



# Industry pipe systems made of polyethylene

GEROtec MINING – the mining pipe

Fields of applications and limitations

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Exports BU Piping Systems

Piping systems RLS

Heating & sanitary H&S

Geothermal systems EWS

Profiles

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## Piping systems RLS

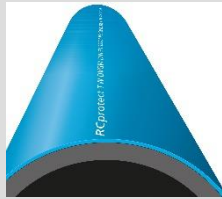
supply



gas



potable water



industry / EMDS



disposal



sewage water





**Industry / EMDS**



**EMDS-  
basic**  
performance class



**EMDS-  
high**  
performance class



**GERotec  
MINING  
Industry**



**GEROfit®  
REX  
Industry**



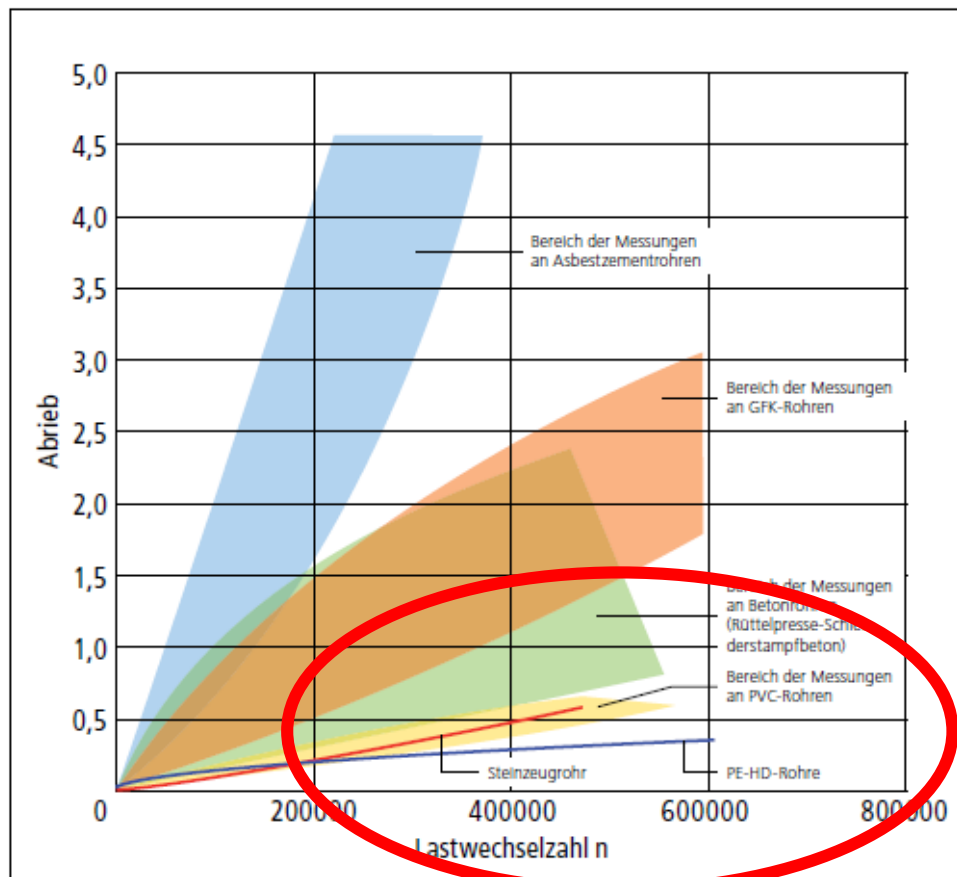
**LHT®  
Industry**

## pipng systems RLS

### Pipes made of PE80 / PE100 / PE100-RC - advantages and properties

- Low weight
  - Flexible / easy to install
  - Highly versatile
  - Simple joining technique
  - Trenchless installation
  - Installation without sand bedding
  - Environmental friendly installation
  - Long lifetime
  - Cost saving installation methods
  - Cost saving application
  - Corrosion resistant
  - Good insulation behavior
  - High chemical resistance
  - Good abrasion resistance
-

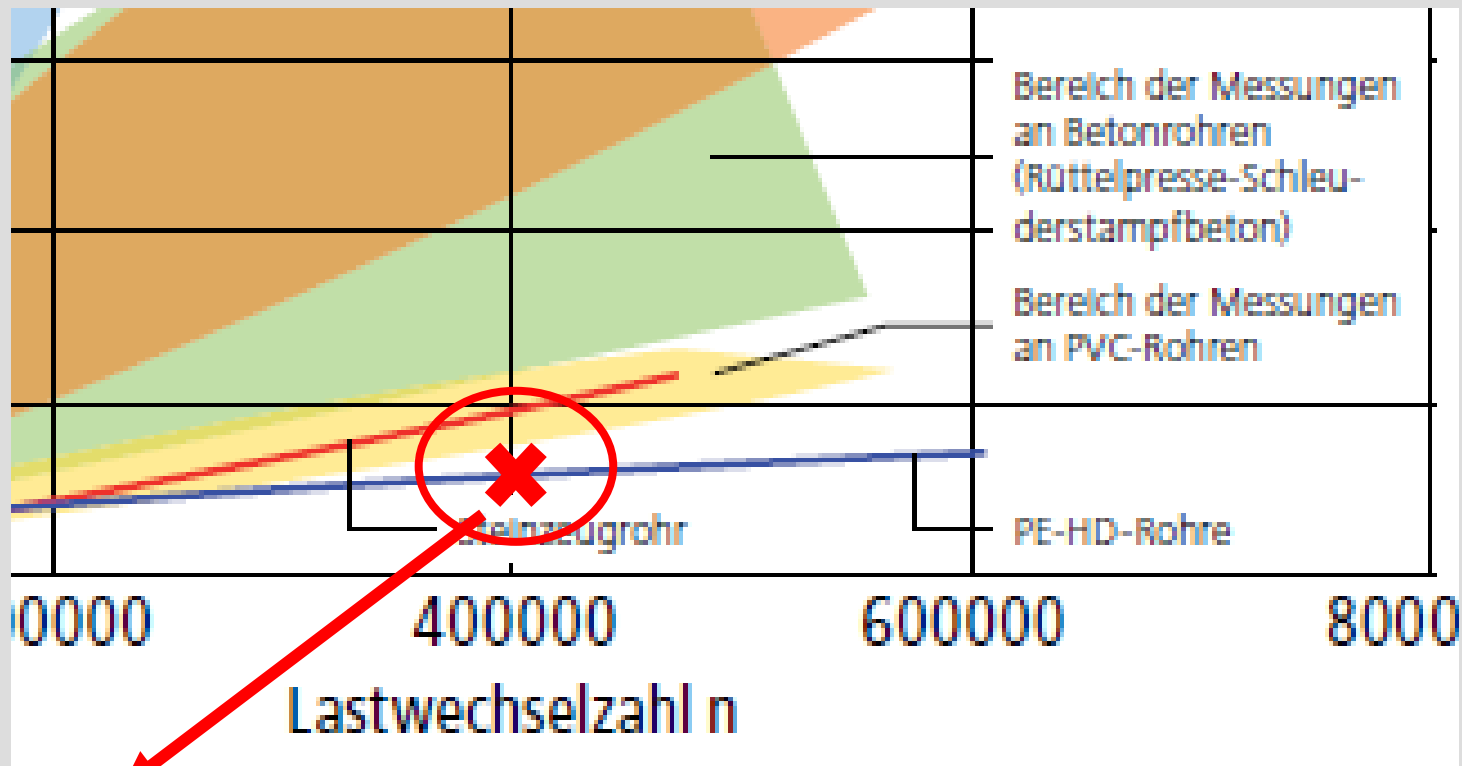
# Polyethylene – a versatile material



- Good abrasion resistance

1.29 Verschleißmessungen in Anlehnung an DIN 58836 (Grafik: basell Polyolefins „Technisches Handbuch für Rohrwerkstoffe“, 08/02)

Good abrasion resistance



PE-HD: 0,3mm wear after 400.000 load changes in comparative test

➤ Significantly lower wear against stoneware, concrete, grp, and other pipe materials!

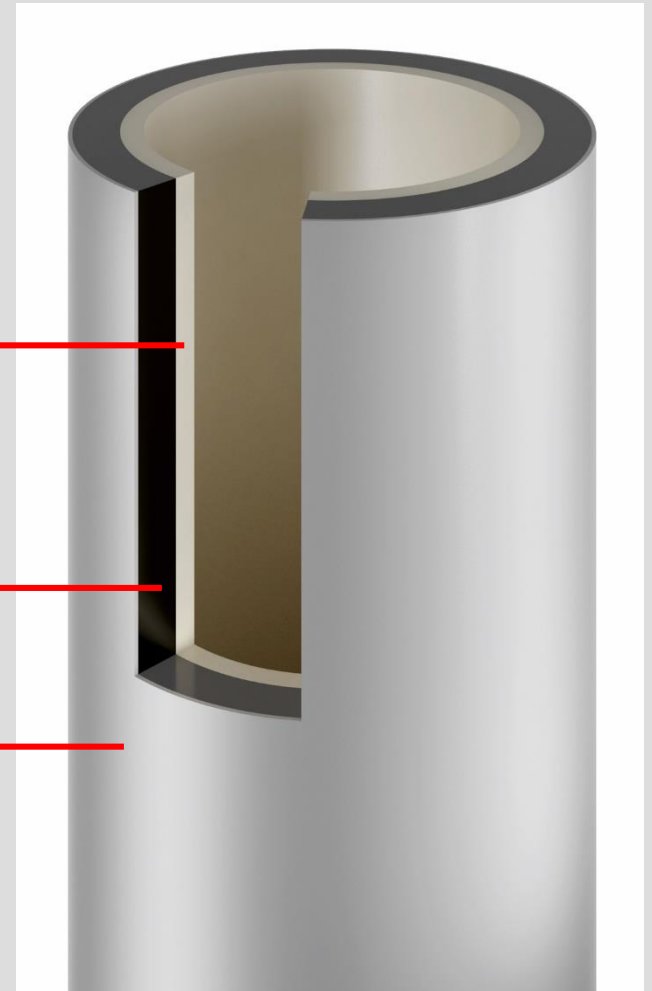
## The pipe for the rough



Dimensionally integrated, inner protection layer made of thermoplastic elastomer for longtime stress of abrasive wear

Core layer made of PE100 or PE100-RC

Dimensionally integrated, co-extruded outer layer made of UV-stabilised PE100 or PE100-RC in bright colour for lower thermal stress of pipe system





## Improvement of resistancy against abrasion

Transport of water together with solid mixtures affects the pipe wall => it becomes worn out – „abrasion“.

Basic rule:

**The more elastic the pipe material**

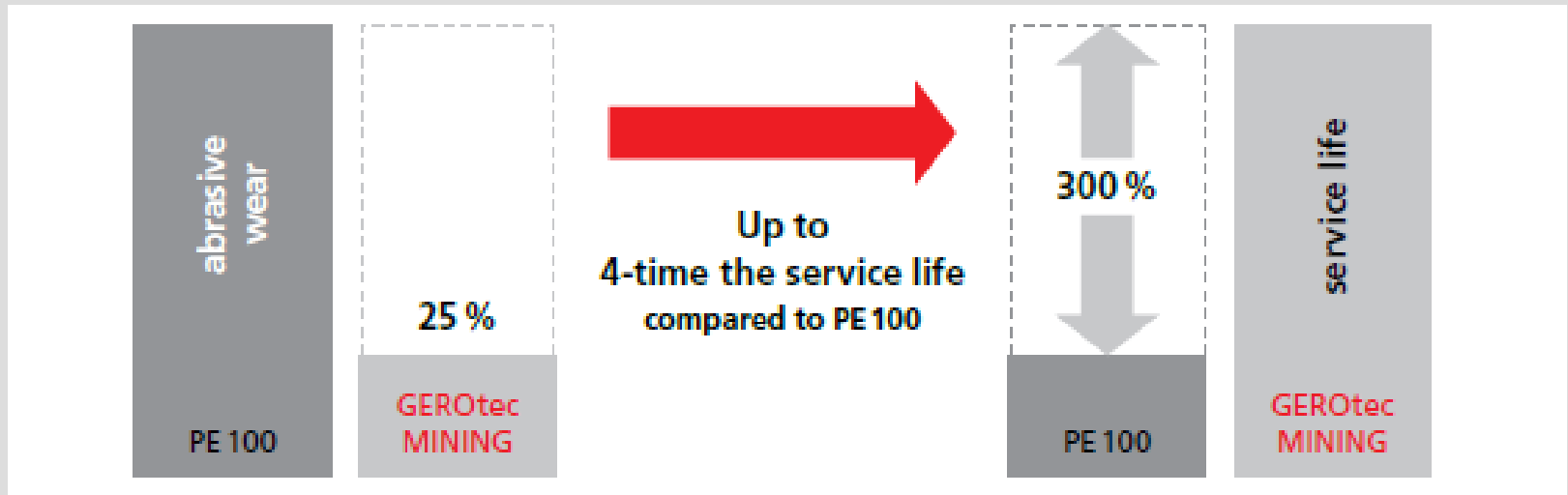
**The less abrasion in the pipe.**



Integration of a functional „*elastic*“ inner layer for improvement of abrasion resistance of inner pipe surface and  
=> increase of operational lifetime of the pipe

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## Increased service time - long lifetime



## Practical test of abrasion

Test series in concrete plant / Fa. Beton Etzel+Linth in Uznach (CH)

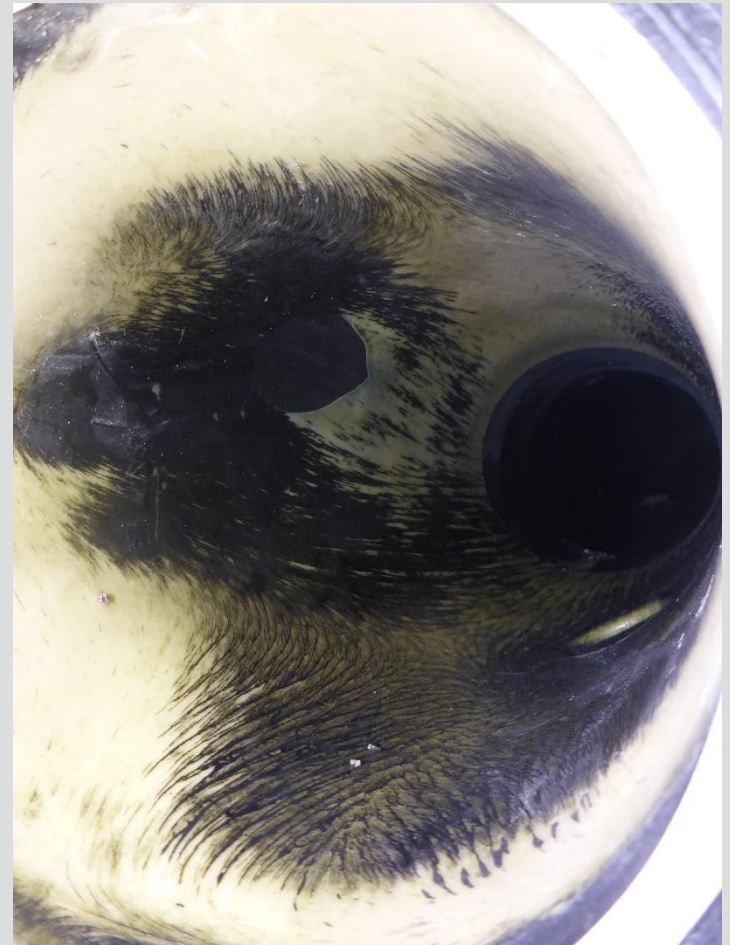
- Normal operation of concrete plant
  - Long term test in **maximal** stressed pipe section
  - Flowing sand-gravel mixture with sidewise blown aggregate
- 
- Standard pipes made of PE100 in different test series with operation time between 2 and 8 weeks are worn out and can not be used anymore
-

Practical test of abrasion



## Practical test

- GEROtec MINING pipes are since **6 months** in test operation
- Result of intermediate check:  
Pipe is not worn-out and can be further used



## Robust, efficient, economical

- |                                   |   |                         |   |
|-----------------------------------|---|-------------------------|---|
| ■ Low abrasive worn-out           | ➤ | High service life       | ■ |
| ■ Good processing                 | ➤ | Short installation time | ■ |
| ■ Improved heat reflection        | ➤ | Low thermal stress      | ■ |
| ■ Inspection friendly inner layer | ➤ | High maintainability    | ■ |



Low installation-, operation and maintenance costs

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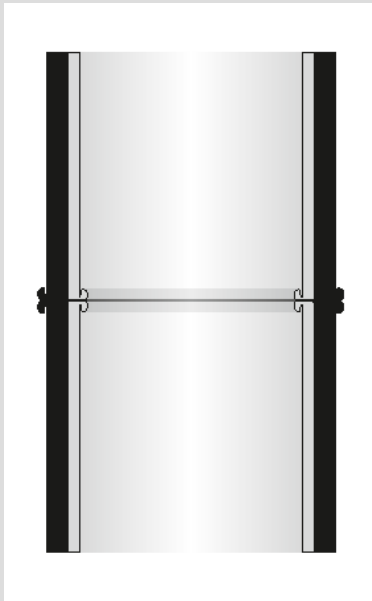
Joining technology

Flange connection

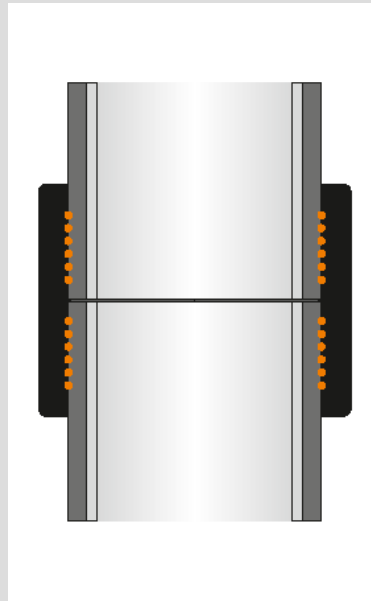


## Joining technology – welding methods

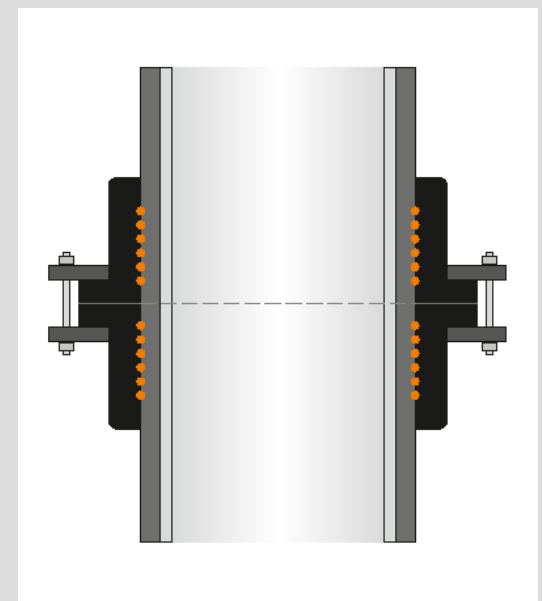
■ Butt welding



■ Electrofusion welding

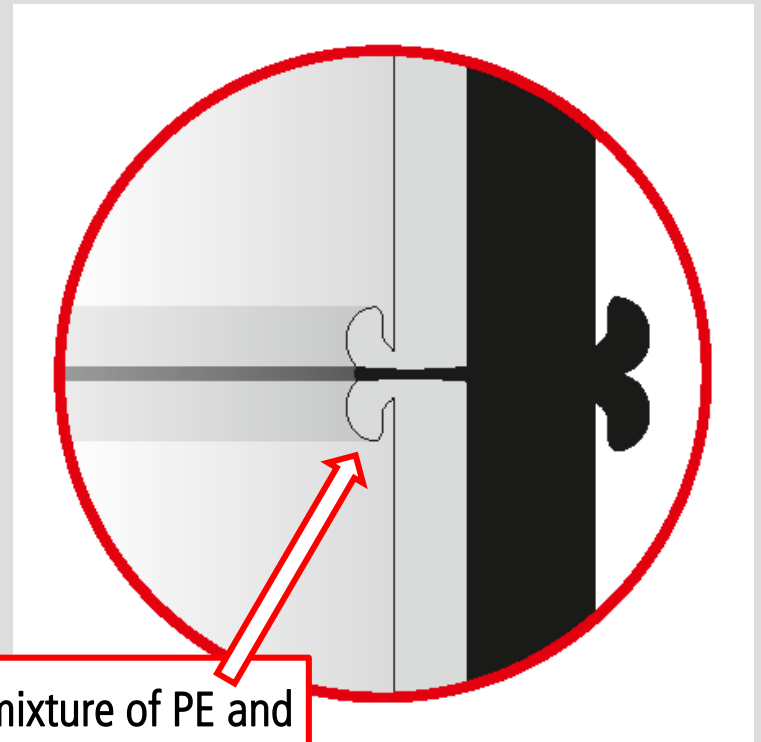
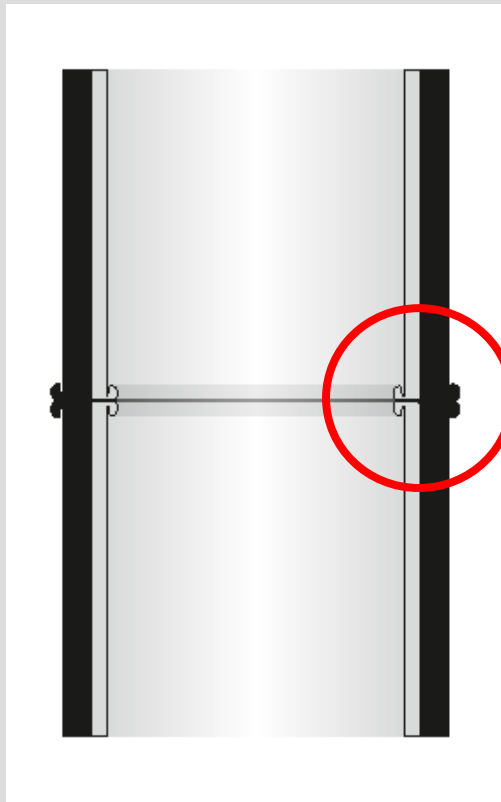


■ GEROtec MINING weld-on flange



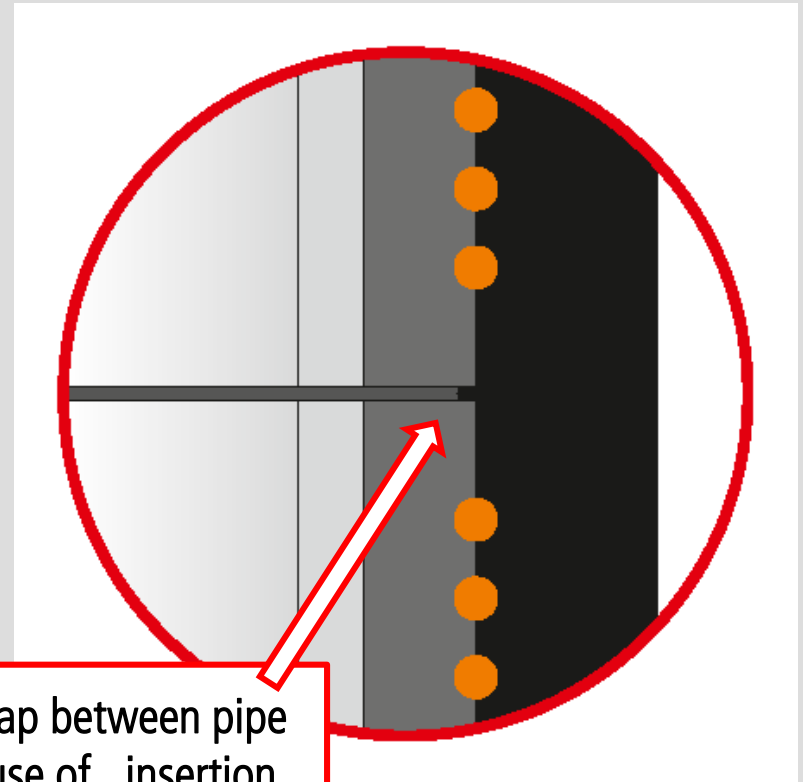
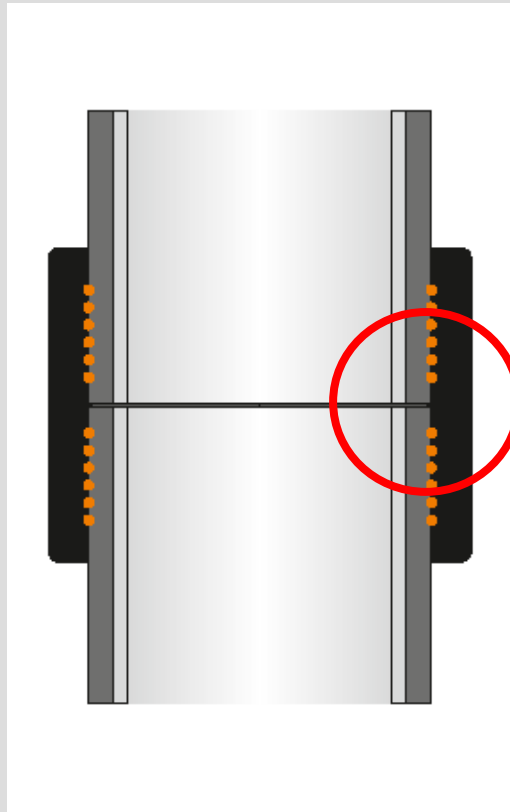


## Butt welding



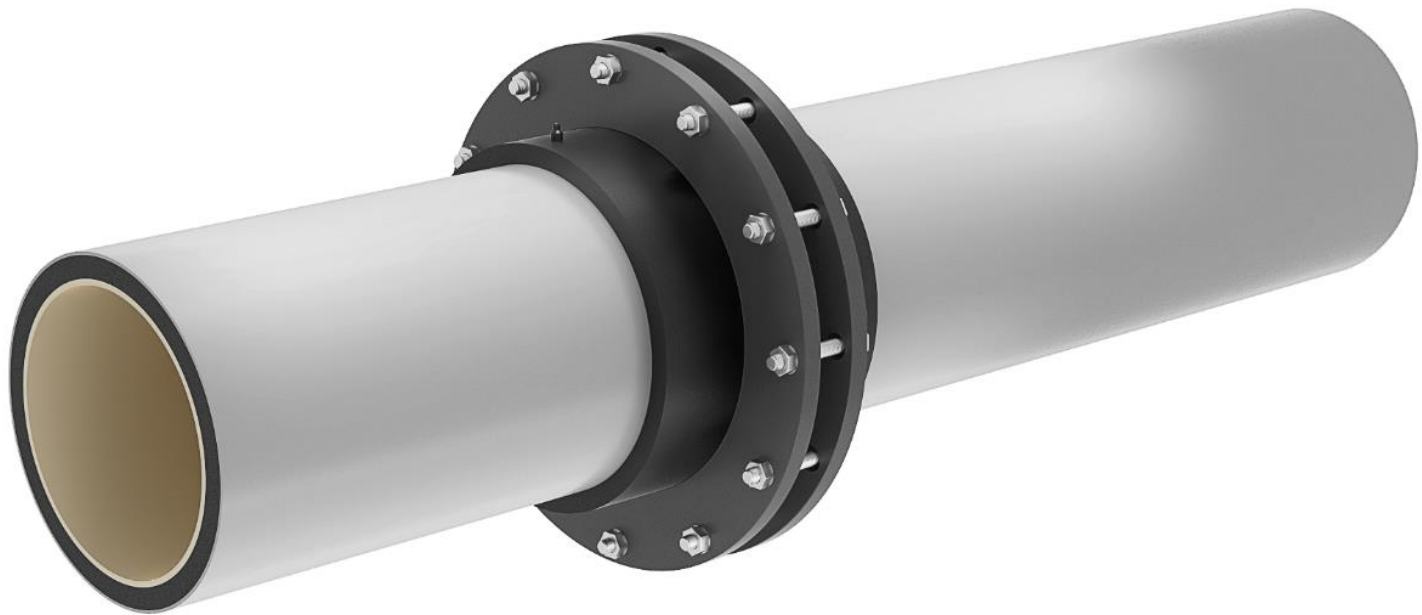
Critical beat mixture of PE and thermoplastic elastomer

## Electrofusion welding



Sensitive gap between pipe ends because of „insertion depth limiter“

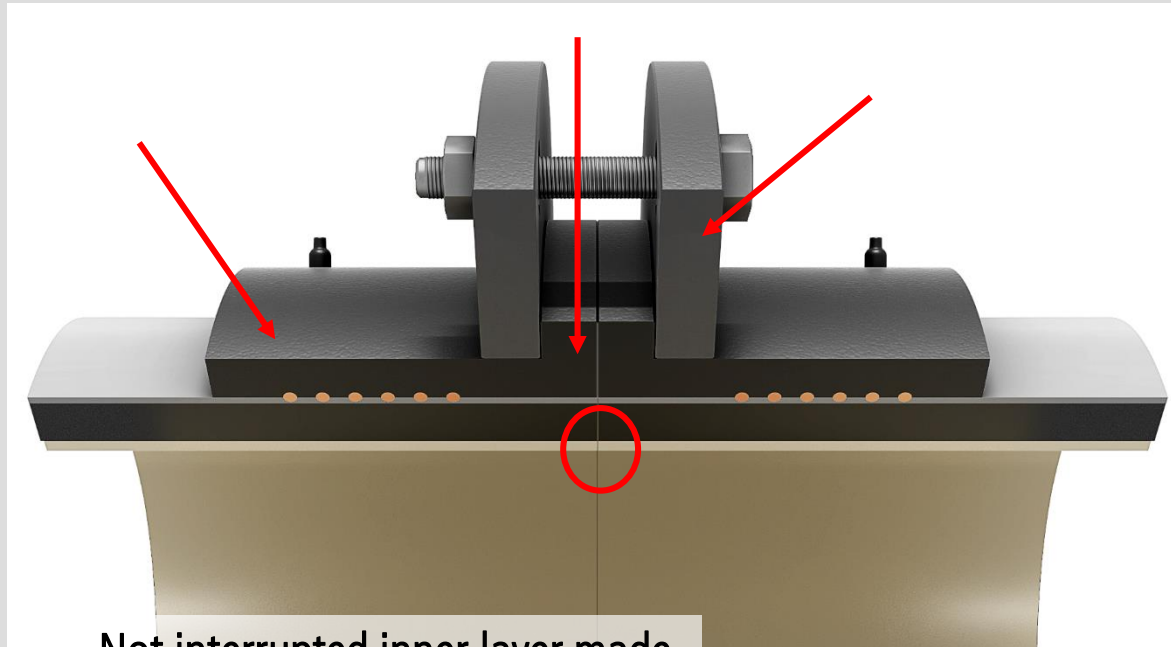
GEROtec MINING – weld-on flange



# GEROtec MINING weld-on flange



Intelligent combination made of stub-end, e-coupler and a flange connection



Not interrupted inner layer made of thermoplastic elastomer

- Removable pipe connection ■
- Connection with other pipe materials ■
- Continuous abrasion resistant inner layer ■

## Conservative design – SDR-classes and dimensions

table 1: GEROtec MINING – dimensions and weights, part 1

d <sub>n</sub>	SDR 7,4				SDR 9				SDR 11			
	PN 20				PN 16				PN 12,5			
[mm]	e <sub>n</sub> [mm]	e <sub>n,PE</sub> [mm]	e <sub>n,AS</sub> [mm]	m [kg/m]	e <sub>n</sub> [mm]	e <sub>n,PE</sub> [mm]	e <sub>n,AS</sub> [mm]	m [kg/m]	e <sub>n</sub> [mm]	e <sub>n,PE</sub> [mm]	e <sub>n,AS</sub> [mm]	m [kg/m]
110	15,1	12,3	2,8	4,54	12,3	10,0	2,3	3,82	10,0	8,1	1,9	3,18
125	17,1	14,0	3,1	5,84	14,0	11,4	2,6	4,92	11,4	9,2	2,2	4,12
140	19,2	15,7	3,5	7,33	15,7	12,7	3,0	6,18	12,7	10,3	2,4	5,13
160	21,9	17,9	4,0	9,54	17,9	14,6	3,3	8,04	14,6	11,8	2,8	6,74
180	24,6	20,1	4,5	12,1	20,1	16,4	3,7	10,2	16,4	13,3	3,1	8,51
200	27,4	22,4	5,0	14,9	22,4	18,2	4,2	12,6	18,2	14,7	3,5	10,5
225	30,8	25,2	5,6	18,8	25,2	20,5	4,7	15,9	20,5	16,6	3,9	13,3
250	34,2	27,9	6,3	23,3	27,9	22,7	5,2	19,6	22,7	18,4	4,3	16,3
280	38,3	31,3	7,0	29,2	31,3	25,4	5,9	24,6	25,4	20,6	4,8	20,5
315	43,1	35,2	7,9	36,9	35,2	28,6	6,6	31,1	28,6	23,2	5,4	25,9
355	48,5	39,7	8,8	46,8	39,7	32,2	7,5	39,5	32,2	26,1	6,1	32,9
400	54,7	44,7	10,0	59,4	44,7	36,3	8,4	50,1	36,3	29,4	6,9	41,7
450	61,5	50,3	11,2	75,2	50,3	40,9	9,4	63,4	40,9	33,1	7,8	52,8
500	68,3	55,8	12,5	82,8	55,8	45,4	10,4	78,1	45,4	36,8	8,6	65,2
560	76,5	62,5	14,0	116	62,5	50,8	11,7	98,0	50,8	41,2	9,6	81,7
630	86,1	70,3	15,8	147	70,3	57,2	13,1	124	57,2	46,3	10,9	103

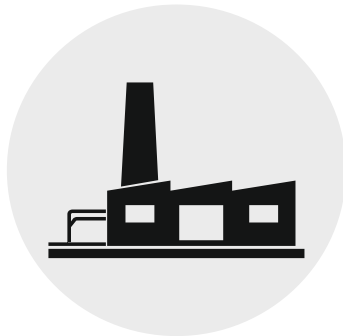
## Advantages and chances

- Low material costs
    - Low installation expenses
      - ▶ Minimization of investment costs
  
  - High service time
    - Long lifetime
      - ▶ Low operation- and maintenance costs
-

Wear resistant pipelines made of PE show a high economic efficiency compared to traditional used materials like steel or rubber.

effective use  
in

Industrial  
construction



Plant  
construction



Mining  
industry



# GEROtec MINING References



Freiberg mine (Germany)

315 x 28,6 mm SDR 11





# GEROtec MINING References



355 x 32,2 mm SDR 11

Elbekies Mühlberg (Germany)



# GEROtec MINING References



180 x 16,4 mm SDR 11

Uznach (Switzerland)



# GEROtec MINING References



Kirovsk (Russia)

355 x 32,2 mm SDR 11







Thank you for your interest!

