.35
		2		-27.87	0.29	-4.18	-0.04	4.99	-0.24
		3		-42.37	-2.86	0.25	-0.01	-0.14	0.82
			1.200	-41.93	-2.86	0.25	-0.01	0.16	-2.61
161	2		0.000	-2.42	0.07	3.99	0.00	-2.47	-0.05
		2		-0.04	-0.57	1.01	-0.00	-0.80	0.40
		4		-1.90	-0.52	4.09	-0.00	-2.75	0.37
		3	1.250	-2.42	0.07	3.76	0.00	2.37	0.04
		2		-0.04	-0.57	0.78	-0.00	0.32	-0.31
162			0.000	0.63	-1.80	0.01	0.00	0.32	0.98
		3		-2.50	0.23	-0.94	0.00	2.37	-0.08
			1.000	-2.50	0.23	-1.12	0.00	1.34	0.15
		4	0.000	-1.33	-1.61	-0.78	0.00	2.21	0.91
		2	1.000	0.63	-1.80	-0.17	0.00	0.24	-0.82
163		3	0.000	-3.03	-0.51	-4.02	-0.00	1.34	0.40
		4		-2.39	-2.13	-3.50	0.00	1.35	1.74
		3	1.000	-3.03	-0.51	-4.20	-0.00	-2.76	-0.11
		2	0.000	-0.04	-1.77	-0.19	0.00	0.24	1.45
		4	1.000	-2.39	-2.13	-3.68	0.00	-2.24	-0.39
164	6		0.000	-42.41	0.03	0.03	0.00	0.08	-0.06
		3		-17.59	0.03	0.17	0.00	-0.10	-0.00
		2	2.089	-32.20	0.01	-0.23	-0.00	-0.12	-0.04
			0.000	-32.36	0.01	0.00	-0.00	0.11	-0.06
		3	2.089	-17.43	0.03	-0.06	0.00	0.01	0.06
165		4	2.419	-30.79	-0.32	-0.31	0.00	-0.10	-0.47
		3	0.000	-8.16	0.00	0.11	-0.00	0.04	0.02
		2		-26.46	-0.33	-0.01	0.00	0.25	0.30
		1		-3.99	-0.00	0.13	-0.00	-0.02	0.01
		4		-30.63	-0.32	-0.03	0.00	0.30	0.31
		2	2.419	-26.63	-0.33	-0.29	0.00	-0.11	-0.50
166	5	4	1.462	43.44	0.48	0.08	-0.00	0.06	0.28
			0.000	43.32	0.48	0.16	-0.00	-0.12	-0.41
		1	1.462	6.56	0.02	-0.02	0.00	0.00	0.02
		3	0.000	16.53	0.08	0.08	0.00	-0.05	-0.02
		2		33.21	0.42	0.15	-0.00	-0.10	-0.40
167		4		6.28	0.04	0.18	-0.00	-0.14	-0.02
		2		3.65	0.07	0.16	-0.00	-0.12	-0.06
		3		4.81	-0.04	0.09	-0.00	-0.06	0.06
		1	1.638	2.05	-0.01	-0.05	-0.00	-0.01	-0.01

ČÍSLO REVÍZIE

REV. No. :

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DATE, SIGN.

05/2005

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

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6

ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE

OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
168		4		6.16	0.04	0.06	-0.00	0.05	0.05
		3	2.290	1.44	-0.02	-0.11	0.00	-0.04	-0.02
		2	0.000	-0.48	0.22	0.14	0.00	-0.07	-0.21
		3		1.31	-0.02	0.10	0.00	-0.02	0.02
		4		0.47	0.20	0.14	0.00	-0.06	-0.18
			1.585	0.55	0.20	-0.01	0.00	0.04	0.13
		2	2.290	-0.35	0.22	-0.07	0.00	0.01	0.29
		4	0.000	-29.25	-0.01	-0.37	0.00	0.61	-0.02
169	6	3		-23.52	0.01	0.19	0.00	-0.17	0.01
		2		-13.05	-0.02	-0.41	-0.00	0.70	-0.03
			2.089	-12.88	-0.02	-0.64	-0.00	-0.40	-0.07
		3		-23.36	0.01	-0.04	0.00	-0.01	0.03
170		4	2.419	-42.83	0.17	-0.14	-0.00	0.18	0.34
		2	0.000	-33.38	0.19	0.14	-0.00	0.09	-0.11
		3		-14.25	-0.02	0.14	-0.00	0.07	0.03
			2.419	-14.41	-0.02	-0.15	-0.00	0.06	-0.01
		4	0.000	-42.67	0.17	0.14	-0.00	0.19	-0.08
			1.209	-42.75	0.17	-0.00	-0.00	0.27	0.13
		1	0.000	-4.96	0.00	0.14	-0.00	-0.02	0.00
		2	2.419	-33.54	0.19	-0.14	-0.00	0.10	0.36
171	5	4	1.462	43.13	-0.06	-0.32	-0.00	-0.10	0.07
			0.000	43.00	-0.06	-0.23	-0.00	0.29	0.16
		2		23.27	-0.05	-0.09	0.00	0.17	0.17
		3		26.50	-0.01	-0.14	-0.00	0.15	-0.01
			1.462	26.62	-0.01	-0.23	-0.00	-0.12	-0.03
		4	0.000	26.67	0.40	-0.17	-0.00	-0.01	-0.45
		1		5.52	0.04	0.02	-0.00	-0.00	-0.04
		4	1.638	26.54	0.40	-0.29	-0.00	-0.38	0.20
		2	0.000	10.62	0.28	-0.06	-0.00	-0.04	-0.32
		3		21.57	0.16	-0.09	-0.00	0.03	-0.17
173		4	2.290	6.09	0.08	0.03	-0.00	0.11	0.08
		2	0.000	3.57	0.08	0.24	-0.00	-0.20	-0.10
		3		2.85	-0.01	0.11	0.00	-0.04	0.01
		4		5.97	0.08	0.24	-0.00	-0.20	-0.10
		1	2.290	0.58	-0.00	-0.10	0.00	-0.04	-0.00
		2		3.70	0.08	0.03	-0.00	0.11	0.09
174	6	4	0.000	11.62	0.03	0.19	-0.01	-0.11	-0.03
		2		11.56	0.03	0.23	-0.01	-0.18	-0.03
		3	1.838	0.11	0.00	-0.17	-0.00	-0.03	0.00
			0.668	0.11	0.00	-0.01	-0.00	0.08	-0.00
		4	1.838	11.62	0.03	-0.06	-0.01	0.01	0.03
		2	0.000	8.36	-0.05	-0.85	0.00	0.08	0.05
		3		-0.13	-0.00	0.04	-0.00	0.02	0.00
		4		8.28	-0.05	-0.86	0.00	0.09	0.05
		1		-0.05	-0.00	0.06	0.00	0.01	0.00
		4	1.839	8.28	-0.05	-1.11	0.00	-1.72	-0.04
		2		8.36	-0.05	-1.10	0.00	-1.71	-0.04
176	5	4	1.396	-8.82	-0.02	-0.20	-0.00	-0.14	-0.04





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## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6  
ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE  
OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

prút	pr.č.	kombi	dx [m]	N [kN]	Vy [kN]	Vz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
		3	0.000	-0.10	0.01	0.04	-0.00	-0.01	0.01
		2		-8.66	-0.03	-0.11	-0.00	0.07	-0.01
		1		-0.06	-0.00	0.04	0.00	-0.01	0.00
		4		-8.70	-0.02	-0.11	-0.00	0.08	-0.01
		3	1.396	-0.22	0.01	-0.06	-0.00	-0.02	0.02
		2		-8.78	-0.03	-0.20	-0.00	-0.14	-0.06
177	6	3	0.000	0.95	-0.00	0.07	0.00	0.03	-0.02
		2	2.903	-7.72	0.06	-0.24	-0.00	-0.15	0.09
			0.000	-7.40	0.06	-0.01	-0.00	0.20	-0.07
		1		0.36	0.00	0.10	-0.00	-0.02	-0.01
		4	2.903	-7.12	0.05	-0.27	-0.00	-0.19	0.07
			0.000	-6.81	0.05	-0.04	-0.00	0.25	-0.08
178		3		0.44	-0.01	0.09	0.00	0.02	-0.00
		2	2.903	-13.13	-0.01	-0.36	-0.00	-0.25	0.02
		4	0.000	-12.79	-0.02	-0.14	-0.00	0.50	0.06
		1		0.41	-0.00	0.10	0.00	-0.01	0.00
		4	2.903	-13.10	-0.02	-0.37	-0.00	-0.25	-0.00
		2	0.000	-12.81	-0.01	-0.14	-0.00	0.47	0.07
		3	2.903	0.12	-0.01	-0.14	0.00	-0.06	-0.03
179	5		0.000	0.28	-0.01	0.07	0.00	-0.01	0.01
		2	1.627	-0.52	0.08	0.28	-0.00	0.36	0.05
			0.000	-0.41	0.08	0.41	-0.00	-0.21	-0.07
		3	1.627	0.16	-0.01	-0.06	0.00	0.00	0.00
		4		-0.27	0.07	0.27	-0.00	0.35	0.05
180			0.000	0.27	0.00	0.18	-0.00	-0.12	-0.01
		2		0.25	0.01	0.15	-0.00	-0.09	-0.02
		3		0.18	-0.01	0.10	0.00	-0.04	0.01
		1	1.627	0.04	-0.00	-0.06	0.00	0.00	0.00
		4		0.16	0.00	0.05	-0.00	0.07	-0.00
181		3	0.000	0.01	0.01	0.21	0.00	-0.13	-0.00
		2	2.339	-2.49	0.02	-0.39	-0.00	-0.39	0.04
		4	0.000	-1.93	0.03	-0.12	-0.00	0.26	-0.01
		2		-2.28	0.02	-0.26	-0.00	0.36	-0.01
		4	2.339	-2.14	0.03	-0.25	-0.00	-0.18	0.06
182			0.000	0.08	-0.00	0.14	-0.00	-0.07	0.00
		1	2.339	-0.26	0.00	-0.08	0.00	-0.04	0.00
		3	0.000	-0.02	0.01	0.07	0.00	-0.02	-0.00
		2		0.05	-0.01	0.12	-0.00	-0.06	0.00
		4	2.339	-0.13	-0.00	0.02	-0.00	0.12	-0.01
		3		-0.23	0.01	-0.06	0.00	-0.01	0.02
		2		-0.16	-0.01	-0.00	-0.00	0.09	-0.02

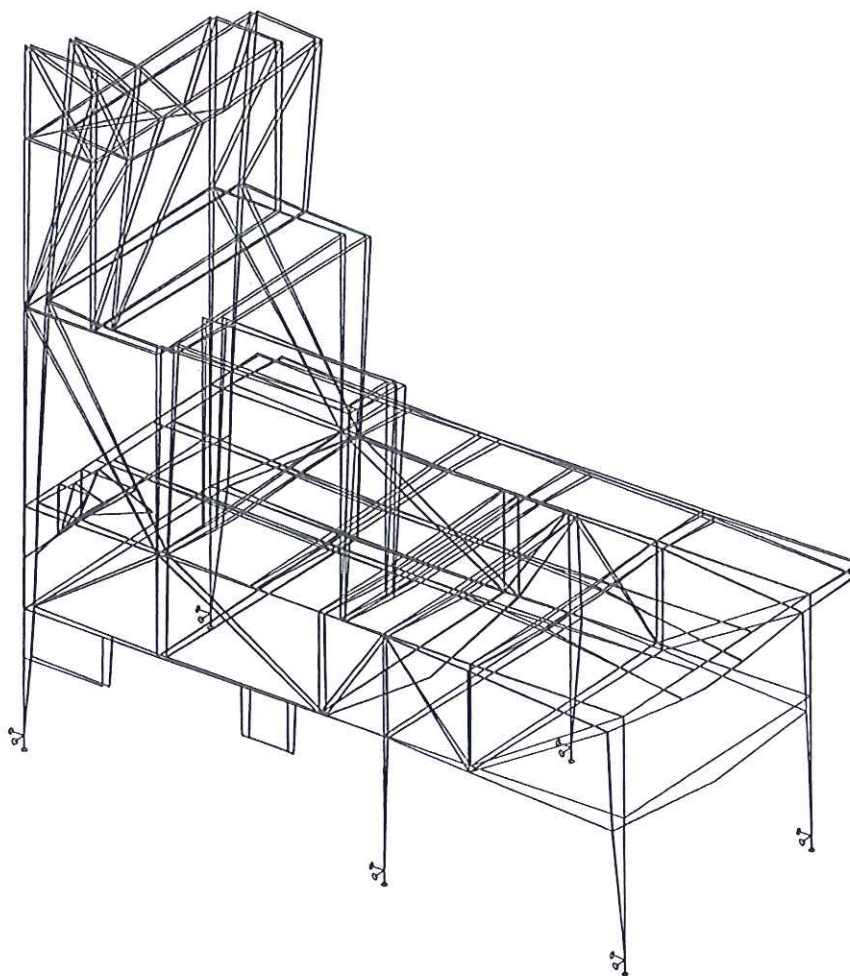
## Deformácie v uzle(och). Globálny extrém

Lineárny statický - nebezpečné alebo všetky kombinácie

Skupina uzlov :1/101

Skupina kombinácií na použiteľnosť :1/4

uzol	kombi	Ux [mm]	Uy [mm]	Uz [mm]	Fix [mrad]	Fiy [mrad]	Fiz [mrad]
92	4	7.17	8.46	-0.05	-0.71	1.20	-0.48
91	2	-2.14	2.59	-0.70	-0.37	7.51	1.42
15	4	7.13	9.61	-0.01	-1.04	1.46	-0.16
27	2	3.49	-7.20	-0.04	2.17	0.05	-0.84
42		4.36	-7.20	1.72	2.04	-0.73	-1.65
80	4	2.42	3.06	-6.19	0.07	7.62	-0.29
2	2	0.00	-0.00	-0.00	4.35	0.99	-2.11
5		1.32	0.72	-0.33	-2.10	-0.22	-1.44
42	4	4.43	-6.99	1.19	1.29	-1.33	-1.70
89		1.34	2.80	-0.02	-0.90	0.21	4.20
88		3.42	2.80	-0.04	-0.79	0.44	-3.87



Deformácie v uzle(och). Spof. kombi : 1/4





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## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6  
ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE  
OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

### Stojky HEB 160 CSN. Prierez - 7 vše. KÚ vše.

Posudok prúta podľa STN 731401-1998.

Súčinitele spoľahlivosti gama M0 = 1.15 gama M1 = 1.15

Štandardný výpis, globálne extrém.

Prierez : 7 - HEB160

Makro : 13 Prút : 46 L = 1.496m Pr : 7 - HEB160 S 235  
trieda 1

rez = 1.496m kombi únos. = 2 fy = 235.0MPa

Posudok únosnosti	N kN	Vy kN	Vz kN	Mx kNm	My kNm	Mz kNm
Návrh	-14.6	-1.4	9.4	0.0	14.1	-2.1
Limit	1108.6	490.8	151.0	0.0	72.3	34.7
koef	0.01	0.00	0.06	0.00	0.19	0.06

Všeobecná podmienka - vzorec (6.19) 0.26

Posudok stability

koef

Tlak : chi = 0.89 Nsd = 14.6 Nbrd = 982.2 0.01

Ohyb y-y : chi = 0.98 Msd = 14.1 Mbrd = 71.2 0.20

Tlak + ohyb : miy = -0.11 miz = 0.39 miLT = -0.06

- vzper : chi = 0.89 ky = 1.00 kz = 1.00 0.27

- klopenie : chiZ = 0.95 kLT = 1.00 kz = 1.00 0.27

Maximálny jednotkový posudok = 0.27 - prierez vyhovuje.

### Stojky HEB 140 CSN. Prierez - 3 vše. KÚ vše.

Posudok prúta podľa STN 731401-1998.

Súčinitele spoľahlivosti gama M0 = 1.15 gama M1 = 1.15

Štandardný výpis, globálne extrém.

Prierez : 3 - HEB140

Makro : 15 Prút : 52 L = 1.200m Pr : 3 - HEB140 S 235  
trieda 1

rez = 0.000m kombi únos. = 4 fy = 235.0MPa

Posudok únosnosti	N kN	Vy kN	Vz kN	Mx kNm	My kNm	Mz kNm
Návrh	-19.9	-9.2	8.7	0.0	-7.1	8.3
Limit	877.9	396.4	115.6	0.0	50.3	24.5
koef	0.02	0.02	0.07	0.00	0.14	0.34

Všeobecná podmienka - vzorec (6.19) 0.48

Posudok stability

koef

Tlak : chi = 0.96 Nsd = 19.9 Nbrd = 841.8 0.02

Ohyb y-y : chi = 0.99 Msd = 7.1 Mbrd = 49.7 0.14

Tlak + ohyb : miy = 0.21 miz = 0.54 miLT = -0.07

- vzper : chi = 0.98 ky = 1.00 kz = 0.99 0.50

- klopenie : chiZ = 0.98 kLT = 1.00 kz = 0.99 0.50

Maximálny jednotkový posudok = 0.50 - prierez vyhovuje.

### Stojky HEB 120 CSN. Prierez - 1 vše. KÚ vše.

Posudok prúta podľa STN 731401-1998.

Súčinitele spoľahlivosti gama M0 = 1.15 gama M1 = 1.15

Štandardný výpis, globálne extrém.

Prierez : 1 - HEB120

Makro : 8 Prút : 30 L = 1.200m Pr : 1 - HEB120 S 235  
trieda 1

rez = 1.200m kombi únos. = 4 fy = 235.0MPa

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Němcovej 30  
042 18 KOŠICE, SLOVAKIA

## STATICKÝ VÝPOČET

ZÁKAZKA / CODE : 3821.2.001.OK – UNIT 6  
ZÁKAZNÍK / CUSTOMER : AIR LIQUIDE AGS GmbH

STAVBA / JOB : KYSLÍKOVÝ APARÁT Č. 9 / ASU No. 9, KOSICE  
OBJEKT / UNIT : SO 001 NÍZKOTEPLTNÝ BLOK / UNIT 6 AIR SEPARATION

Posudok únosnosti	N kN	Vy kN	Vz kN	Mx kNm	My kNm	Mz kNm
Návrh	-4.5	1.7	-0.1	0.0	-0.1	1.8
Limit	695.0	311.5	92.0	0.0	33.9	16.6
koef	0.01	0.01	0.00	0.00	0.00	0.11

Všeobecná podmienka - vzorec (6.19) 0.11

Posudok stability koef

Tlak :  $\chi_i=0.91$   $N_{sd}=4.5$   $N_{brd}=633.0$  0.01

Ohyb y-y :  $\chi_i=0.98$   $M_{sd}=0.1$   $M_{brd}=33.4$  0.00

Tlak + ohyb :  $\mu_{iy}=0.28$   $\mu_{iz}=0.45$   $\mu_{iLT}=-0.05$

- vzper :  $\chi_i=0.91$   $\kappa_y=1.00$   $\kappa_z=1.00$  0.12

- klopenie :  $\chi_{iZ}=0.96$   $\kappa_{LT}=1.00$   $\kappa_z=1.00$  0.12

Maximálny jednotkový posudok = 0.12 - prierez vyhovuje.

### Nosníky HEA 100 CSN. Prierez - 2 vše. KÚ vše.

Posudok prúta podľa STN 731401-1998.

Súčinitele spoľahlivosti  $\gamma_{M0}=1.15$   $\gamma_{M1}=1.15$

Štandardný výpis, globálne extrém.

Prierez : 2 - HEA100

Makro : 23 Prút : 61  $L=1.625m$  Pr : 2 - HEA100 S 235

trieda 1

rez=0.000m kombi únos.=2  $f_y=235.0MPa$

Posudok únosnosti	N kN	Vy kN	Vz kN	Mx kNm	My kNm	Mz kNm
Návrh	7.9	0.7	6.7	-0.0	-7.0	-0.1
Limit	433.2	188.8	56.6	0.0	17.2	8.4
koef	0.02	0.00	0.12	0.00	0.40	0.02

Všeobecná podmienka - vzorec (6.19) 0.43

Posudok stability koef

Ohyb y-y :  $\chi_i=0.96$   $M_{sd}=7.0$   $M_{brd}=16.5$  0.42

Ťah + ohyb :  $\psi_i=0.70$   $\sigma_{com}=92.9$   $M_{effsd}=6.8$  0.41

Maximálny jednotkový posudok = 0.43 - prierez vyhovuje.

### Nosníky HEA 140 CSN. Prierez - 4 vše. KÚ vše.

Posudok prúta podľa STN 731401-1998.

Súčinitele spoľahlivosti  $\gamma_{M0}=1.15$   $\gamma_{M1}=1.15$

Štandardný výpis, globálne extrém.

Prierez : 4 - HEA140

Makro : 29 Prút : 79  $L=1.625m$  Pr : 4 - HEA140 S 235

trieda 1

rez=1.625m kombi únos.=2  $f_y=235.0MPa$

Posudok únosnosti	N kN	Vy kN	Vz kN	Mx kNm	My kNm	Mz kNm
Návrh	10.7	4.4	17.2	0.0	17.4	4.2
Limit	641.7	280.8	86.3	0.0	35.6	17.3
koef	0.02	0.02	0.20	0.00	0.49	0.24

Všeobecná podmienka - vzorec (6.19) 0.73

Posudok stability koef

Ohyb y-y :  $\chi_i=0.97$   $M_{sd}=17.4$   $M_{brd}=34.5$  0.50

Ťah + ohyb :  $\psi_i=0.70$   $\sigma_{com}=109.6$   $M_{effsd}=17.0$  0.49

Maximálny jednotkový posudok = 0.73 - prierez vyhovuje.

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DÁTUM, PODPIS DATE, SIGN.	05/2005 <i>[Signature]</i>							

ZÁKAZNÍK / CUSTOMER

AIR LIQUIDE AGS GmbH

Stupeň / Level

Projekt pre realizáciu stavby  
Construction Design

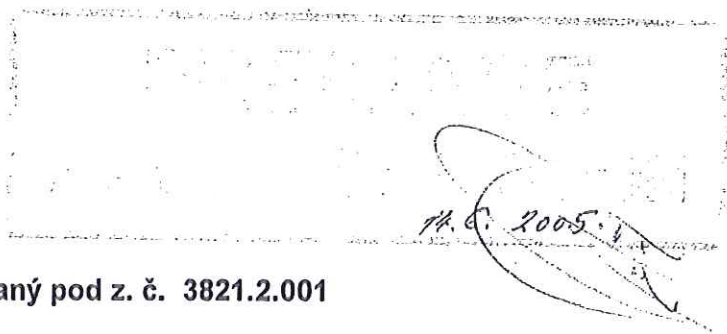
Dátum / Date

jún 2005

Kód / Code

4. Výkaz materiálu  
Material specification

792.87480-2



Projekt pre realizáciu stavby spracovaný pod z. č. 3821.2.001



AIR LIQUIDE

TM

F								
E								
D								
C								
B								
A								
O	06/2005	Ing. Ďurašková		Ing. Čepela		Ing. Pavlíčko		
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. 9Němcovej 30  
042 18 KOŠICE, SLOVAKIA

Objekt / Unit :

Prev. celok / Unit :

Prev. súbor / Unit :

UNIT 6 – AIR SEPARATION  
CONSTRUCTION DESIGNSO 001 - NÍZKOTEPLTNÝ BLOK  
AIR SEPARATIONProfesia / Profession :  
Prev. jednotka / P. Unit:OCEĽOVÁ KONŠTRUKCIA  
STEEL STRUCTURE

A



STAVBA / JOB : KYSLÍKOVÝ APARÁT č. 9




AIR SEPARATION UNIT No. 9

OBJEKT / UNIT: SO 001 - NÍZKOTEPLTNÝ BLOK


UNIT 6 - AIR SEPARATION

[illegible]

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

F								
E								
D								
C								
B								
A								
O	06/2005	Ing. Ďurašková		Ing. Čepela		Ing. Pavlíčko		
Rev./ Rev.	Dátum / Date	Vypracoval Originator	Sign.	Kontroloval Checked	Sign.	Schválil Approved	Sign.	Pozn. / Note

Str. / Page  
B

VÝKAZ OCELOVEHO MATERIÁLU / LIST OF STEEL MATERIAL		 <b>HPK engineering a.s.</b> Němcovej 30 042 18 KOŠICE, SLOVAKIA
ZAKÁZKA / CODE	792-87480 - 2	
ZAKAZNÍK / CUSTOMER	AIR LIQUIDE AGS GmbH	
STAVBA / PROJECT	ASU No.9 KOŠICE	
OBJEKT / UNIT	UNIT 6 - AIR SEPARATION / TECHNOLOGIC PART 2	

HPK engineering a.s.

Ks/m <sup>2</sup> Pc/m <sup>2</sup>	Profil Profile	Délka / Length		Hmotnost / Weight		Náterová plocha Texture area	Materiál Material	Poznámka Note
		Jednotková Unit	Celkom Total	Jednotková Unit	Celkom Total			
		[mm]	[m]	[kg]	[kg]			


# OK PRE POTRUBIA

1 ks

1	HEB 160	6520	6,52	42,60	278	6,00	11373
1	HEB 160	7620	7,62	42,60	325	7,01	11373
2	HEB 140	3070	6,14	33,70	207	4,97	11373
2	HEB 140	2270	4,54	33,70	153	3,68	11373
3	HEB 120	2270	6,81	26,70	182	4,70	11373
2	HEB 120	1300	2,60	26,70	69,00	1,79	11373
2	HEB 140	1300	2,60	33,70	88,00	2,11	11373
4	HEB 140	2380	9,52	33,70	321	7,71	11373
2	HEA 140	4765	9,53	24,70	235,00	7,57	11373
2	HEA 140	3250	6,50	24,70	161	5,16	11373
2	HEA 140	1710	3,42	24,70	84	2,72	11373
2	HEA 100	2945	5,89	16,70	98	3,30	11373
6	HEA 100	3250	19,50	16,70	326,00	10,94	11373
3	HEA 100	750	2,25	16,70	38,00	1,26	11373
1	HEA 100	500	0,50	16,70	8	0,28	11373
1	HEA 100	890	0,89	16,70	15,00	0,50	11373
3	HEA 100	7710	23,13	16,70	386	12,98	11373
1	HEA 100	4050	4,05	16,70	68	2,27	11373
1	HEA 100	1950	1,95	16,70	33	1,09	11373
2	HEA 140	1710	3,42	24,70	84,00	2,72	11373
1	HEA 100	795	0,80	16,70	13,00	0,45	11373
5	HEA 100	3250	16,25	16,70	271	9,12	11373
1	HEA 140	860	0,86	24,70	21	0,68	11373
2	HEA 100	860	1,72	16,70	29,00	0,96	11373
1	HEA 100	1360	1,36	16,70	23	0,76	11373
2	L 80*8	1670	3,34	9,64	32	1,04	11373
2	L 80*8	2260	4,52	9,64	44	1,40	11373
2	L 80*8	1400	2,80	9,64	27	0,87	11373
2	L 80*8	2150	4,30	9,64	41	1,33	11373
2	L 100*8	2800	5,60	12,18	68	2,18	11373
2	L 100*8	2200	4,40	12,18	54	1,72	11373
2	L 100*8	2470	4,94	12,18	60,00	1,93	11373
2	L 80*8	1620	3,24	9,64	31	1,00	11373
2	L 80*8	1640	3,28	9,64	32	1,02	11373
2	L 80*8	2350	4,70	9,64	45,00	1,46	11373
7	TR 44.5*2.9	12000	84,00	2,98	250	11,76	11373
2	TR 31.8*2.6	12000	24,00	1,87	45	2,40	11373
26	KR 20	400	10,40	2,47	26	0,62	11373
2	P 10*200	450	0,90	16,00	14	0,36	11373
4	P 10*300	365	1,46	24,00	35	0,88	11373
3	P 6*100	12000	36,00	4,80	173	7,20	11373
1	ROŠT 850	1950	1,95	30,00	50,00	0,00	11373
1	ROŠT 850	1550	1,55	30,00	40	0,00	11373
1	ROŠT 850	1320	1,32	30,00	34	0,00	11373
1	ROŠT 850	1180	1,18	30,00	30,00	0,00	11373
1	ROŠT 850	1710	1,71	30,00	44	0,00	11373
1	ROŠT 1000	1180	1,18	30,00	35	0,00	11373
1	ROŠT 1000	920	0,92	30,00	28	0,00	11373
1	ROŠT 1000	955	0,96	30,00	29	0,00	11373

okopový plech  
pre všetky rošty platí:  
pozinkované, lemované  
DIN 24537 - SP



VÝKAZ OCELOVEHO MATERIÁLU / LIST OF STEEL MATERIAL		 <b>HPK engineering a.s.</b> Němcovej 30 042 18 KOŠICE, SLOVAKIA
ZAKÁZKA / CODE	792-87480 - 2	
ZÁKAZNÍK / CUSTOMER	AIR LIQUIDE AGS GmbH	
STAVBA / PROJECT	ASU No.9 KOŠICE	
OBJEKT / UNIT	UNIT 6 - AIR SEPARATION / TECHNOLOGIC PART 2	

HPK engineering a.s.

HPK engineering a.s.

Ks/m <sup>2</sup> Pc/m <sup>2</sup>	Profil Profile	Dĺžka / Length		Hmotnosť / Weight		Náterová plocha Texture area [m <sup>2</sup> ]	Materiál Material	Poznámka Note
		Jednotková Unit	Celkom Total	Jednotková Unit	Celkom Total			
		[mm]	[m]	[kg]	[kg]			

1	ROŠT 1000	995	1,00	30,00	30	0,00	11373	
1	ROŠT 995	1250	1,25	30,00	37	0,00	11373	
1	ROŠT 555	1250	1,25	30,00	21	0,00	11373	
1	ROŠT 400	1250	1,25	30,00	15	0,00	11373	
1	ROŠT 920	1250	1,25	30,00	34	0,00	11373	
1	ROŠT 920	1000	1,00	30,00	28	0,00	11373	
1	ROŠT 400	1000	1,00	30,00	12	0,00	11373	
1	ROŠT 555	1000	1,00	30,00	17	0,00	11373	
1	ROŠT 995	1000	1,00	30,00	30	0,00	11373	
2	ROŠT 850	1625	3,25	30,00	83	0,00	11373	
2	ROŠT 795	1250	2,50	30,00	60	0,00	11373	

Hmotnosť celkom pre 1 ks	5150	kg
Prirážka na spojovací materiál ( 4.85 %)	250	kg
Hmotnosť dielca	5400	kg
Náterová plocha dielca	137,89	m2

ZÁKAZNÍK / CUSTOMER

AIR LIQUIDE AGS GmbH

Stupeň / Level

Dátum / Date

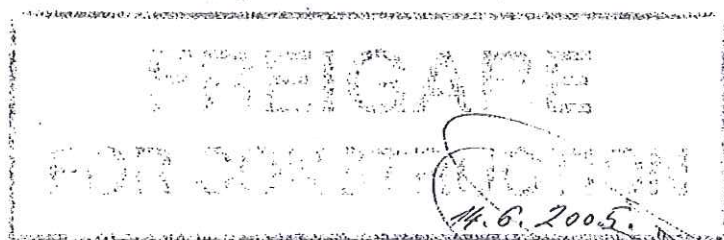
Kód / Code

Projekt pre realizáciu stavby  
Construction Design

June 2005

5. Výkaz materiálu (anglicky)  
Material specification (english)

792.87480-2



Projekt pre realizáciu stavby spracovaný pod z. č. 3821.2.001

Construction design prepared under No. 3821.2.001



F								
E								
D								
C								
B								
A								
O	06/2005	Ing. Ďurašková		Ing. Čepela		Ing. Pavlíčko		
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. 9Němcovej 30  
042 18 KOŠICE, SLOVAKIA

Objekt / Unit :

Prev. celok / Unit :

Prev. súbor / Unit :

UNIT 6 – AIR SEPARATION  
CONSTRUCTION DESIGNSO 001 - NÍZKOTEPLTNÝ BLOK  
AIR SEPARATIONProfesia / Profession :  
Prev. jednotka / P. Unit:OCEĽOVÁ KONŠTRUKCIA  
STEEL STRUCTURE

A



STAVBA / JOB : KYSLÍKOVÝ APARÁT č. 9


AIR SEPARATION UNIT No. 9

OBJEKT / UNIT: SO 001 - NÍZKOTEPLTNÝ BLOK


UNIT 6 - AIR SEPARATION

[illegible]

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

F								
E								
D								
C								
B								
A								
O	06/2005	Ing. Ďurašková		Ing. Čepela		Ing. Pavlíčko		
Rev./ Rev.	Dátum / Date	Vypracoval Originator	Sign.	Kontroloval Checked	Sign.	Schválil Approved	Sign.	Pozn. / Note

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VÝKAZ OCELOVÉHO MATERIÁLU / LIST OF STEEL MATERIAL		 <b>HPK engineering a.s.</b> Němcovej 30 042 18 KOŠICE, SLOVAKIA
ZAKÁZKA / CODE	792-87480 - 2	
ZÁKAZNÍK / CUSTOMER	AIR LIQUIDE AGS GmbH	
STAVBA / PROJECT	ASU No.9 KOŠICE	
OBJEKT / UNIT	UNIT 6 - AIR SEPARATION / TECHNOLOGIC PART 2	

HPK engineering a.s.

Ks/m <sup>2</sup> Pc/m <sup>2</sup>	Profil Profile	Dĺžka / Lenght		Hmotnosť / Weight		Náterová plocha Texture area [m <sup>2</sup> ]	Materiál Material	Poznámka Note
		Jednotková	Celkom	Jednotková	Celkom			
		Unit	Total	Unit	Total			
		[mm]	[m]	[kg]	[kg]			

#### STEEL STRUCTURE FOR PIPELINES

1 ks

1	HEB 160	6520	6,52	42,60	278	6,00	11373
1	HEB 160	7620	7,62	42,60	325	7,01	11373
2	HEB 140	3070	6,14	33,70	207	4,97	11373
2	HEB 140	2270	4,54	33,70	153	3,68	11373
3	HEB 120	2270	6,81	26,70	182	4,70	11373
2	HEB 120	1300	2,60	26,70	69,00	1,79	11373
2	HEB 140	1300	2,60	33,70	88,00	2,11	11373
4	HEB 140	2380	9,52	33,70	321	7,71	11373
2	HEA 140	4765	9,53	24,70	235,00	7,57	11373
2	HEA 140	3250	6,50	24,70	161	5,16	11373
2	HEA 140	1710	3,42	24,70	84	2,72	11373
2	HEA 100	2945	5,89	16,70	98	3,30	11373
6	HEA 100	3250	19,50	16,70	326,00	10,94	11373
3	HEA 100	750	2,25	16,70	38,00	1,26	11373
1	HEA 100	500	0,50	16,70	8	0,28	11373
1	HEA 100	890	0,89	16,70	15,00	0,50	11373
3	HEA 100	7710	23,13	16,70	386	12,98	11373
1	HEA 100	4050	4,05	16,70	68	2,27	11373
1	HEA 100	1950	1,95	16,70	33	1,09	11373
2	HEA 140	1710	3,42	24,70	84,00	2,72	11373
1	HEA 100	795	0,80	16,70	13,00	0,45	11373
5	HEA 100	3250	16,25	16,70	271	9,12	11373
1	HEA 140	860	0,86	24,70	21	0,68	11373
2	HEA 100	860	1,72	16,70	29,00	0,96	11373
1	HEA 100	1360	1,36	16,70	23	0,76	11373
2	L 80*8	1670	3,34	9,64	32	1,04	11373
2	L 80*8	2260	4,52	9,64	44	1,40	11373
2	L 80*8	1400	2,80	9,64	27	0,87	11373
2	L 80*8	2150	4,30	9,64	41	1,33	11373
2	L 100*8	2800	5,60	12,18	68	2,18	11373
2	L 100*8	2200	4,40	12,18	54	1,72	11373
2	L 100*8	2470	4,94	12,18	60,00	1,93	11373
2	L 80*8	1620	3,24	9,64	31	1,00	11373
2	L 80*8	1640	3,28	9,64	32	1,02	11373
2	L 80*8	2350	4,70	9,64	45,00	1,46	11373
7	TR 44.5*2.9	12000	84,00	2,98	250	11,76	11373
2	TR 31.8*2.6	12000	24,00	1,87	45	2,40	11373
26	KR 20	400	10,40	2,47	26	0,62	11373
2	P 10*200	450	0,90	16,00	14	0,36	11373
4	P 10*300	365	1,46	24,00	35	0,88	11373
3	P 6*100	12000	36,00	4,80	173	7,20	11373
1	ROŠT 850	1950	1,95	30,00	50,00	0,00	11373
1	ROŠT 850	1550	1,55	30,00	40	0,00	11373
1	ROŠT 850	1320	1,32	30,00	34	0,00	11373
1	ROŠT 850	1180	1,18	30,00	30,00	0,00	11373
1	ROŠT 850	1710	1,71	30,00	44	0,00	11373
1	ROŠT 1000	1180	1,18	30,00	35	0,00	11373
1	ROŠT 1000	920	0,92	30,00	28	0,00	11373
1	ROŠT 1000	955	0,96	30,00	29	0,00	11373

toe plate  
for all gridiron:  
galvanized, flanged  
DIN 24537 - SP



## VÝKAZ OCEĽOVÉHO MATERIÁLU / LIST OF STEEL MATERIAL



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

ZAKÁZKA / CODE	792-87480 - 2
ZÁKAZNÍK / CUSTOMER	AIR LIQUIDE AGS GmbH
STAVBA / PROJECT	ASU No.9 KOŠICE
OBJEKT / UNIT	UNIT 6 - AIR SEPARATION / TECHNOLOGIC PART 2

HPK engineering a.s.

Ks/m <sup>2</sup> Pc/m <sup>2</sup>	Profil Profile	Dĺžka / Length		Hmotnosť / Weight		Náterová plocha Texture area	Materiál Material	Poznámka Note
		Jednotková Unit	Celkom Total	Jednotková Unit	Celkom Total			
		[mm]	[m]	[kg]	[kg]			

1	ROŠT 1000	995	1,00	30,00	30	0,00	11373	
1	ROŠT 995	1250	1,25	30,00	37	0,00	11373	
1	ROŠT 555	1250	1,25	30,00	21	0,00	11373	
1	ROŠT 400	1250	1,25	30,00	15	0,00	11373	
1	ROŠT 920	1250	1,25	30,00	34	0,00	11373	
1	ROŠT 920	1000	1,00	30,00	28	0,00	11373	
1	ROŠT 400	1000	1,00	30,00	12	0,00	11373	
1	ROŠT 555	1000	1,00	30,00	17	0,00	11373	
1	ROŠT 995	1000	1,00	30,00	30	0,00	11373	
2	ROŠT 850	1625	3,25	30,00	83	0,00	11373	
2	ROŠT 795	1250	2,50	30,00	60	0,00	11373	

Hmotnosť celkom pre 1 ks	5150	kg
Prirážka na spojovací materiál ( 4.85 %)	250	kg
Hmotnosť dielca	5400	kg
Náterová plocha dielca	137,89	m <sup>2</sup>