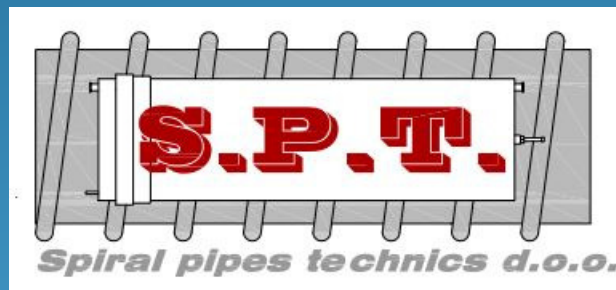


# KRAH

# Spiral pipes technics

# CROATIA



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*-since 2001*

- Production HDPE/PP pipes , manholes, pump station, tanks



*-since 2000*

- Production of mandrils (tools) for production spiral winding pipes from ID 300 to ID 4000 mm





# -PEHD/PP pipes

- according standard

DIN 16961-2

EN 13476-3

EN 12666-1

diameters of pipes(mm):

ID:300,400,500,600,700,800,900,1000,1100,1200,1300,  
1400,1500,1600,1800,2000,2200,2300,2500,3000.

SN CLASS according request from the project

the annual capacity 4000 t

certificates of IGH Cert

Length from 0.5m to 6m

# -PEHD/PP pipes (software)

- hydraulic calculation ATV A110

Hydra-GC01

Durchmesser: 1000 [mm]

betrieb. Rauh. 0,5 [-]

kin. Zähig. 1,31  $\cdot 10^{-6}$  [m<sup>2</sup>/s]

Gefälle: 30 [0/∞]

Fließquerschn. 0,7853981 [m<sup>2</sup>]

benetzter Umf. 3,14159 [m]

hyd. Radius: 0,25 [m]

Füllhöhe: 70 %

Ergebnisse	bei Vollfüllung	bei Teilfüllung
Fließgeschwindigkeit (v):	5,92 [m/s]	6,58 [m/s]
Durchfluß:	4.647,91 [l/s]	3.863,99 [l/s]

- static calculation ATV –DVWK-A-127

EasyPipe98 V 1.5 - C:\Users\krah\Desktop\STATIKA\pipelife srbija\pancevo ID1200.epi

Profile catalogue

Selected profile: Krah AG\Profilrohr\1200\PR-75-014.61

Transfer in 'Profiled pipe'

Most important results

	1: min GW	1: min GW	1: max GW	1: max GW	2:	2:	
	Short term	Long term	Short term	Long term	Short term	Long term	
qv	kN/m <sup>2</sup>	90,14	88,23	80,36	78,76	61,00	60,96
qh	kN/m <sup>2</sup>	39,41	40,67	32,62	33,68	12,09	12,12
qh* + qh*w	kN/m <sup>2</sup>	57,54	64,46	54,24	60,97	54,58	57,99
Bearing capacity	[1]	-	-	-	-	-	-
Deformation	%	2,34	3,96	2,16	3,56	2,02	2,23
Safety Buckling	[1]	9,26	5,65	6,25	2,88	13,68	12,29
Non-linear stability	[1]	-	-	-	-	-	-
Stress Crown	[1]	(o) -5,55	(o) -5,97	(o) -5,39	(o) -5,52	(o) -6,56	(o) -6,72
Stress Springline	[1]	(i) -8,12	(i) -8,74	(i) -7,51	(i) -7,51	(i) -10,30	(i) -10,69
Stress Bottom	[1]	(o) -4,34	(o) -4,26	(o) -4,32	(o) -4,12	(o) -5,27	(o) -5,19
Dynamic loading	[1]	-	-	-	-	-	-

- internal specifications software

Project: Pipe (841,19 kg/Pipe | SN 32,98)

Material: PE100 (Baxell CRP100)

Weight (Pipe) (Wp): 841,19 kg/Pipe

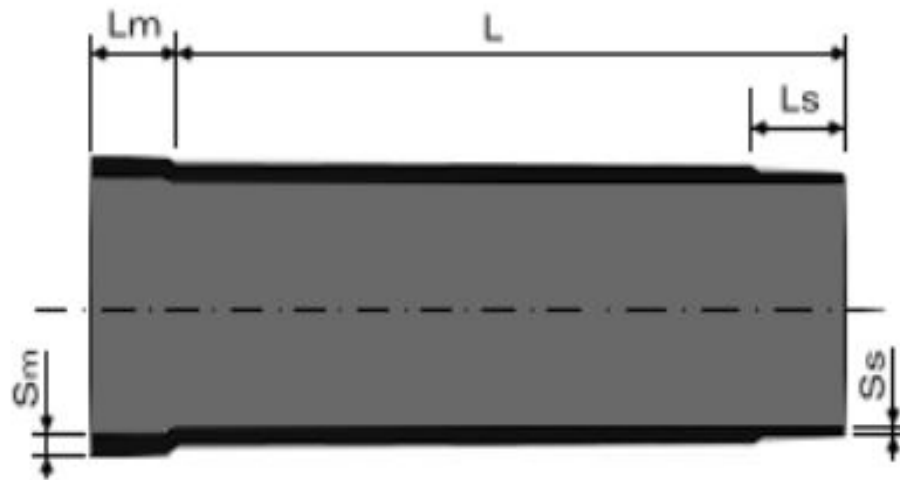
Price (Pipe) (Pp): 1.345,91 EUR/Pipe

Summary

Property	Value
Total costs	1.345,91 EUR
Total Weight	841,19 kg
Total Sales price (min)	2.090,96 EUR
Total Sales price (normal)	2.413,42 EUR

# -PEHD/PP pipes (profile VW, PR, CPR, OP)

- Profile of pipe depends of static and hydraulic calculation
- selected profile is the best proportion weight and the required conditions
- VW profile



solid wall pipe

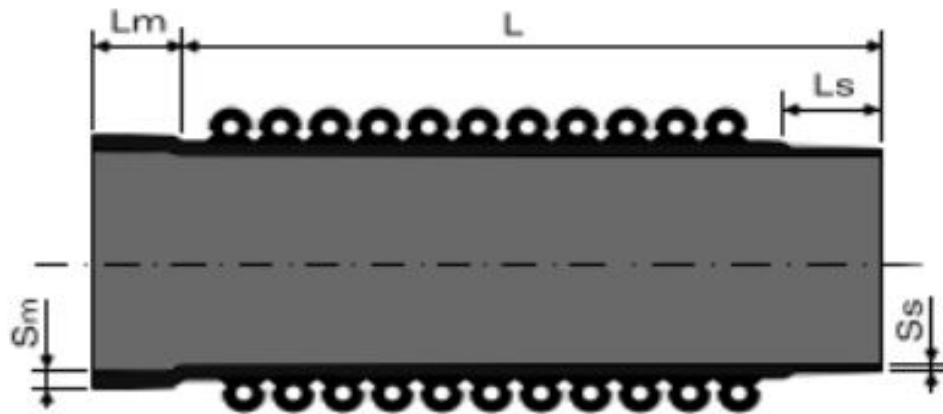
Ideal for extruder welding

production , pressure pipes

Connecting pipes electrofusion  
welding

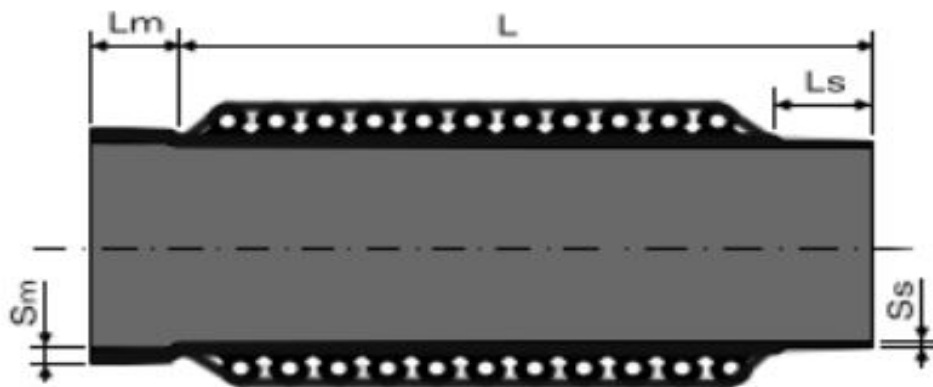
# -PEHD/PP pipes (profile VW, PR, CPR, OP)

- PR profile



profile pipes  
ideal for low pressure pipes  
connection rubber ring or  
electrofusion socket  
integrated to pipe

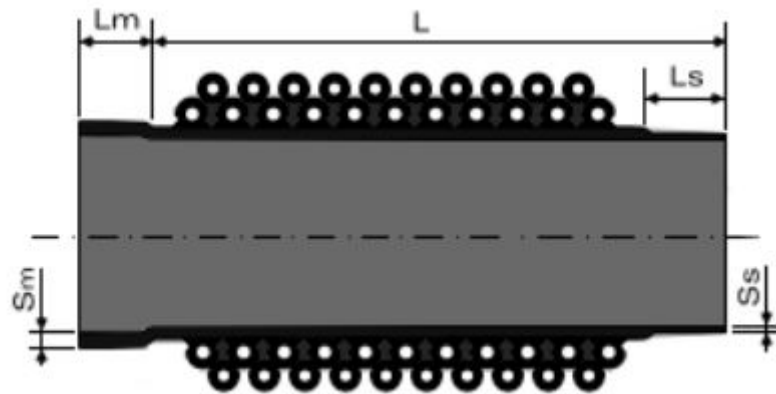
- CPR profile



profile pipes  
ideal for low pressure pipes  
for larger loads and  
diameter  
connection rubber ring or  
electrofusion socket  
integrated to pipe



# -PEHD/PP pipes (profile VW, PR, CPR, OP)



profile pipes  
ideal for low pressure pipes  
for larger loads and  
diameter  
connection rubber ring or  
electrofusion socket  
integrated to pipe



OP-profile ID 2500 SN10



# -PEHD/PP pipes (rib reinforcement PP pipes)

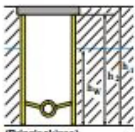
- All profile we can make from rib OD 21,34,42,54,65,90 and 110 .
- Selection of ribs depend of pipe specification



# -PEHD manholes

- We have two types of manholes according to EN13598-2
- From ID 300-ID 600 transitory and tangential for ID700 –ID3000, this division is for base ID 800 and ID 1000
- For base ID 1000 the best choice is PEHD pipes VW 1000 x30
- We are able manufacture manholes for coruggatore pipes ,PVC/UKC pipes and sold wall pipes
- Each base is checked by static calculation for class D , while the flow pipe is is calculate in SN class quality
- base of manholes we can manufactre in this dimension DN/ ID 800,1000,1200, 1400,1500,1600,1800,2000,2200,2500 and 3000

**Einbau**



(Prinzipskizze)


Einbaulänge (h1):	h <sub>1</sub>	6.000	mm
Länge Schachtrohr (h2):	h <sub>2</sub>	5.700	mm
Höhe Grundwasser (HW):	h <sub>w</sub>	4.000	mm
Wichte (Erdboden):	γ <sub>e</sub>	20,0	kN/m <sup>3</sup>
Hang-Abstützungswinkel Beta:	β	0,0	°
Einbettung	G1		
Bodennguppe:	D <sub>PR,β</sub>	97,0	%
Proctordichte:			
anliegender Boden	G2		
Bodennguppe:	D <sub>PR,β</sub>	95,0	%
Proctordichte:			
Verkehrslast neben dem Schachdeckel	SLW 60		

**Annahmen**

Sicherheitsklasse:	A (Regelfall)		
Vorverformung aus struktureller Imperfektion:	δ <sub>v, u</sub>	0,50	%
Vorverformung aus geometrischer Imperfektion:	δ <sub>v, g</sub>	0,50	%
Arbeitsraum:	d	1.500	mm
Ungleichheitsfaktor (i.d.R. 0,6-0,7):	α	0,8	[1]
Stützfaktor Beta für ax. Beulnachweis:	β	2,00	[1]
horizontaler Erddruck	Ebener aktiver Ansatz		
Mantelreibungswinkel	1/3 Boden-Reibungswinkel (Normalfall)		

**Deckelbauform**

aufliegender Stb-Deckel

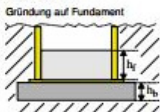


(Prinzipskizze)

Innendurchmesser Einbauleg:	D <sub>1</sub>	625	mm
Dicke der Betonplatte:	s <sub>b</sub>	300	mm
Durchmesser Betonplatte:	D <sub>b</sub>	1.400	mm
Verkehrslast auf dem gesamten Schachdeckel:	SLW 60		

**Bodenbauform**

Gründung auf Fundament



(Prinzipskizze)

Betonfüllung (hf):	h <sub>f</sub>	0	mm
Dicke der Bodenplatte:	s <sub>b</sub>	40	mm
Form der Schweißnaht:	keine Naht/Bemessung		
Betonfüllung Fundament:	B25		
Betonstahl:	BSI 500 S/M		
Dicke des Fundaments (hf):	h <sub>f</sub>	250	mm
Durchmesser Fundament:	D <sub>b</sub>	2.000	mm

**Stützen/Öffnungen**

Keine Stützen oder Öffnungen vorhanden.

**Einbauten**

Gewicht von Einbauten am Schachtmantel:	G <sub>u</sub>	0,00	kN
Gewicht von Einbauten auf Schachtboden:	G <sub>b</sub>	0,00	kN

**Bohr**

Hersteller:	VW		
Profil-Reihe:	VW 30		
Bezeichnung:	d <sub>1</sub>	1.000,0	mm

**Bohr-Material**

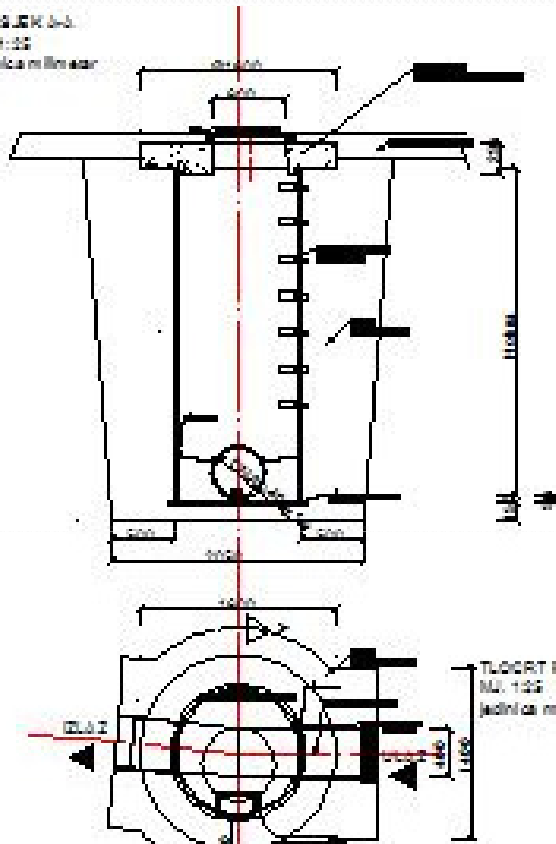
Materialklasse:	Thermoplast		
Bezeichnung:	Borealis PE100		



# -PEHD manholes (transitory)

Manhol for KRAH pipes

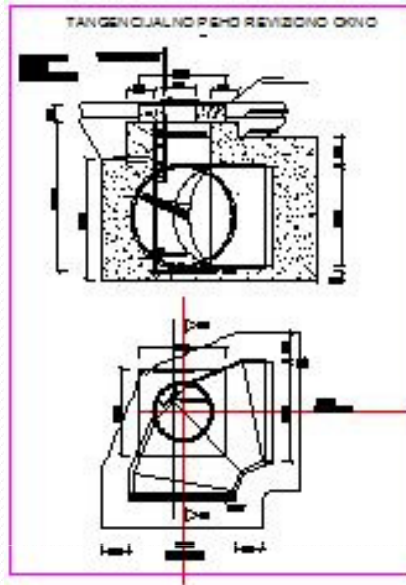
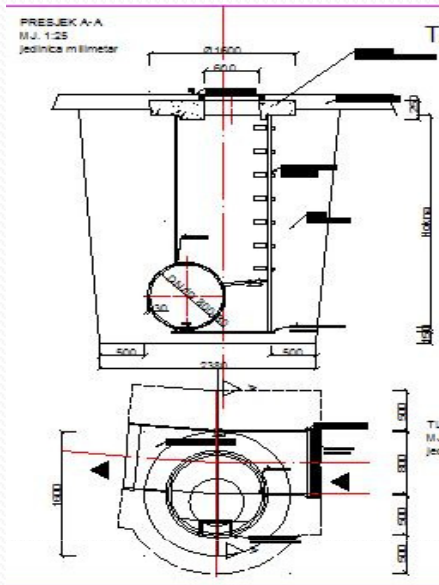
FIGURA 1-1  
ML 122  
Técnica milímetros



Manhol for GIGAPIPE  
ID800 base 1200

Manhol for PVC pipes

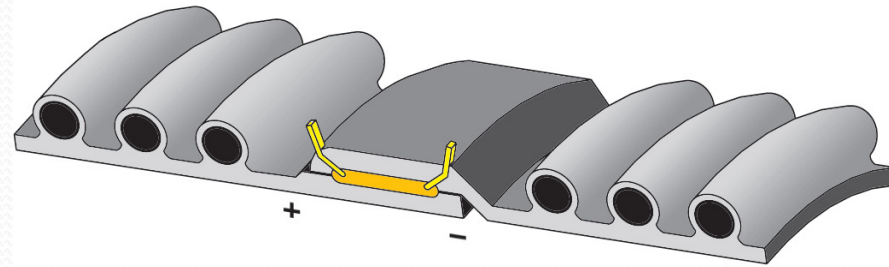
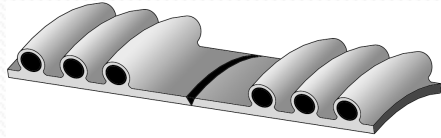
# -PEHD manholes (tangential)



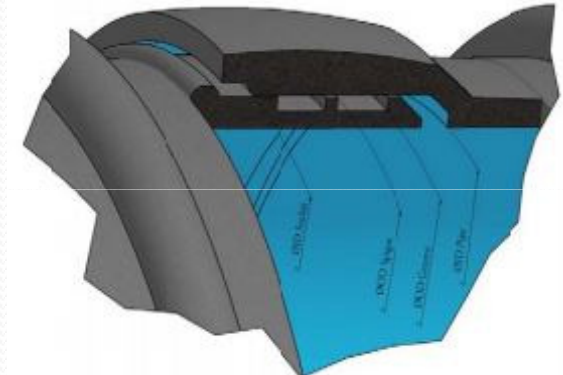
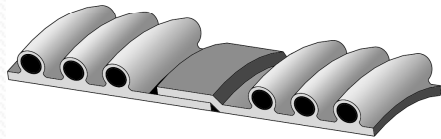


# -TYPES of Joint

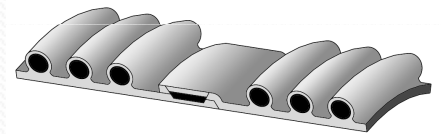
The best fo KRAH technology



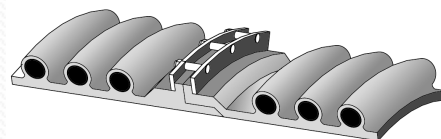
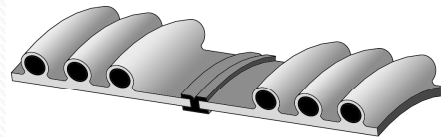
Electrofusion socket



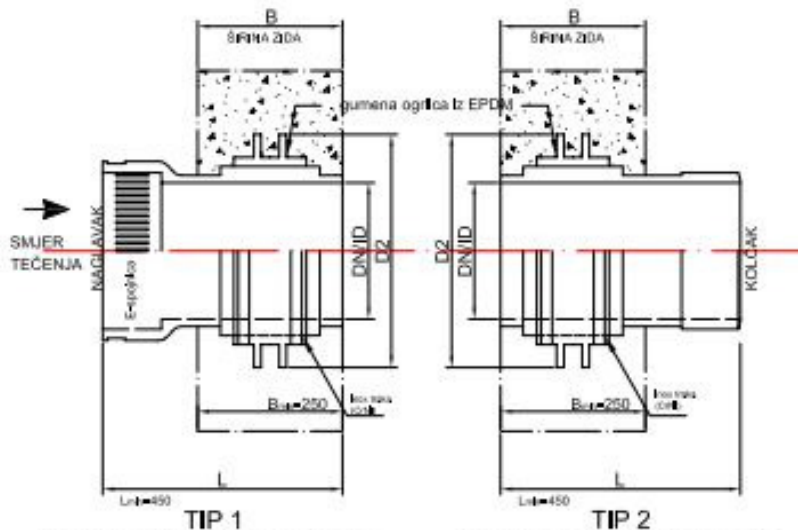
Spigot whit two gaskets



The combined joint  
electrofusion+flanga



# -JOINT CONCRETE WALL+PIPES



za ulaz u armirano betonsku građevinu naglavak / spojnica za ubetoniranje s fikspuntom i gumenom ogrlicom iz EPDM

za ulaz u armirano betonsku građevinu spojnica za ubetoniranje s fikspuntom i gumenom ogrlicom iz EPDM / kolčak

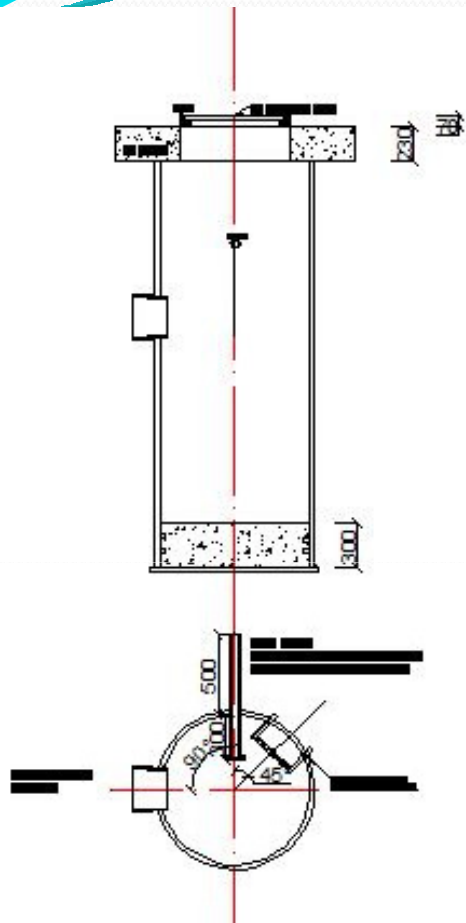


For joint the concrete manhol and HDPE / PP pipe we used rubber seal from EPDM , attached to a tube with two stainless steel strips. Rubber seal ensures dilation between the concrete and pipe.

DN/ID cijevi	D2	B	L	TIP1	TIP2
300	440	<b>KOD NARUĐBE DOSTAVITI</b>	<b>KOD NARUĐBE DOSTAVITI</b>	<b>KOD NARUĐBE DOSTAVITI</b>	<b>KOD NARUĐBE DOSTAVITI</b>
400	550				
500	660				
600	770				
700	880				
800	990				
900	1100				
1000	1270				
1100	1370				
1200	1470				
1300	1580				
1400	1680				
1500	1780				
1600	1900				
1800	2100				
2000	2300				

Ostale dimenzije po zahtjevu

# -PUMP STATION



- Production of PEHD chamber for pump stations
- According standard EN 13598-2



# -TANKS ,RETENTION TANKS



Cijev DN 1200

Krah cijevi napravljene  
Od PEHD i PP materijala  
Po normama:

- ❖ HRN EN 13476
- ❖ DIN 16961

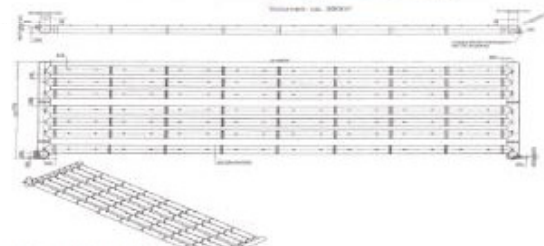


PENJALICE  
norma EN 13101 MSS  
OBLIK B u razmaku  
od 280 mm



MONOLITNO REVIZIJSKO OKNO  
norma:  
HRN EN 13598 - 2

REZERVOAR



Nacrt cijevnog sustava

Ugradnja cijevi

