



**SIMONA**

# **SIMONA<sup>®</sup> Seamless Bends**

**SIMONA AG**

GLOBAL THERMOPLASTIC SOLUTIONS

# Agenda

**SIMONA**

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# Introduction

## Well known problem on-site

**SIMONA**



**How to make a turn of 11° - 90° under the following conditions?**

- Pressure fittings without reduction factor
- Only limited space required, with as little excavation as necessary
- Cost-efficient solution especially for larger diameters



## Introduction

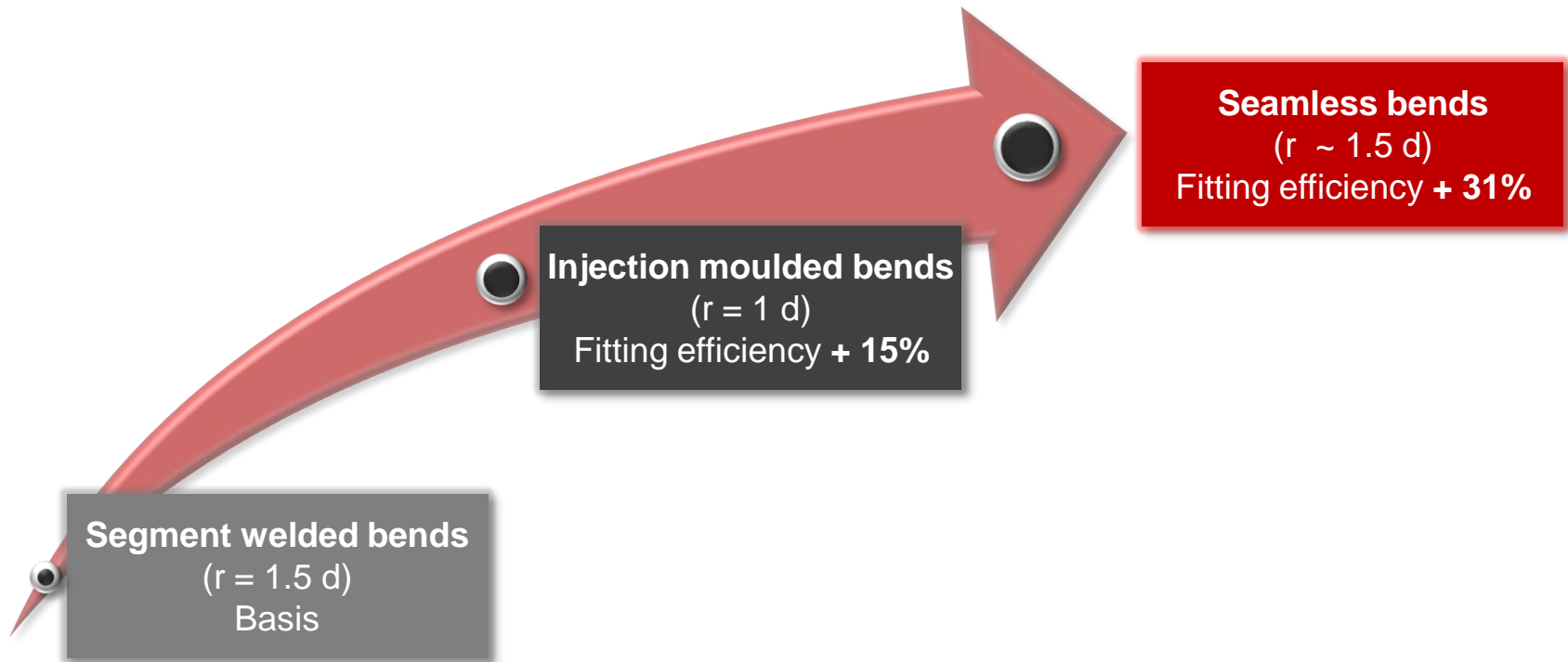
Solution: SIMONA® Seamless bends!



⇒ made out of  
SIMONA® PE100 pressure pipes

## Hydraulics by comparison

Seamless bends increase efficiency by 31%








	Segment welded bends $r = 1.5 d$	Injection moulded bends $r = 1 d$	Seamless bends $r \sim 1.5 d$
Flow Resistance, Zeta $\zeta$	0.25	0.21	0.175
Pressure loss Fittings, mbar	52	44	36

Assumptions: Seamless bends 90°, d 200 mm volume 200 m³/h


# Properties by comparison

## Seamless bends offer several advantages

	Pressure pipe	Elbow	Injected bend	Segment bend	Seamless bend
					
<b>Hydraulics</b>	Excellent $r = 35 d$ (10° C)	Very poor $r \sim 1 d$ + 90° sharp turn	Good $r = 1 d$	Poor $r = 1.5 d$ + corners	<b>Very good</b> $r \sim 1.5 d$ smooth surface
<b>Dimensions</b> (d in mm)	Wide range 20 – 1,200	Limited range 32 – 315	Limited range 20 – 400	Wide range 20 – 1,200	<b>Wide range</b> 32 – 1,000
<b>Degree</b>		Only 45° and 90°	Only 90°	30°– 90°	11°– 90°
<b>Required space</b>	Very large	Very small	Small	Large	Medium
<b>Pressure</b>	Full pressure	Full pressure	Full pressure	De-rating by minus 20 %	Full pressure
<b>Comments</b>	Risk of overexpansion	Not recommended for fluids		Risk of incrustation	<b>No pressure reduction</b>

## Competition by comparison SIMONA vs. Competition

- + World's largest seamless bend  
( $r \sim 1.5 d$ ),  $d$  1,000 mm, SDR 17
- + Widest range of dimensions  
 $d$  32 – 1,000 mm
- + Best dimensional stability in the market ( $\pm 2^\circ$ ),  
other suppliers  $\pm 3^\circ$  to  $\pm 5^\circ$
- + Only chance for one-stop-sourcing in Europe  
Pipes + Fittings + Bends
- + All bends with protection caps –  
hygienic clean for drinking water



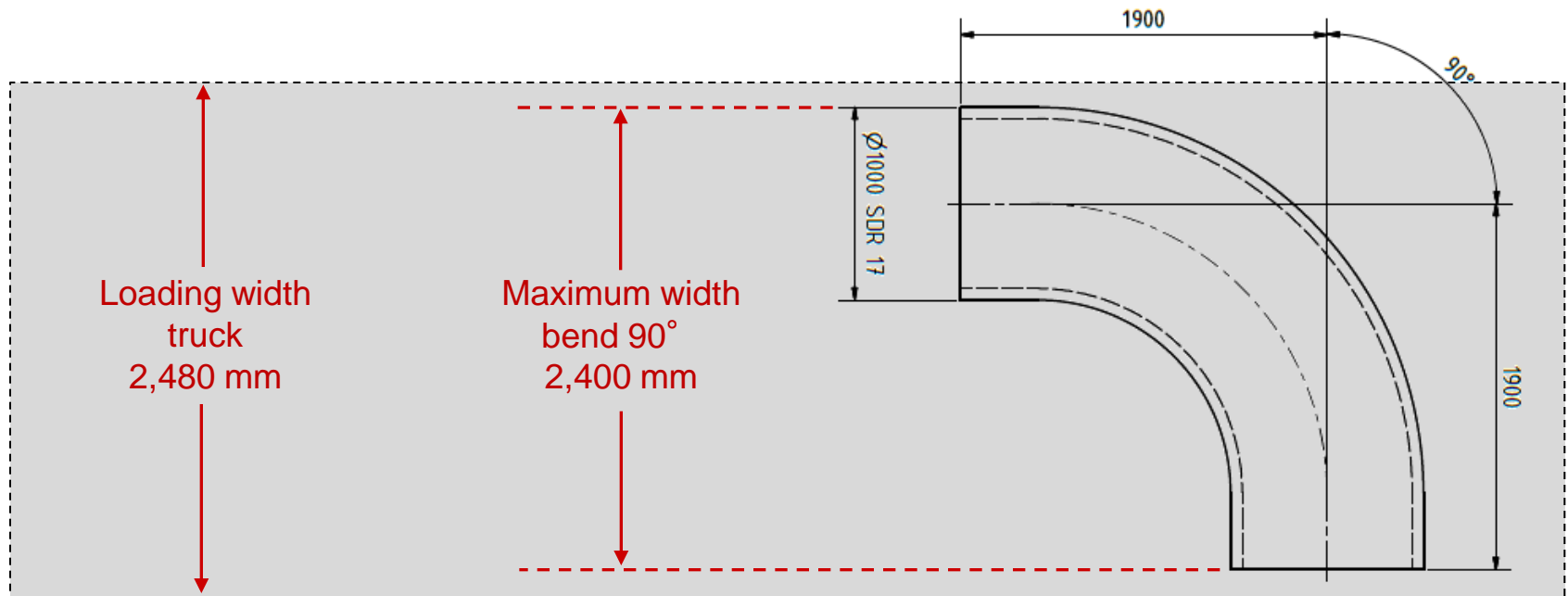
Due to extra stress relief production, an exceptional dimensional stability of  $\pm 2^\circ$  can be guaranteed – even for outside storage.  
No additional holding or clapping devices are required.

## Advantage

### Transport with conventional trucks

Due to the optimal radius of  $r \sim 1.5 d$ , SIMONA® Seamless Bends  $d$  1,000 mm can be transported with conventional trucks.

**A saving of time and money!**





## References

Worldwide projects and reliable solutions



**Long-lasting experience in many applications**

- Utility  
(drinking water and gas transport)
- Waste water management
- Industry

**Shell Refinery Rotterdam,  
Netherlands**

CO<sub>2</sub> transport in seamless bends  
d 63 – 630 mm

## References

Worldwide projects and reliable solutions



**Long-lasting experience in many applications**

- Utility  
(drinking water and gas transport)
- Waste water management
- Industry

### **Eastern Europe**

Gas supply with seamless bends  
d 630 mm x 70 mm (SDR 9)

# At a glance

## SIMONA® Seamless Bends

<b>Materials</b>	PE 100 or PE 100 RC
<b>Dimensions</b>	32 – 1,000 mm
<b>Degrees</b>	11°– 90° especially tight tolerances of $\pm 2^\circ$
<b>SDR</b>	17 / 11 / 9 / 7.4
<b>Radius</b>	$r \sim 1.5 d$ ( $r \sim 2.5 d$ on request)
<b>Nominal pressure</b>	PN10 / PN16 / PN20 / PN25
<b>Standards</b>	DIN EN 12201 (DIN EN 1555 on request)

- +** Long spigots =  
**Universally weldable**
- +** Large stock range =  
**Excellent delivery times**
- +** Stress-relief production =  
**Best dimensional stability**



**➤➤ To our product range**

Thank you for your kind attention!

**SIMONA AG**

Teichweg16

D-55606 Kirn

Phone +49 (0) 6752 14-0

Fax +49 (0) 6752 14-211

[mail@simona.de](mailto:mail@simona.de)

[www.simona.de](http://www.simona.de)