fitt lilforce

The new standard for water reuse infrastructure

The new generation of PVC-HI (PVC-A) pipes dedicated to reuse of treated wastewater infrastructure.



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Why fitt Lilforce



Immediate identification

Purple (RAL 4005) color conforms to international standards.
Prevents cross-contamination and reduces operational errors.

Superior technology

PVC-HI (PVC-A) with consistently ductile behavior.
No brittle fracture, high resistance to crack propagation.

Fast and safe installation

No gasket displacement and reduced assembly force (by hundred of Netwons) thanks to pre-inserted PowerLock® gasket, heat-integrated into the socket.
No installation equipment required, reduced laying time.

Reduced total costs

Durability over time, less maintenance, longer service life and environmental sustainability of infrastructure.
Lower life cycle cost of the work.

System compatibility

Integration into new and existing networks. Compatible with cast iron, steel, PVC-U and HDPE fittings.

Certified Sustainability

100% recyclable - Organic Based Stabilizer (OBS) - Carbon footprint ISO 14067 - B Corp 2024 - Benefit Corporation. Water reuse starts with the choice of pipe.

Water reuse is no longer an option

The reuse of water

Water scarcity is no longer a future scenario: it already affects entire European territories, prompting institutions and managers to look for concrete alternatives to capture from natural sources, with a view to a circular economy.

Reuse of treated wastewater reduces pressure on water resources by replacing potable water in uses that do not require it - from agricultural irrigation to industrial processes. **EU Regulation 2020/741** sets uniform minimum standards for all of Europe, paving the way for a new dedicated infrastructure for reclaimed water.

For the secure conveyance of potable water, FITT offers **Lilforce**: a PVC-HI (PVC-A), High Impact PVC with a CPE impact modifier, pipe designed specifically for **reclaimed non-potable water distribution networks.** Identifiable by the **purple colour (RAL 4005)** - an international standard for reuse nets-Lilforce guarantees durability, structural strength and operational safety.

Where FITT Lilforce operates

Agricultural irrigation

Regenerated water distribution networks for irrigation use. Compliance with EU 2020/741 European standards.

Urban and firefighting use

Networks for fire protection, public green irrigation, street cleaning and ornamental fountains.

Industrial use

Production processes using non-potable water for cooling, washing and methanation.

“Last mile" network

Connection between wastewater treatment plants (WWTP) and end-use points. Secure and clearly identifiable systems.



From waste to value

Untapped potential

In Europe, more than **40 billion m³ of wastewater** are treated annually, but yet only **2.4% undergoes further treatment for reuse**. This vast potential for growth is the driving force behind dedicated infrastructure solutions such as FITT Lilforce.

Source: Water Reuse Regulation(EU) 2020/741 - European Environment Agency (EEA)

Water stress: a real urgency

At least **11% of Europeans are already affected by water scarcity today**, and the volume of treated water that could be reused is six times higher than current levels. The gap between availability and usage defines the precise infrastructure opportunity created by **EU Regulation 2020/741.**

Source: Water Reuse Overview - European Commission, DG Environment

A Rapidly Expanding Market

The European water reuse market was worth 3,3 billion Euro in 2023 and is expected to reach **7,3 billion Euro by 2032**, growing at a 9,1% CAGR. Such growth requires substantial investment in dedicated pipelines and 'last-mile' infrastructure.

Source: Europe Water Recycle and Reuse Market Report (2024) - Astute Analytica

The water sector is undergoing a structural transformation: increasing water stress, new European regulatory frameworks (EU 2020/741) and the need to develop dedicated infrastructure for reuse of treated wastewater require secure, identifiable and durable distribution networks. FITT Lilforce was designed exactly to achieve this goal.



Sustainable development

Sustainable Development Goals (SDGs) 6 and 13 by United Nations and **European Water Resilience Strategy** by European Commission: the international framework indicates a clear direction toward a more responsible management of water resources.

FITT has embraced this vision. **Benefit Corporation since 2019** and **Certified B Corp since 2024**, sustainability is a core pillar for FITT, integrated throughout the entire value chain - not just a superficial positioning.

FITT Lilforce is the tangible embodiment of this vision: virgin polymers, lead-free organic stabilizers, 100% recyclable and ISO 14067 carbon footprint certified by TÜV. Power Lock® system extends the infrastructure's life cycle and optimizes management costs by minimizing maintenance. True sustainability lies in the longevity of the infrastructure.

Learn more
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The Reclaimed Water Cycle

The reuse of water

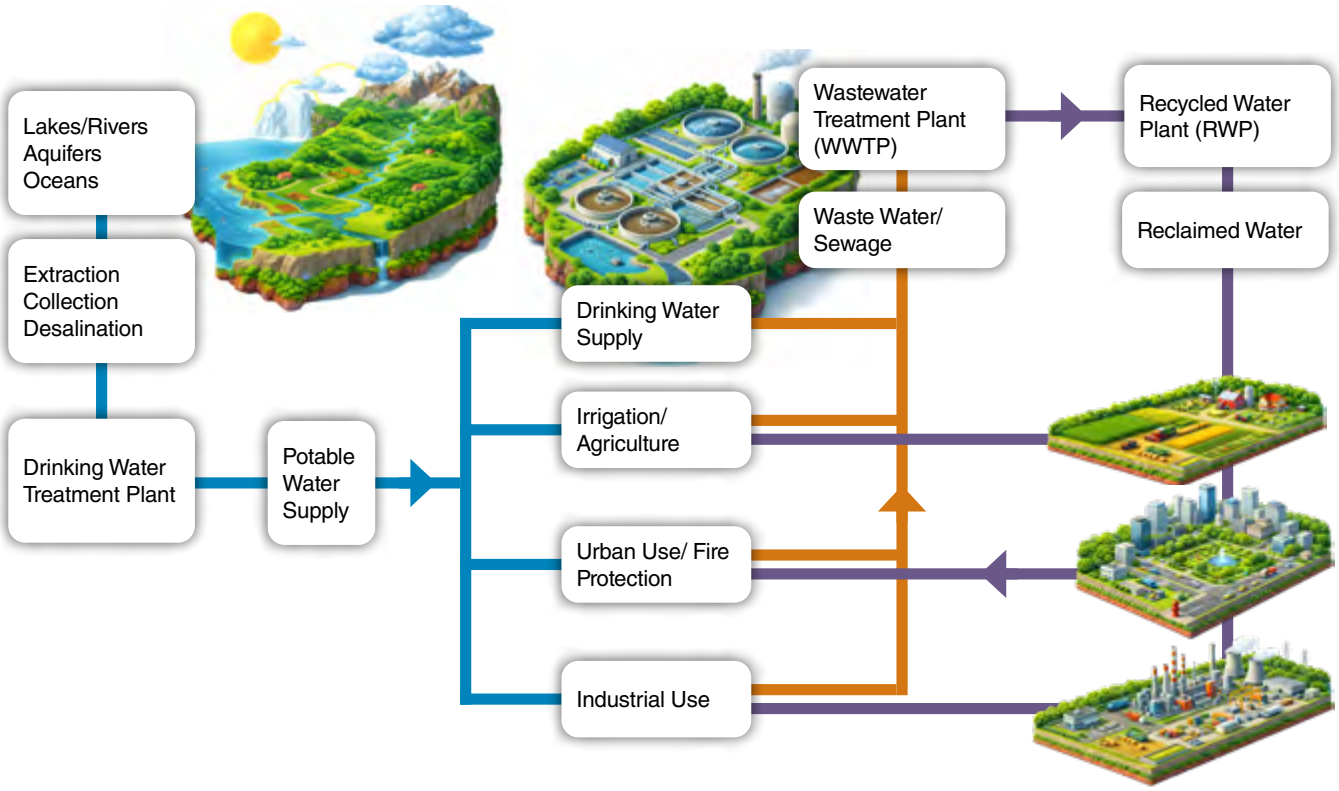
Water is never depleted: it is transformed. The reuse of treated wastewater is not a fallback option, but a logical and necessary step within a more efficient and sustainable water cycle.

The process begins with the collection of urban and industrial wastewater, conveyed to **waste water treatment plants and recycled water plants** where it undergoes progressive stages - primary, secondary, and tertiary treatment - until it meets the strict quality standards defined by **EU Regulation 2020/741**. Reclaimed water does not return to the environment as waste discharge; instead, it is reintroduced into the system as a valuable resource.

In this scenario, the **dedicated distribution network** comes into play: a separate system, clearly identifiable by its internationally recognized **purple color**, which carries the reclaimed water to end-use points while ensuring **zero risk of cross-contamination.**

Key applications include agricultural and urban green irrigation, industrial processes, fire protection, and street cleaning: all contexts where potable water can, and must, be replaced.

FITT Lilforce is designed to be the **backbone of this cycle**: a PVC-HI (PVC-A) piping system, made by PVC with CPE impact modifier, that guarantees safety, durability, and immediate recognizability at every stage of distribution, from the treatment plant to the end-user



Purple (RAL 4005) – The Global Standard for Water Reuse

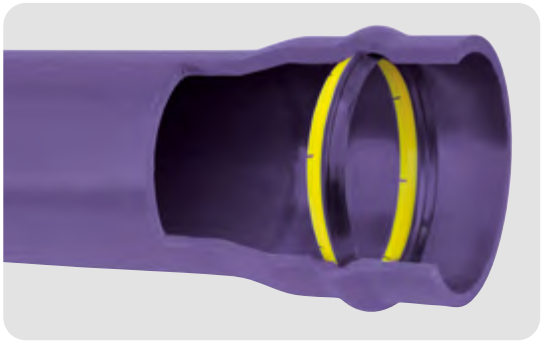
International regulations and standards align on mandatory color coding for non-potable water networks through the use of purple. This specific shade, RAL 4005, prevents cross-connections with potable water pipelines, minimizing operational errors on-site in compliance with Risk Management Plans for reclaimed wastewater systems.

The polymer alloy that changes the rules

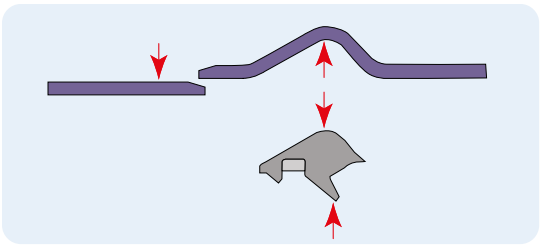
FITT Lilforce is made of **PVC-HI* (PVC-A)** High Impact polymer, developed by combining the **mechanical strength of PVC-U** with the **ductility of chlorinated polyethylene (CPE)**. The result is a material with exceptionally high resistance to crack propagation: the leading cause of failure in pressure networks. The technology originated in the UK in the 1990s, when North West Water and the Pipeline Development Ltd. laboratory launched a research project to overcome the limitations of materials available at the time - such as grey cast iron, PVC-U, and HDPE - by developing a material capable of preventing corrosion, withstanding water hammer, and ensuring long-term integrity.

(*) At the regulatory level it is defined as Poly Vinyl Chloride polymer alloy with high impact strength PVC-HI (such as PVC-M, PVC-A, PVCCPE). PVC-HI (PVC-M, PVC-A, PVC-CPE) is a thermoplastic material that contains PVC Resin with the addition of an impact modifier (PVC- Hight Impact). Depending on the type of impact modifier, the acronym HI can be replaced with various designations (PVC-A, Acrylic or PVC-A Alloy (polymer alloy);PVC-CPE, Chlorinated Polyethylene; PVC-M, Modified).

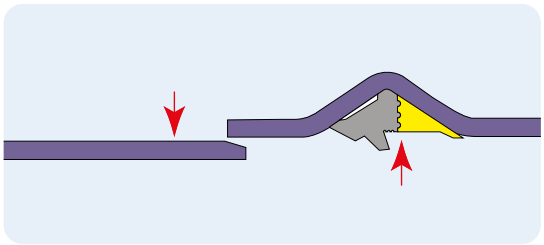
The Power Lock® jointing system



FITT Lilforce adopts aa socket joint with pre-inserted gasket, heat-integrated into the socket. The **Power Lock®** gasket - made of EPDM elastomer (UNI EN 681) co-molded with a fiber-reinforced polypropylene stiffening ring - **is an integral part of the pipe.** The integral belling process eliminates tolerances between gasket and seat, setting to zero the irregularities typical of traditional systems and ensuring ease of installation, optimal hydraulic seal stability over time. With FITT Bluforce, large radius bends can be made, taking advantage of the sealing guarantee of the Power Lock® joint system even for angular deflections up to 3°.



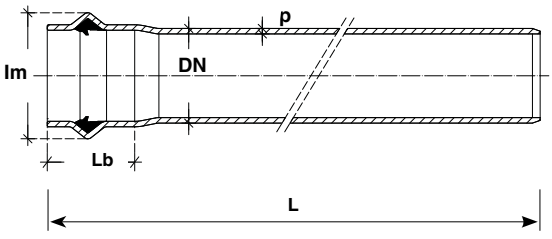
The 4 clearances on a ring with traditional jointing system.

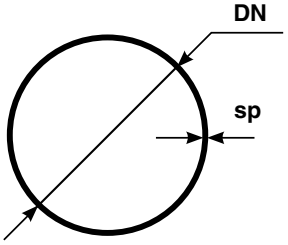


The 2 clearances on a ring with the Power Lock® jointing system.

The FITT Lilforce range

	PN 16			
DN [mm]	**Weight* [kg/m]**	**sp [mm]**	**Lb [mm]**	**lm [mm]**
90	1,62	4,0	150	120
110	2,42	4,9	150	145
125	3,09	5,5	160	165
140	3,90	6,2	160	180
160	5,00	7,0	180	205
200	7,84	8,8	190	260
225	9,90	9,9	200	270
250	12,21	11,0	210	320
280	15,31	12,3	210	330
315	19,28	13,8	220	390
355	24,55	15,6	220	440
400	31,02	17,5	230	490
500	48,34	21,9	240	610
630	76,60	27,6	330	780
(*) Total bar length L = 6m			**PN10 and PN20**, on request	





DN = outer diameter

L = bar length

Lb = socket length

sp = thickness

lm = maximum overall dimensions

Efficiency at every stage

DESIGNERS

- Risk reduction of accidental cross-connections between drinking water and reclaimed water networks
- High gasket performance
- Time savings in infrastructure inspection and testing
- Guaranteed hydraulic tightness in case of both positive and negative pressure
- Enhanced reliability of the joint sealing
- Angular deflection of 3° on the joint (in case of significant aftershock)
- Internal dimensions of the socket not susceptible to change

INFRASTRUCTURE FITTERS

- Simplified installation in case of cross-connections between the drinking water and reclaimed water network
- Pre-inserted gasket in the pipe socket to prevent its loss or damage
- No displacement of the seal
- Ease, speed, safety of assembly
- Considerable reduction in assembly force, which becomes significant as diameter increases, allowing savings in applied force (in terms of several hundred Newtons)
- Reduced labor for installation
- Manual assembly in total absence of machinery
- Reduction in laying time

PLANT OPERATORS

- Clear identification of infrastructure for transportation of refined water (not-potable), in accordance with regulations on water reuse (Reg. EU 2020/741 and DM 185/2003)
- Guarantee of separation between the drinking water and reclaimed water network, with reduction of cross-contamination risk
- Safety of hydraulic sealing despite joint deflection
- Tube and gasket act as one body
- No risk of pipeline misplacement
- Guarantee of perfect system operation for both installer and plant operators
- Perfect sealing, thanks to the gasket, to prevent groundwater from entering the pipeline



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FITT INFRASTRUCTURE SOLUTIONS
This is the business area of the FITT Group that manufactures and develops complete piping and fittings solutions for pressure and gravity management of fluids dedicated to integrated water service management entities such as waterworks and sewers.

For more information:

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