



**MOLECOR**

*Orienting the future*

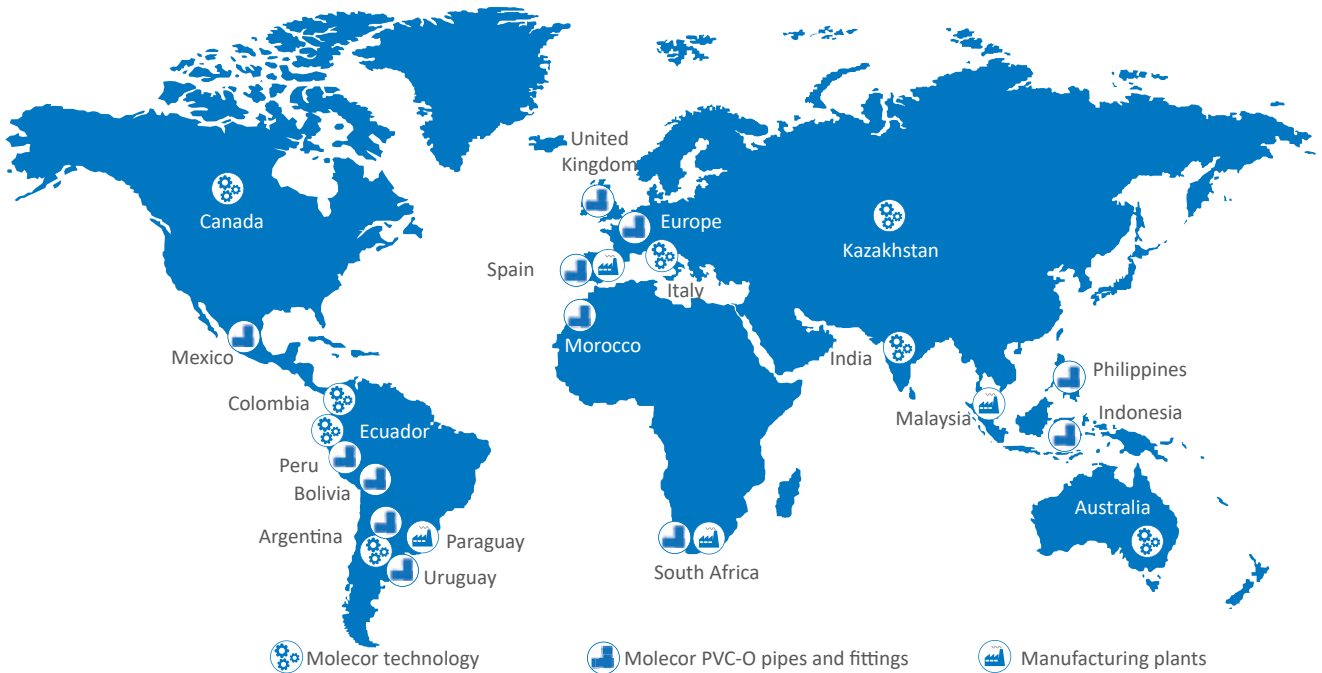
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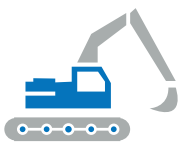


## Molecor, developing an oriented world

Since the appearance of **Molecor** in 2006, and thanks to its undeniable **international vocation**, as well as to its **continuous investment in R&D**, **Molecor** has undoubtedly become the world leader in the development of **Technology** applying **Molecular Orientation** to pipeline solutions.

The idea of manufacturing **Oriented PVC pipes** in a more efficient way, expanding the range of products, applications and functions, has led the company to install thousands of kilometers of its **TOM® PVC-O pipes** in the five continents, together with the **ecoFITTOM® PVC-O fittings** more recently; fittings developed exclusively by **Molecor** and with which the company offers an **integral solution in PVC-O** which allows all elements of the network to have the same properties, characteristics and advantages.

Pipes are an element of great importance in the projection and design of the different networks, and for their correct choice, their contrasted quality must be taken into account, as well as their hydraulic capacity and their durability in time to stay in service without being affected by mechanical or chemical actions or by the micro and macro-organisms present in nature.



- Lightness
- Ease of connection
- The highest installation performance



- Complete watertight
- Less breakages and leakages
- Immune to attacks of micro and macro organisms
- Less load loss



- No corrosion
- Water remains always unaltered
- Total quality of the conveyed water

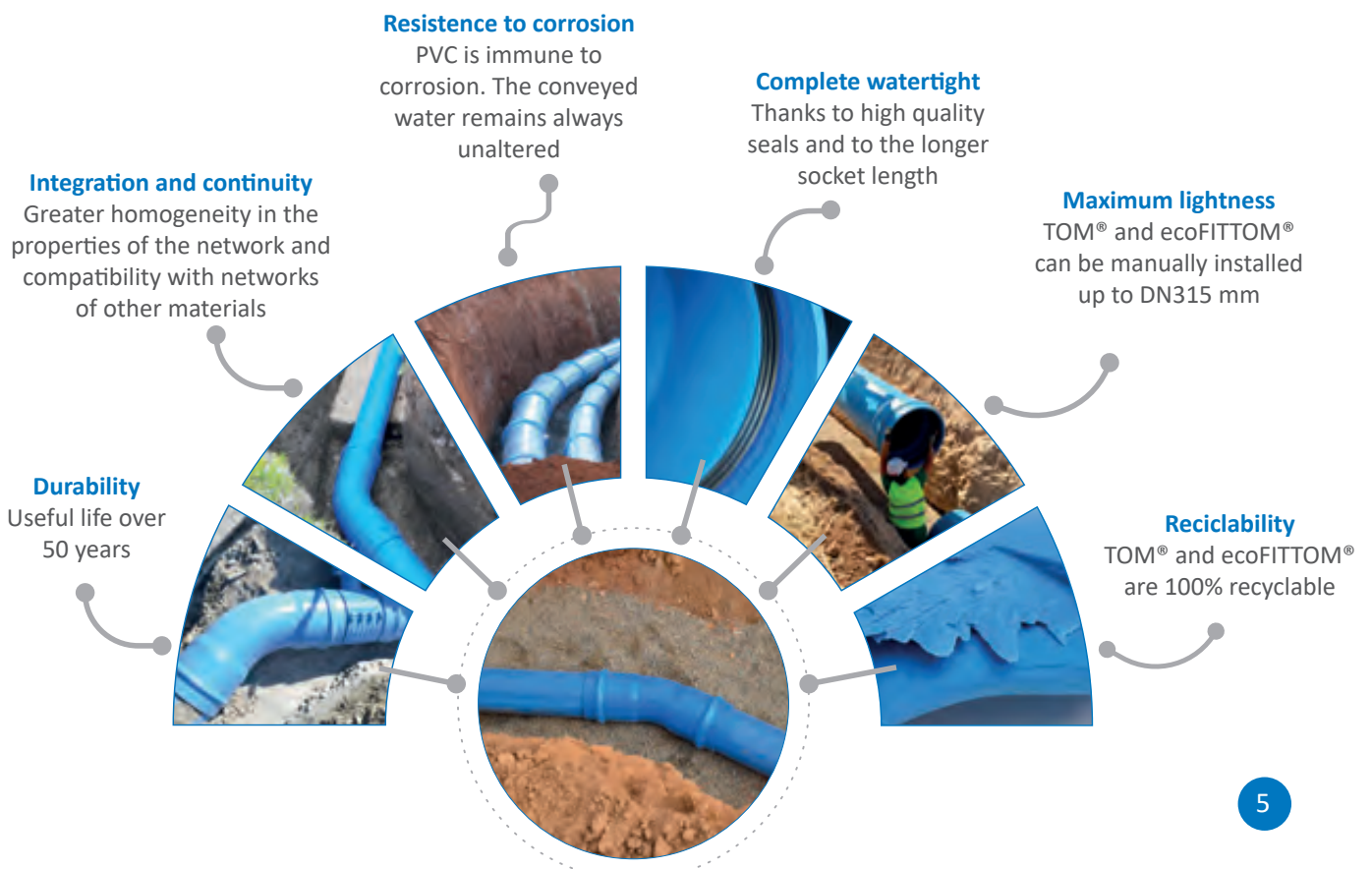
**TOM® PVC-O pipes** become the perfect alternative for the different types of networks thanks to their efficiency in operation and low maintenance costs, due to their high physical-mechanical and chemical properties. **TOM® PVC-O pipes** have become a high quality and economically viable product worldwide recognized and with which a growing number of installations are developed.

To the insurmountable technical characteristics of the **Oriented PVC pipes (PVC-O)**, due to their chemical nature and to the improvement of mechanical properties produced during their manufacture thanks to the Molecular Orientation process, joins their commitment to the environment given the optimal behavior of the product throughout its life cycle.

These pipes are manufactured in a wide range of nominal pressures (12.5, 16, 20 and 25 bar) and diameters (from 90 to 800 mm).

**Molecor** is the first company in the world able to manufacture **500, 630, 710 and 800 mm diameter pipes** in this material as well as **ecoFIT TOM® PVC-O fittings**, which are currently manufactured from DN110 mm to DN400 mm in PN16 bar. Both products form the ideal solution for the uniformity in networks for the conveyance of water; facts that have supposed inflexion points in the market thus contributing with new solutions previously unthinkable.

In this way, the company offers the market a **continuous and uniform Oriented PVC system** in which all the elements have the same physical-mechanical properties, becoming an advantageous alternative compared to other materials. Taking into account these innumerable advantages and characteristics, the **TOM® PVC-O pipes** manufactured in Loeches, Madrid, by Molecor, are a product of the highest quality and have become the best alternative for the conveyance of water under pressure, furthermore, it is a **product guaranteed for 50 years** thanks to its excellent physical-mechanical properties and its high durability.



## Project for the development of a new water supply network for the city of Pernik, Bulgaria

- **Application:** Abastecimiento
- **Year:** 2020
- **Country:** Bulgaria
- **Region:** Pernik
- **Constructor:** Montagi AD
- **Total length (m):** 12,500

DN630  
PN25 bar

DN630  
PN20 bar

DN630  
PN16 bar



### Description

Molecor has recently completed a major project: that of **supplying the Bulgarian city of Pernik with drinking water**. This city suffered extreme drought since November 2019. The absence of rain and the very low water level in the Studena dam, with 25 million cubic meters of capacity, threatened to leave a population of 100,000 people without potable water.

In addition to the scarcity of flow from the Struma river that supplies the Studena dam, there were also **enormous losses of water** from the current installed pipes, **estimated in more than 75%** by the Water and Sewerage Systems of the city. That is until the installation of the new line with the **TOM® PVC-O pipes of Molecor**, three-quarters of the water extracted from the dam did not reach the inhabitants of Pernik. This situation, which has put Pernik into the spotlight of all the Bulgarian national media and of a multitude of international media, led the city authorities to implement extraordinary measures to ensure the supply to the population, which was already suffering severe daily water cuts, 6 hours of water a day and 18 hours without supply.

These measures implied the **installation in record time, of a new drinking water supply line of 12,5 km in length**, which would connect and reinforce, with a **capacity of 300 l/sec**, the supply of Pernik. After making the necessary calculations, it was confirmed that the city could be supplied from the Belmeken dam, which supplies the capital of the country, Sofia, which could absorb these needs while maintaining its water balance.

The commitment of the **Bulgarian Prime Minister, Boyko Borisov**, was to execute the project in record time, with that objective, the material selected by the technical managers has been a **Class 500 Oriented PVC pipe from the Spanish manufacturer Molecor Tecnología**, with a **diameter of 630 mm and in a pressure range of 16, 20 and 25 bar**.

The project officially started on January 29. At a **rate of installation of several kilometers a day** and with the technical assistance of **Molecor** during the design and installation phases, the project ended in record time, on March 13 the supply line from Sofia to Pernik was already installed.

From a technical point of view and taking into account the urgency of the installation, the **Molecor Oriented PVC TOM® pipes met with the very high requirements of this project**, which included the manufacturing and supply capacity, at the required rate of five teams simultaneous installation, to complete the works in the indicated time of 37 days.

The pipes should also be easy of handle, store, distribute and assemble on-site; characteristics for which, the lightness of the **Molecor TOM® pipes**, whose weight is less than half of PVC and PE pipes, and between six and twelve times less per linear meter than the cast iron pipes of an equivalent nominal external diameter, has been essential during the development of the project.

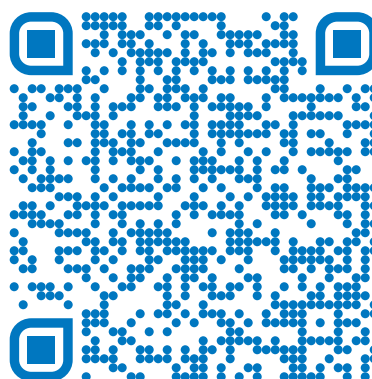
On the other hand, the installed pipeline, thanks to its **higher hydraulic capacity**, between 15% and 40% compared to pipes of other materials with the same external diameter, is capable of transporting a higher flow with optimal hydraulic behavior and a minimum pressure drop that leads to significant energy savings during pumping. This pumping, on the Sofia - Pernik line, involves the drive from the catchment to a tank located at a height of 160 m; tank from which the main connection to the supply network to Pernik is supplied by gravity.

**The long service life of the TOM® PVC-O pipes** in the long term, over 75 years, implies enormous resource savings in the long term, thus optimizing the investment made. In addition, these pipes, certified in more than 10 countries and with several health certificates, guarantee the total quality of the transported water for consumption by the population of Pernik.

Once the installation of the new supply line was completed, on March 13, and after having carried out all the necessary tests, **the project was officially inaugurated by the Bulgarian Prime Minister, Boyko Borisov**, on March 23, 2020. A project that has, once again demonstrated, that the TOM® PVC-O pipes of Molecor are the best solution for the conveyance of water under pressure.



Discover more  
information about this  
project through this  
code:



## Transforming the Irrigation Area of the “Vegas del Bajo Valdavia (Palencia) Irrigation Community” into an irrigated area with PVC-O pipes

- **Application:** Irrigation
- **Year:** 2019
- **Country:** Spain
- **Region:** Vega-Valdavia (Palencia)
- **Constructor:** TRAGSA y UTE Valdavia
- **Promoter:** Junta de Castilla y León and Comunidad de Regantes de las Vegas del Bajo Valdavia
- **Total length (m):** 62,328

DN160  
PN20 bar

DN200  
PN20 bar

DN160  
PN16 bar

DN200  
PN16 bar

DN250  
PN16 bar

DN315  
PN16 bar

DN355  
PN16 bar

DN400  
PN16 bar

DN450  
PN16 bar

DN500  
PN16 bar

DN630  
PN16 bar

DN710  
PN16 bar

DN800  
PN16 bar



### Description

The **Irrigation network project for the Valdavia River irrigation area** (Palencia) aims to define and quantify the required irrigation works to make use of the water accumulated in the Arroyo Villafría Dam, in the lower Valdavia River valley irrigable area. The objective of the project is to **transform 2,700 ha into irrigated land** in the municipalities of Villaeles, Villasila de Valdavia, Villanuño de Valdavia, Bárcena de Campos, Castrillo de Villavega and Osorno (Palencia), through a demand-based irrigation system using natural pressure.

Since power requirements have changed, and the cost of contracting power, as well as the actual price per kW/h consumed, is very high, being able to design a system of this magnitude that does not depend on electricity is both very valuable and remarkable. Making the most of the terrain's transformation and its natural slopes to irrigate a 2,700 hectare area, as is the case, is highly worthwhile.



Therefore, **the purpose of this action is to provide the area with water resources using a demand irrigation system, with natural pressure.** This means that no power costs are incurred for pressure irrigation on the plots, which unquestionably makes them very competitive in terms of their operational cost-effectiveness.

The general scheme for the irrigation infrastructure is as follows, starting with a dam on the Valdavia River, upstream of La Puebla de Valdavia, at an elevation of 936 meters above sea level, and using a 1,000 to 1,200 mm diameter pipe that is 23,650 meters long, the necessary flow will be transported by gravity to the irrigation network.

**The secondary network is between 160 and 1,000 mm in diameter and 62 km long. It is designed in 900 and 1,000 mm diameters. And, in 800 mm diameter it is made of Orientated PVC (PVC-O).** It will supply 182 irrigation units, and the tertiary network will come out of the hydrants, with **more than 40 km of tuberías TOM® PVC-O pipes.** Two regulation reservoirs will be built, one before reaching the irrigation area in Arenillas de San Pelayo and the other in Villanuño de Valdavia. These reservoirs will serve as water storage during the peak demand periods, to make up for the lack of supply from the dam, and to reduce the diameters used in the main pipeline.

**The high hydraulic capacity and smooth surface make Class 500 PVC-O the ideal material for transporting water with minimum energy consumption.**

This circumstance, together with the current power situation, in which the electricity contracted throughout the year is a burden for many Irrigation Communities that only use it for 6 months a year, makes the designers consider PVC-O as another tool for optimising the electricity costs in a modernisation or irrigation transformation project.

**The transformation of the irrigable area of the “ Vegas del Bajo Valdavia (Palencia) Irrigation Community” into an irrigation area is an example of optimal design, doing away with the need for electricity to distribute the irrigation water,** taking advantage of the area's natural slopes, so that all the parcels in the area can enjoy water under suitable pressurised irrigation conditions.

These qualities would be of no use if the material's durability jeopardised the large investments that are being made. Therefore, we can talk about energy efficiency in water transport along with other qualities that are no less important, such as the material's durability, its low speed and its high impact resistance.



Access the complete case study of this project through this code:



## Irrigation Modernization Project in the Irrigation Community of the Tajo-Segura de Librilla Diversion Community Irrigation Zone, Sector 2

- **Application:** Irrigation
- **Year:** 2019
- **Country:** Spain
- **Region:** Librilla, Murcia
- **Constructor:** Padelsa Infraestructuras
- **Engineering:** Moval Agroingeniería
- **Total length (m):** 25,283



### Description

Irrigation before the execution of the works was by flooding in 45% of the irrigable surface and was organized from five intakes on the TTS Canal. The water poured into channels that, varying in section, constituted a network of ditches that carried the water to each of the plots. The other 55% have high-frequency irrigation systems installed, starting at a private reservoir, where they collected the water corresponding to each irrigation shift.

The purpose of the work is to **optimize the use of currently available resources, increase the seasonal regulation capacity, optimize the water and energy supply infrastructures, in order to reduce drive costs, ensure the supply of water on the plot and automate and computerize hydraulic infrastructures**, facilitating consumption control and administrative management of water.

For the calculation of water needs, an adult plantation of lemon trees is considered representative of the irrigable area, formed at 60/40 by the Verna and Fino varieties. The probable diameter of the bulb, given the texture of the terrain, has been estimated at 1.37 m, which means a wetted area per emitter of 1.47 m<sup>2</sup>. With an arrangement of 8 emitters of 4 l/h per tree, considering a planting frame of 5.5x5.5, a percentage of wet soil of 35% is obtained. In this way, an irrigation module of 1,057 l/m<sup>2</sup>h was deduced and thus it follows that it is convenient to do 3 daily irrigation shifts for each Zone of each Sector, and if the JER is 18 hours, there will be 6 hours per shift.

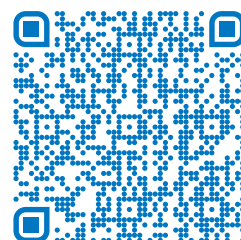
In total there are 8,802,300 m<sup>3</sup>/year. This figure is made up of the endowment of the CCRR of the Tajo-Segura Transfer, the runoff collected in the Rambla Dam, those corresponding to the concession of reclaimed wastewater from the Librilla WWTP and groundwater from some wells.

For each irrigation sector, there has been a regulating reservoir that will be supplied independently from the Canal through the corresponding intake. In this sector the reservoir is the subject of another project and has been carried out directly by the Ministry of Water, Agriculture, Livestock and Fisheries of the Region of Murcia.

Hydraulic networks:

- **Branched distribution network of the Impulsion Zone** of 8,190.2 m in length and diameters between 400 mm and 90 mm, in PVC-O series 500 and HDPE (PE-100).
- **Distribution network of the Gravity Zone** of 21,778.35 m in length and diameters from 800 mm to 90 mm, with the following materials: PVC-O series 500 and HDPE (PE-100).
- **Connections:** They are projected in high-density polyethylene (HDPE or PE100).
- **Collective and individual hydrants:** 41 will be installed in the impulsion zone and 98 in the gravity zone. There are a total of 371 in the impulsion zone and 868 in the gravity zone.
- **Tertiary pipes:** they will be in charge of carrying the water from each individual hydrant to each plot or farm. They are projected in HDPE with diameters between 32 mm and 250 mm with an approximate length of 179 km.
- **Filtering station.** The filtering station will be made up of 4 batteries of 32 units of 3 "self-cleaning ring filters with a 100 micron pitch, which must maintain the filtering surface of 64.64 m<sup>2</sup> and will include a washing water recovery box for its subsequent injection at the filtrate inlet, by means of an impulsion electric pump. The electrical supply for this filtering station will be done through an insulated roof photovoltaic solar plant, made up of 40 panels of 300 Wp and a power of 12 kWp.
- **Transfer pipe** between the regulation reservoir of the sector of the present project and that of sector 1, 1,924.50 m long, made up of PVC-O pipes with a diameter of 400 mm PN12.5.
- **Automation:** remote units will be used to control hydrants and valves, which will communicate with concentrator units (one in the impulsion zone and the other in the gravity zone) via radio.

Discover more  
information about this  
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code:



## Installation of ecoFITTOM® fittings in Huesca, Spain

- **Application:** Irrigation
- **Year:** 2018
- **Country:** Spain
- **Region:** Zaidín, Huesca
- **Constructor:** TRAGSA
- **Promoter:** Comunidad de Regantes de Zaidín
- **Total length (m):** 4,910

DN140  
PN16 bar

DN160  
PN16 bar

DN200  
PN16 bar

DN250  
PN16 bar

DN315  
PN16 bar

DN400  
PN16 bar

DN500  
PN16 bar

DN630  
PN16 bar



### Description

In the implementation of the irrigation modernization project of fruit trees of the Irrigation Community of Zaidín, Huesca, several **ecoFITTOM® Oriented PVC fittings** have been used due to the **ease of installation** they present and to their **lightness**, characteristics that contribute significantly to reduce the installation costs that would be higher with the use of other types of fittings.

Within the 711 hectares of sector 9, which is under modernization, **4 ecoFITTOM® 22.5° DN200 mm bends** and a **one 45° bend** of the same nominal diameter together with **TOM® pipes** of the same material have been installed, a fact that contributes to the creation of a network that presents the same properties in all the elements that form it, both in the pipes as well as in the fittings.

## Ringstead Resilience and Sustainability water project in Norfolk, United Kingdom

- **Application:** Water reusability
- **Year:** 2018
- **Country:** United Kingdom
- **Region:** Norfolk
- **Total length (m):** 7,000

DN315



### Description

The installed pipe is one of the most important elements of the network, therefore, the importance in the choice of the material to be used. At this point it is very important to take into account the quality of the material, its durability and of course, its contribution to the environment. The environmental impact of a pipe system depends on its composition and on the application to which it is intended, being the type of raw material used, the production process, the finish of the product, and its useful life the main factors that determine the efficiency and sustainability throughout its life cycle. The European Commission has compiled all methods at European level and launched the Common Recommendation for Environmental Footprint Calculation 179/2013/EC in 2013, in order to establish the principles for communicating the environmental performance of a product or organization, which should include: transparency, reliability, integrity, comparability and clarity. Environmental Footprint Study of an Oriented PVC Pipe System (PVC-O) according to the European Commission's recommendation for calculation in order to show its environmental performance and its best contribution to the sustainable development of the planet.

**Mick Renshaw, manager of the project, and his team have been using MOPVC (Molecularly Oriented PVC) on their Ringstead Resilience and Sustainability water project in Norfolk, United Kingdom.**

MoPVC comes in six metre sticks and despite having a thinner wall than traditional PE; it is very strong but also light weight. This means that often MoPVC does not require mechanical lifting, so our workers can move it manually up to DN315 mm, without the need to factor in expensive equipment.

A great feature of this product is its jointing method, which differs to previous versions. MoPVC has a spigot and socket with a 'locked in seal' meaning it is practically impossible to dislodge it. There is also an insertion depth mark on the pipe so you can be sure it is pushed fully 'home'.

Because of MoPVC's thinner wall in comparison to PE, in many cases a smaller pipe can be used because it still has a larger hydraulic capacity than that of a larger size of PE. This can render considerable savings.

Mick Renshaw, Construction Manager said:

**"This product allows quicker installation due to its easier-handling because it can be installed as you dig. On our water infrastructure project in Norfolk, 315mm MoPVC has been used along a seven km pipeline, which would have otherwise taken weeks to set up because of welding and other factors".**

**"What makes this product even better, is that while PE pipes are sometimes cheaper, the time-saving benefits of using this material equate to approximately £50k on the scheme".**

**"We haven't used any generators or butt welding equipment or tents. This is the first time we have used this material in a cross-country pipeline and it's very simple to install. The programme is currently ahead of schedule and due to finish in April 2019."**



The biggest range of diameters and pressures in the world



Thousands of kilometers of PVC-O pipes manufactured with the Molecor technology



Entity committed to innovation and development

The preservation of the scarce natural water resources available requires, among other actions, the avoidance of losses of the piped water, and the optimization of the hydraulic networks is necessary. Both their modernization and the choice of the material to be used in such pipelines are key factors in ensuring these challenges. Molecular Oriented pipes, are increasingly used in pressure water pipeline works, being the current solution of greater efficiency in the management of the hydraulic resources that demand the modern infrastructures and those that the best environmental performance present.

**Acknowledgments: project information provided by R2M Ltd**

## Network for irrigation project in Switzerland

- **Application:** Irrigation
- **Year:** 2018
- **Country:** Switzerland
- **Region:** Fully
- **Constructor:** Bovey Machines
- **Total length (m):** 3,150

DN140  
PN16 bar

DN400  
PN16 bar



### Description

Pipe network for sprinkler irrigation for fruit trees. The ecoFIT TOM<sup>®</sup> Oriented PVC fittings were selected for this project due to their excellent physico-mechanical characteristics, their ease of installation and the continuity they form with the TOM<sup>®</sup> pipes of the same material.

For the development of this project 20 units of **DN400 mm 45° bend** and **4 sliding couplers** of the same diameter have been installed.

## Sanitation and potable water program for the Chaco and intermediate cities of the eastern region of Paraguay (phase II)

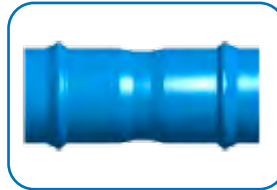
- **Application:** Potable water supply
- **Year:** 2018
- **Country:** Paraguay
- **Region:** El Chaco
- **Constructor:** Chaco Consortium
- **Promoter:** MOPC (Ministry of Public Works and Communications)
- **Engineering:** Talavera y Ortellado & Rovella Carranza
- **Total length (m):** 172,000

DN250  
PN16 bar

DN315  
PN16 bar

DN355  
PN16 bar

DN400  
PN16 bar



### Description

The second phase of the Aqueduct Project for the Central Chaco, has been executed by the Chaco Consortium, composed of the construction companies Talavera and Ortellado & Rovella Carranza. The supply has been quickly and efficiently made by **Molecor-Titan** and allows drinking water to reach around 70,000 people living in the cities of Philadelphia, Neuland and Loma Plata, among others, as well as 86 indigenous villages in the Paraguayan Chaco thus contributing to strengthen the drinking water and sanitation sector in the region.

The main objective of this program is to contribute to the improvement of the sanitary conditions of the indigenous populations of the Chaco and of the intermediate cities of the Eastern Region of Paraguay by extending the coverage of the drinking water and sanitary sewer systems in areas lacking the service or in which it is deficient and so, ensure its sustainability.





The most efficient solution for the execution of this project has been **TOM® pipes and ecoFIT TOM® fittings** manufactured with the Molecor technology. These pipes and fittings have a series of advantages compared to other materials that make them the ideal solution thanks to their operating efficiency and low maintenance costs.

They present a higher installation performance in meters/hour compared to other solutions due to their lightness and ductility, their ease of connection and their great impact resistance, a characteristic acquired in the molecular orientation process by which they are manufactured. Their high physical-mechanical and chemical properties ensure the reliability and environmental protection, offering a better behavior of respect for the environment contributing to the creation of high quality water conduction systems.



In total, more than **172 km of TOM® PVC-O pipes and more than 200 ecoFIT TOM® fittings** have been installed, including **45° bends, 22.5° bends, couplers and reducers of all diameters** manufactured by Molecor.



## Reconstruction of the Severomorsk water supply network, Russia

- **Application:** Potable water supply
- **Year:** 2018
- **Country:** Russia
- **Region:** Severomorsk, Murmansk Region
- **Promoter:** Municipal Severomorsk vodokanal
- **Total length (m):** 2,885.75

DN500  
PN16 bar



### Description

In August 2018 in the Murmansk region, in the city of Severomorsk, the reconstruction of the cast iron water supply network was launched. This material is replaced by pipes of a new material: Class 500 PVC-O.

The purpose of the project: being able to supply the city with high quality drinking water in a very short period of time. The old pipeline caused many complaints by the population of the city, now they are being replaced by the new ones of **Class 500 DN500 mm PN16 bar PVC-O TOM® pipes**.

Thanks to the smooth surface of the PVC-O 500 pipes, the formations in the tube walls are impossible, which provides an extremely high quality to the water that is transported. The hydraulic capacity of the PVC-O allows to reduce expenses in the pumping and increases the energy efficiency of the section. The total section of the new pipeline is 2,800 m.

The assembly team highlights the ease and speed of assembly of the PVC-O 500 pipe. The dismantling of the old network requires much more time than what is needed to assemble the new system.

The solution offered satisfies the following purposes: guarantee water quality, increase of the energy efficiency in the section, a considerable saving in the assembly is achieved offering, at the same time, a long term saving since the useful life of the Class 500 PVC-O pipes exceeds 50 years.

## Fire extinguishing network in France

- **Application:** Fire extinguishing network
- **Year:** 2017
- **Country:** France
- **Region:** Avignon
- **Constructor:** Rossi
- **Promoter:** Sotreco
- **Total length (m):** 300

DN200  
PN16 bar



### Description

This project was intended to supply water to a biomass plant with high fire extinguishing requirements due to the great fire risks that there are in this type of industries.

The installation was tested at 12 bar while the working pressure of the network is 7 bar.

In this project four units of **ecoFIT TOM® DN200 mm 45° bend** were installed together with **DN200 mm TOM® pipes**.



## Second phase of the impulse and reservoir project for the irrigation of 838.4 ha in the sites of La Sarda and El Terrero in the T.M. of Pedrola, Zaragoza, Spain

- **Application:** Irrigation
- **Year:** 2017
- **Country:** Spain
- **Region:** Pedrola, Zaragoza
- **Constructor:** UTE Riegos Pedrola (Hermanos Caudevilla S.L. - Tecririego S.L.)
- **Promoter:** Riegos Avisá - Ansó A.I.E.
- **Engineering:** Agrartis
- **Total length (m):** 3,040

DN800  
PN16 bar

DN800  
PN20 bar



### Description

In April 2014, the SAT Ansó presented a Prior Consultation Document in the Aragonese Institute of Environmental Management (INAGA) with the aim of initiating the procedures for the transformation into irrigated land 244 hectares in La Sarda area of the municipal district of Pedrola (Zaragoza). After the efforts made by SAT Ansó with the owners of the area, the company Agrícolas Villahermosa S.A. (AVISA) joined the project. With the purchase by SAT Ansó of new plots and the area contributed by AVISA, the perimeter to be transformed reached 853.22 hectares when the preliminary draft about the Environmental Impact study was drawn up.

The purpose of this project is to design and assess the common actions required to transform into irrigated land the 838.4 hectares in the sites of La Sarda and El Terrero. The project report includes works that are necessary in order to capture and impulse water from the Imperial Canal to a regulation reservoir that will be built in the area of La Sarda, on the edge of the two farms:

- Pumping station
- Impulsion
- Reservoir of 80,000 m<sup>3</sup>
- Electrification. Low Voltage
- Control and automation

Due to the importance of the affected services in the route of the impulsion pipeline, its layout is carefully analyzed. The length of the impulsion pipeline would be 3,034 meters, from the catchment to the reservoir, and the layout is determined by the crossing points of the existing roads. The choice of the PVC-O material is due, among other reasons, to its resistance to corrosion, its ease of assembly and to the fact of being a more economical pipe. The most suitable diameter is calculated and the investment and energy costs are taken into account, being the diameter 800 mm designated for this action.

The different offers of the several types of pipes (cast iron, helical steel, Oriented PVC, reinforced concrete) are analyzed and the option with the best quality/price ratio is chosen. The most economical diameter is considered, bearing in mind the energy cost and the cost of the investment for three diameters, the 800 mm diameter resulting in the lowest overall cost.

The installed pipe is one of the most important elements of the network, therefore, the importance in the choice of the material to be projected.



Discover the full case study of this project with this code:



## Irrigation Transformation Project of Sector XXII of the Payuelos Sub-zone – Cea Area of the Irrigable Zone of Riaño (León, Spain)

- **Application:** Irrigation
- **Year:** 2017
- **Country:** Spain
- **Region:** León and Valladolid
- **Promoter:** UTE-Payuelos Sector XXII (SACYR - EUROFOR)
- **Total length (m):** 66,127

DN140  
PN16 bar

DN160  
PN16 bar

DN200  
PN16 bar

DN250  
PN16 bar

DN315  
PN16 bar

DN400  
PN16 bar

DN450  
PN16 bar

DN500  
PN16 bar

DN630  
PN16 bar



### Description

The project's purpose is the irrigated transformation of the Payuelos sub-zone (Sector XXII) - Cea Area - of the Irrigable Area of Riaño (León, Spain).

A series of actions are considered for the different sectors in which the Payuelos sub-area has been divided, among which is Sector XXII, which includes those described in the current project. This sector has a total area of 6,679 ha, of which 3,070.34 ha are irrigated, belonging to 563 owners and distributed in 712 plots.

The network was modelled using computer programmes, thus optimising the diameters needed to meet the flow and pressure demand requirements at the supply points, as well as the cost of investment and exploitation of the same, the Oriented PVC material being allocated for this activity.

The range of diameters used in the irrigation network's pipes were: Orientated PVC pipes (PVC-O) for diameters equal to or smaller than 630 mm, with a 66,127 m length.

DN	PN	L (m)
140		4.707
160		1.417
200		14.382
250		13.667
315	16	12.442
400		8.622
450		2.458
500		5.284
630		3.148



All the special parts (changes of direction, bypasses, air and hydrant outlets) of the network are steel with threaded or sharpened outlets to join them to the PVC-O with an elastic joint.

The bends, bypasses, stop valves and all those parts subjected to the thrusts produced by the water's dynamic and static pressure were subjected to forces whose resultant cannot be absorbed by the supply.

The anchoring consists of a concrete cube whose weight and supporting surface guarantee its stability against sliding. The adherence to the theoretical plane formed by the trench's horizontal depth in which it rests was considered for its calculation, as well as the vertical support surface in one of the trench's parameters, precisely the one which affects the supply's ensuing exterior forces.

The irrigation network consists of a total of 219 hydrants along with auxiliary and valve parts (butterfly valves and shut-off gate valves for sectoring, gate valves for drainage, air release valves for air outlets, etc.).

Discover the full case study of this project with this code:



## Renewal of the water supply network for the community of irrigators of Moncofa, Castellon, Spain

- **Application:** Irrigation
- **Year:** 2017
- **Country:** Spain
- **Region:** Castellón
- **Constructor:** Elecnor
- **Promoter:** Consejería de Agricultura
- **Engineering:** Salvador Illueca
- **Total length (m):** 2,653

DN630  
PN16 bar



### Description

The Irrigation Cooperative of Moncofa asked the Generalitat Valenciana for the Proposal for the Rationalization of water for irrigation. The Resolution of June 13, 2016, approves the works for the modernization of irrigation systems proposed by the irrigation communities, and other irrigation entities, in relation to the promotion of the rational use of water in hydraulic and irrigation uses.

The actions defined in the project are located in the Municipality of Moncofa, in the region of the Plana Baja, province of Castellón. The Cooperative of Moncofa covers an area of **717 hectares** dedicated to the grow of citrus fruits, covering the entire municipality of Moncofa.

The **water supply for the irrigation** of the entire municipality of Moncofa is carried out through water wells, which have been transformed or abandoned over the years due to salinization, the increase of pumping heights or the deterioration of the facilities. Currently the cooperative is supplied by two water wells, Barranc de Betxi, located in the municipality of Alquerías del Niño Perdido, and Pedrera, in the municipality of Burriana, with submerged pumps and a flow of 678 m<sup>3</sup>/h.





Discover the full case study of this project with this code:



The deterioration of the water supply installation to the Irrigation Cooperative of Moncofa suggests the replacement of the section from the junction of the AP-7 to the upper reservoir. The new facility will serve to guarantee the water supply to the Irrigation Cooperative.

The objective of the project was to define and evaluate the works considered necessary, among which was the replacement of the existing network with the installation of a pipe line from the defined point to the connection pipe, **630 mm of diameter PN12.5 Class 500 PVC-O pipe**.

The selected solution satisfies one of the main pursued objectives with the modernization of irrigation systems: the reduction of water losses in the transport systems while reducing the energy costs of the process, thus increasing energy efficiency.

The project replaces **2,653 meters** of the old fiber-cement/concrete pipe of DN700 millimeters by a **630 millimeters in diameter PVC-O pipe**.



## Construction project for the renewal of the Sobrón water supply system: A4326 road crossing - Bergüenda Derivation, Álava, Spain

- **Application:** Potable water supply
- **Year:** 2017
- **Country:** Spain
- **Region:** Sobrón, Álava
- **Constructor:** Construcciones Aguado Cabezudo
- **Promoter:** Diputación General de Álava
- **Engineering:** Saitec
- **Total length (m):** 4,736

DN110  
PN16 bar

DN500  
PN16 bar



### Description

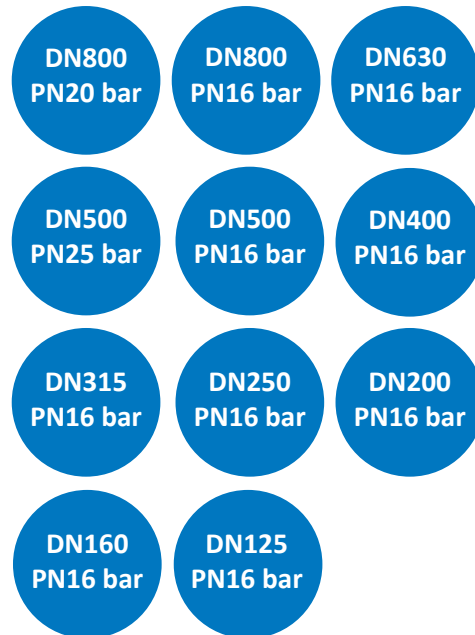
The first phase of renewal of the water supply system of Sobrón will allow the future improvement of the supply of drinking water to Sobrón, Bergüenda, Puentelarrá and Fontecha using the water coming from the aquifer. This water resource, property of the Diputación Foral de Álava, was found in the decade of the 60s at a depth of 600 meters.

This first phase of the works has consisted in the renewal of a section of 2.3 kilometers, which runs parallel to the A-2122 road, from the intersection with the A-4326 road to the deviation to the town of Bergüenda.

The water supply network consists of **more than 4,700 m of DN110 and DN500 mm TOM® Oriented PVC pipe in PN16 bar.**

## Irrigation of the estate of La Corona and Acampo Orús-TM Barboles, Zaragoza, Spain

- **Application:** Irrigation
- **Year:** 2017
- **Country:** Spain
- **Region:** Zaragoza
- **Constructor:** Riego y Gestión
- **Promoter:** S.A.T. Ansó
- **Engineering:** AGRARTIS
- **Total length (m):** 16,900



### Description

Project to modernize the irrigation of the Estate of la Corona and irrigation of the Acampo Orus Estate, in the municipal terms of Barboles and Zaragoza (Phases 1, 2 and 3).

The farms of La Corona and Acampo Orús, in the municipal terms of Bárrboles, Bardallur and Zaragoza (Zaragoza). The actions proposed in the preliminary draft contemplate the modernization of the irrigation of the estate of La Corona and the irrigation of the Acampo Orús estate, by means of the realization of a new catchment of waters in the Imperial Channel of Aragon and the subsequent installation of a primary telescopic irrigation under pressure network to replace the current catchment from the Jalón river.

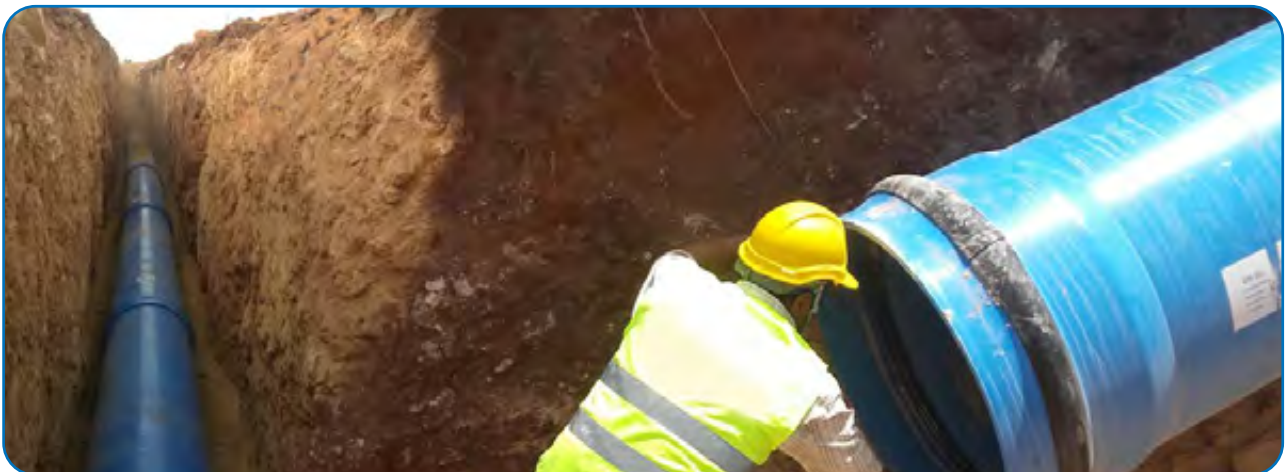
## Installation of a pipeline between the Azid Derai reservoir and the supply network of the city of Safi, Morocco

- **Application:** Potable water supply
- **Year:** 2017
- **Country:** Morocco
- **Region:** Safi
- **Constructor:** Sarah
- **Promoter:** Radees (Regie Autonome Intercommunal de Distribution et D'électricité de Safi)
- **Total length (m):** 2,341

DN110  
PN16 bar

DN630  
PN16 bar

DN800  
PN16 bar



### Description

Installation of the water distribution network between the Azid Derai deposit and the supply network (Section: Tronçon: Lotissement Al Morjane - Assafa subdivision) of the city of Safi.

The distribution network consists of more than 2,300 m of **DN110, DN630, and DN800 mm TOM® Oriented PVC pipes in PN16 bar.**

## Sector Arroyo-Calamonte of the Irrigation Zone of the Channel of Lobón, Badajoz, Spain

- **Application:** Irrigation
- **Year:** 2017
- **Country:** Spain
- **Region:** Lobón, Badajoz
- **Constructor:** Tesma, S.A.
- **Promoter:** Confederación Hidrográfica del Guadiana, Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente.
- **Total length (m):** 220

DN800  
PN16 bar



### Description

Project for the replacement of DN700 mm reinforced concrete pipes without sheet chamber by **DN800 mm TOM® Oriented PVC pipes** in the Sector Arroyo-Calamonte of the irrigation zone of the Channel of Lobón (Mérida). The network covers a watering area of 3,000 ha.



## Pumping line from Palomares desalination to the reservoir of Abellán CCRR Cuevas de la Almanzora, Almería, Spain

- **Application:** Irrigation
- **Year:** 2016
- **Country:** Spain
- **Region:** Almería
- **Constructor:** Talleres y Grúas González S.L.
- **Promoter:** C.R del Bajo Almanzora
- **Engineering:** Technical support: Zenit Ing.
- **Total length (m):** 17,000

DN500  
PN16 bar

DN500  
PN20 bar

DN500  
PN25 bar



### Description

Investment actions focused on rehabilitating the water transport network from the desalination plant that recovers aquifers from the irrigation itself. The modernization of this infrastructure, discards other incompatible materials with an acid Ph in some supplies, necessary to preserve and dispose of water resources for irrigation in the Almanzora basin located in Almería.

The distribution network from the Palomares desalination plant to the Abellán reservoir is made up of over 16,000 mts of **TOM® Oriented PVC DN500 mm pipes in PN16, 20 and 25 bar.**

## Construction project to supply irrigation water with recycled water. Municipality of Ciempozuelos, Madrid, Spain

- **Application:** Water reusability
- **Year:** 2016
- **Year:** Spain
- **Region:** Ciempozuelos, Madrid
- **Constructor:** Acsa-Sorigue
- **Promoter:** Canal de Isabel II Gestión
- **Total length (m):** 12,801

DN110  
PN16 bar

DN160  
PN16 bar

DN200  
PN16 bar

DN250  
PN16 bar

DN315  
PN16 bar



### Description

Construction of the entire recycled water distribution system to the public green areas of the municipality of Ciempozuelos from the tertiary treatment of the Soto Gutiérrez wastewater treatment plant and extracted from a storage depot in Ciempozuelos.

The distribution network consists of 12,801 m of **TOM® PN16 bar Oriented PVC pipes** and is divided into five branches (DN110, DN160, DN200, DN250 and DN315 mm) extending through the urban center of Ciempozuelos.

## Impulsion pumping system in La Capuera - Maldonado, Uruguay

- **Application:** Water reusability
- **Year:** 2016
- **Country:** Uruguay
- **Region:** La Capuera, Maldonado
- **Constructor:** Techint
- **Promoter:** OSE (Obras Sanitarias del Estado)
- **Engineering:** OSE (Obras Sanitarias del Estado)
- **Total length (m):** 17,884

DN315  
PN12,5 bar

DN355  
PN12,5 bar

DN450  
PN12,5 bar



### Description

Construction of the first phase of the sewage net in La Capuera. The Municipality of Maldonado is in charge of running secondary works in this area and the OSE - State Sanitary Works is in charge of the external system that will connect, through pipes and three pumping stations, the internal network of La Capuera to the sewage system of Maldonado-Punta del Este.

In this project more than 17,800 m of **TOM® PVC-O pipes of 315, 355 and 450 mm diameter and PN 12.5 bar** were installed.



## Implementation of the Lift Irrigation Scheme at Madabhavi, Athani, Karnataka, India

- **Application:** Irrigation
- **Year:** 2015
- **Country:** India
- **Region:** Athani, Karnataka
- **Constructor:** Amson Sales Corporation, Sangli
- **Promoter:** Shrimant Tatya Patil Niravari Sangh
- **Total length (m):** 4,230

DN315  
PN12,5 bar



### Description

This is the first installation project in India, carried out by Floking Pipes Ltd.

The Promoter (Association of 57 farmers) is engaged to do hi-tech cultivation of agricultural crops of improved variety like Grapes & Sugarcane covering 101 hectares of total land. The water need of the farmers is estimated at 0.63 LPS per hectare.

Water was lifted from river Krishna with the said **315 mm 12.5 bar PVC-O pipe** line installation.

The installation was carried successfully by the Supplier & Contractor M/s. Amson Sales Corporation, Sangli, Maharashtra India

## Zarzalejo regulating reservoir and connecting pipe. Municipality of Zarzalejo, Madrid, Spain

- **Application:** Potable water supply
- **Year:** 2015
- **Country:** Spain
- **Region:** Zarzalejo, Madrid
- **Constructor:** Dragados, S.A.
- **Promoter:** Canal de Isabel II Gestión
- **Total length (m):** 2,095

DN200  
PN25 bar

DN250  
PN16 bar



### Description

Improvement of supply to the municipality of Zarzalejo by building a new 2,000 m<sup>3</sup> capacity reservoir in the Zarzalejo urban center to increase the supply guarantee and the connecting pipe between the two Zarzalejo reservoirs.

Given the strong environmental conditions presented by the General Directorate of Environmental Assessment, it is taken into account the installation of a less heavy and flexible pipe, which made it possible to respect the trees and which transport could be done with much lighter machinery, capable of assuming the poor trace accessibility.

Tank filling line - 1,847 m **DN200 mm TOM<sup>®</sup> PVC-O pipe.**

Driving that connects the new tank with the distribution network to the urban core of Zarzalejo station - 248 m **DN250 mm TOM<sup>®</sup> PVC-O pipe.**

## Project to improve the irrigation infrastructure in the Municipality Huercal Overa Sur, Almería, Spain

- **Application:** Potable water supply
- **Year:** 2015
- **Country:** Spain
- **Region:** Huercal Overa, Almería
- **Constructor:** Talleres y Grúas González S.L.
- **Promoter:** Comunidad de Regantes de Bajo Almanzora
- **Engineering:** Zenit
- **Total length (m):** 3,165

DN630  
PN16 bar



### Description

This was a project to improve the irrigation infrastructure of the Bajo Almanzora Irrigators Community consisting in the replacement of three lines by a larger one of **630 mm diameter in PVC-O** material, allowing in this way the transport of water for supply and for the irrigation of the region.

The Bajo Almanzora region has an area of 1,148 km<sup>2</sup>. The Municipality of Huercal Overa is the one with the largest surface area, 318 km<sup>2</sup>, with a population of 14,672 inhabitants.

This conduction will have the necessary capacity to transport the water required by both the Drinking Water Purification System of Bajo Almanzora and the irrigation communities grouped in the Central Board of Users of Valled del Almanzora.

## Compensating irrigation work in Peramola Basella, Lléida, Spain

- **Application:** Irrigation
- **Year:** 2014
- **Country:** Spain
- **Region:** Peramola - Basella, Lleida, España
- **Constructor:** UTE Comsa y Grupmas Constructores
- **Promoter:** Infraestructures de Catalunya
- **Engineering:** Cingral
- **Total length (m):** 10,978

DN400  
PN12,5 bar

DN400  
PN16 bar

DN500  
PN12,5 bar

DN500  
PN16 bar



### Description

The compensating irrigation for the municipalities in the area which will provide irrigation land with plots of fertile ground that led to the construction of resevoirs so that people could maintain the agro-livestock activity of the municipalities.

The surface of the new irrigation slightly exceeds 1,330 hectares. The distribution network waters a total of 554.94 hectares, of which 481.01 belong to Peramola and 73.93 to Basella. The total number of farms beneficiated is 103.

## Modernization of the Irrigation zone with waters regulated by the argos reservoir of Calasparra, Murcia, Spain

- **Application:** Irrigation
- **Year:** 2014
- **Country:** Spain
- **Region:** Calasparra, Murcia
- **Constructor:** Empresa de Transformación Agraria - TRAGSA
- **Promoter:** Sociedad Estatal de Infraestructuras Agrarias, S.A. (SEIASA)
- **Total length (m):** 9,660

DN400  
PN12,5 bar

DN500  
PN16 bar

DN630  
PN16 bar



### Description

The irrigated area of the Irrigation Community of the waters regulated by the Argos of Calasparra reservoir is located in the municipalities of Calasparra and Cehegín, located northwest of the province of Murcia, at the confluence point of the Argos and Segura rivers.

The main objective of this modernization is to change the traditional system, which distributed water through channels and ditches, to drip irrigation by using pipes manufactured for the conveyance of water under pressure.

With this action primary, secondary and tertiary conductions for the distribution of water from the regulating points to the whole irrigable zone will be installed. Other actions to be developed within the framework of this project will be the installation of multi-user hydrants, filtration stations and the automation of the entire irrigation system.



This project affects a maximum area of 1,002 hectares and a maximum of 1,400 irrigators.

This irrigation system will improve the production quality and the environment of the area, facilitating the management for the Irrigation Community and farmers.

In this project more than 9,660 m of **DN400, 500 and 630 mm TOM® PVC-O pipes** at 12,5 and 16 bar pressure were installed.



## Irrigation Area in the province of Haouz, Morocco

- **Application:** Irrigation
- **Year:** 2014
- **Country:** Morocco
- **Region:** Haouz, Marrakech
- **Constructor:** Capep
- **Promoter:** Ormva du Haouz
- **Engineering:** Ormva
- **Total length (m):** 14,566

DN110  
PN12,5 bar

DN160  
PN12,5 bar

DN200  
PN12,5 bar

DN250  
PN12,5 bar

DN315  
PN12,5 bar

DN400  
PN12,5 bar

DN140  
PN16 bar

DN225  
PN16 bar



### Description

The performance of this important project for the modernization of irrigation systems financed by a World Bank loan to the government of Morocco, was driven by the administration of the Rural Engineering to improve the service of large-scale irrigation (under the Ministry of Agriculture) located in Rabat. The work was carried out by the Regional Office of Agricultural Development of Haouz (ORMVA: one of the nine regional irrigation organizations in Morocco).

In the construction of the irrigation network promoted by Ormva, more than 14,000 meters of **TOM® PVC-O pipes of 110-400 mm diameter at 12.5 and 16 bar** pressure were installed in the Province of Haouz (Marrakech).

## Oliana resevoir connection, Lleida, Spain

- **Application:** Potable water supply
- **Year:** 2014
- **Country:** Spain
- **Region:** Oliana, Lleida
- **Constructor:** Equipamientos Blaslo S.L.
- **Promoter:** Confederación Hidrográfica del Ebro
- **Engineering:** Cingral
- **Total length (m):** 1,918

DN250  
PN16 bar

DN500  
PN16 bar



### Description

This action consists in the continuation of the main pipe already installed from the dam of Rialb in Oliana (Lleida), to the crossing of the C-14 road with the Segre river, along with the construction of a pumping station and the installation of a impulsion pipe in that pumping.

This allowed to launch the first compensating irrigations by giving continuity to the works executed in the Midspan Oliana Dam and connect the secondary or distribution network.

The works consist in the execution of the adduction necessary conductions for the proper operation of the line up for the branch of the irrigation in the municipality of Oliana. Specifically, an adduction pipe is installed with a length of **1,025 meters** in a diameter of **500 mm** in **PVC-O**, and a pumping station from which there will be a pipe connecting with the distribution valve.



## Main line replacing at Pachuca, Hidalgo. Tuzobús project, Mexico

- **Application:** Potable water supply
- **Year:** 2014
- **Country:** Mexico
- **Region:** Pachuca, Hidalgo
- **Constructor:** Conhsiba Mexicana S. de R.L. de C.V.
- **Promoter:** Comisión de Agua y Alcantarillado de Sistemas Intermunicipales
- **Total length (m):** 4,940

DN110  
PN16 bar

DN200  
PN16 bar

DN250  
PN16 bar

DN315  
PN16 bar

DN200  
PN25 bar



### Description

Due to the variation of pressure in the north of the Journalists colony of the city of Pachuca (Hidalgo), the Commission of Intermunicipal Water and Sewerage Systems (CMSIM), performed a series of maneuvers to detect the origin of pressure deficiency in the streets 15 and 16 September, 18 of July, part of the Madero avenue and José Ibarra Olivares street. Hence we can find the origin of the construction work of storm drains and lanes of Tuzobús located in the Juárez and Revolution avenues.

So the CMSIM conducted the review of all branches to locate not visible leaks, detecting the need of valves replacement which presented difficulties when operating, in addition to the installation of 24 gauges in all streets and major intersections; performing acoustic monitoring of distribution networks, identifying high levels of noise that indicated no visible leaks.

For the rehabilitation of the water supply network there were installed TOM® PVC-O pipes of DN110 mm to DN315 mm at pressures of 16 and 25 bar.

## Treated water line distribution for agricultural irrigation in Ejido Santa Rosa Plan de Ayala, León, Mexico

- **Application:** Water reusability
- **Year:** 2013
- **Country:** Mexico
- **Region:** León, Guanajuato
- **Constructor:** Conhsiba Mexicana S. de R.L. de C.V.
- **Promoter:** H. Ayuntamiento de León, Guanajuato. Sistema de Agua Potable y Alcantarillado de León
- **Total length (m):** 3,954

DN110  
PN16 bar

DN160  
PN16 bar

DN200  
PN16 bar

DN250  
PN16 bar

DN315  
PN16 bar



### Description

The construction of wastewater treatment plants for irrigation of parks and public spaces, is a project which places the city of León at the forefront of sustainable practices that aims to provide the population with a high quality of life. The expectation is training in the culture of water reuse while creating opportunities and encouraging green areas for the population.

The Water and Sewerage System of Leon (SAPAL), motivated by environmental responsibility and commitment to citizenship through a culture of water reuse, has developed various strategies around this issue. This organism has designed and built treatment plant that meets different objectives according to the needs that have arisen as a result of economic, social and cultural upswing that an innovative city like León has.

In this project more than 3,900 m of **TOM® PVC-O pipes of 110 mm to 315 mm diameter and PN 16 bar** were installed for the construction of a distribution line of treated water for agricultural irrigation.

## Drinking water station in Cameroon

- **Application:** Potable water supply
- **Year:** 2013
- **Country:** Cameroon
- **Constructor:** BTD Proyectos
- **Engineering:** Seta
- **Total length (m):** 27,807

DN110  
PN12,5 bar

DN160  
PN12,5 bar

DN90  
PN16 bar

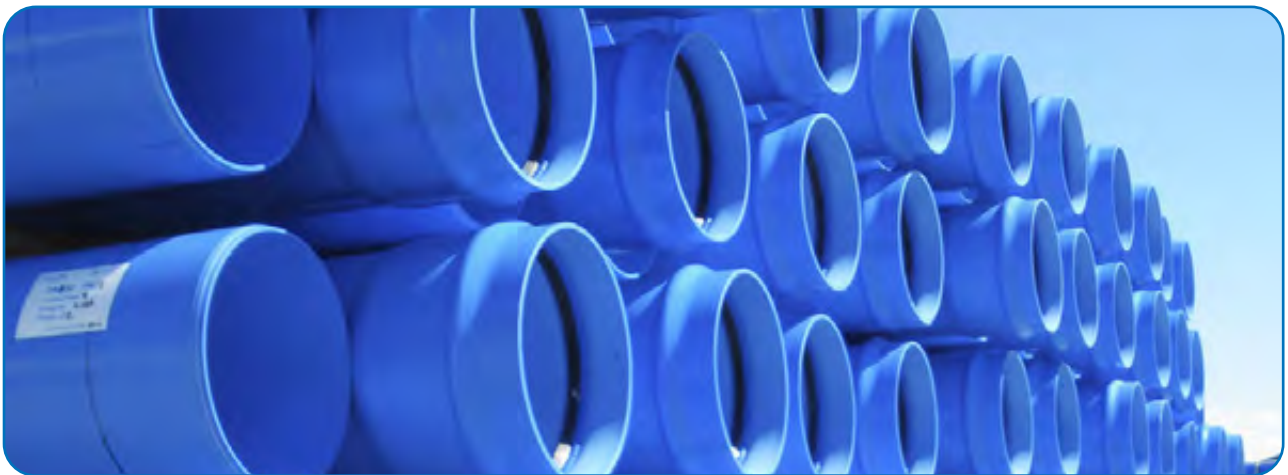
DN110  
PN16 bar

DN160  
PN16 bar

DN250  
PN16 bar

DN315  
PN16 bar

DN400  
PN16 bar



### Description

The project of water supply and sanitation (AEPA) in semi-urban areas supplies 19 municipalities in six provinces in Cameroon, including the provinces of Central America, the Far North, Littoral, West, South and South-West. These 19 municipalities are supplied from 16 water supplying systems managed by CAMWATER. This project meets the needs of drinking water and adequate sanitation of people in these communes.

In this supplying project promoted by Cameroon Water Company more than 27,000 meters of **TOM® PVC-O pipes DN90 mm to DN400 mm** were installed at **12.5 and 16 bar** pressure.

## 6<sup>th</sup> and 1<sup>st</sup> Pumping lines - Montevideo, Uruguay

- **Application:** Potable water supply
- **Year:** 2013
- **Country:** Uruguay
- **Region:** Montevideo
- **Constructor:** Teyma - Abengoa
- **Promoter:** OSE (Obras Sanitarias del Estado)
- **Engineering:** OSE (Obras Sanitarias del Estado)
- **Total length (m):** 18,702

DN315  
PN12,5 bar

DN400  
PN12,5 bar

DN500  
PN12,5 bar

DN630  
PN12,5 bar

DN200  
PN16 bar

DN250  
PN16 bar

DN500  
PN16 bar



### Description

The supply of drinking water to the city of Montevideo, as well as to the major cities and towns in the Canelones Department (Canelones, Pando, Toledo, Suarez, Progress, Cerrillos, La Paz, Las Piedras, Ciudad de la Costa and Costa de Oro to Salina, Cap. Juan A. Artigas, etc.) is done from the Water Treatment Plant located in the town of Aguas Corrientes, near the city of Canelones and distant about 50 km from the city of Montevideo.

This drinking water system, called "Montevideo System" serves more than 1:700.000 inhabitants, i.e. more than half of the population of Uruguay.

The transport of water from the Water Treatment Plant to the cities that form the System was carried out by four large pipes and different materials, called "1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> pumping lines" in order according to its age, with diameters ranging from DN610 mm (1<sup>st</sup> Pumping Line) to DN1520 mm (4<sup>th</sup> Pumping Line).

In the 1<sup>st</sup> and 6<sup>th</sup> pumping lines TOM® PVC-O pipes DN200-630 mm at pressures of 12.5 and 16 bar have been supplied.

## Irrigation water supply with reused water in Coslada, Madrid, Spain

- **Application:** Water reusability
- **Year:** 2012
- **Country:** Spain
- **Region:** Coslada, Madrid
- **Constructor:** ALDESA Construcciones S.A
- **Promoter:** Canal de Isabel II
- **Total length (m):** 19,938

DN110  
PN16 bar

DN160  
PN16 bar

DN200  
PN16 bar

DN250  
PN16 bar

DN315  
PN16 bar

DN400  
PN16 bar



### Description

This project is included within the action carried out in the Madrid Depura Plan which aims to preserve the available water resources with the reuse of treated water to water with recycled water all the green areas of the city, wich exceed 232 hectares, to these must be added the 80 hectares of the Humedal Park. Keeping this surface is a daily consumption of 4,000 cubic meters of water.

- Adduction conduction between the pumping station at the output of the Casaquemada WWTP and the new reclaimed water tank with a capacity of 5,500 m<sup>3</sup>.
- Branched distribution network by gravity from the reclaimed water tank to 21 consumption points.
- Branched distribution network drive from the reclaimed water tank to 25 consumption points.

In the irrigation network project with reused water in the municipality of Coslada (Madrid) promoted by the Canal de Isabel II more than 19,900 meters of **TOM® PVC-O pipes DN110 mm to DN400 mm at PN16 bar** were installed.

Discover the full case study of this project with this code:



## Water treatment plant in Congo

- **Application:** Potable water supply
- **Year:** 2011
- **Country:** Congo
- **Region:** Pointe Noire, Brazzaville
- **Constructor:** Swiss Water Power
- **Promoter:** Gouvernement de la République du Congo  
Ministère de L'énergie et de L'hydraulique
- **Total length (m):** 15,289

DN250  
PN12,5 bar

DN110  
PN16 bar

DN160  
PN16 bar

DN200  
PN16 bar

DN250  
PN16 bar

DN315  
PN16 bar



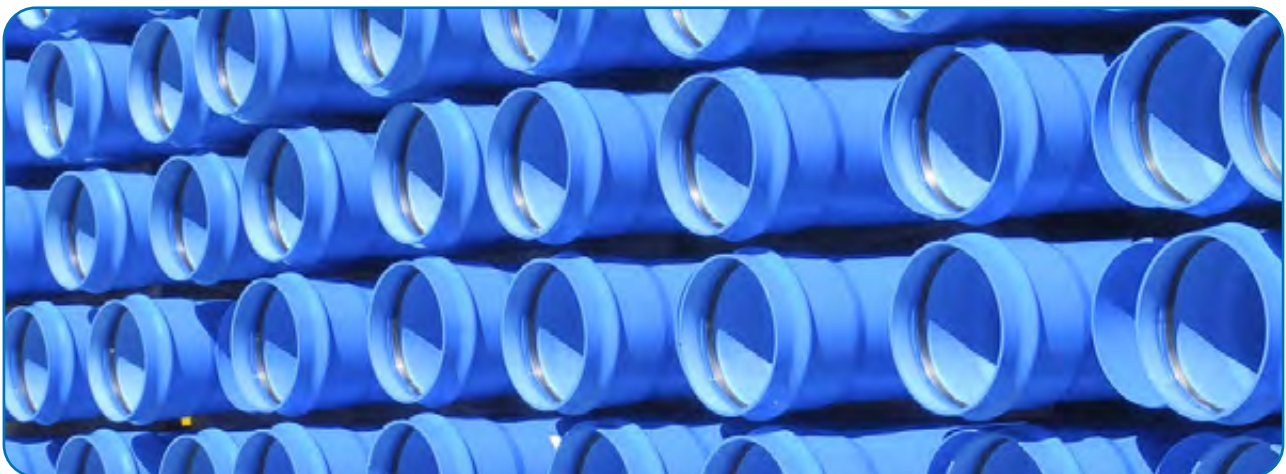
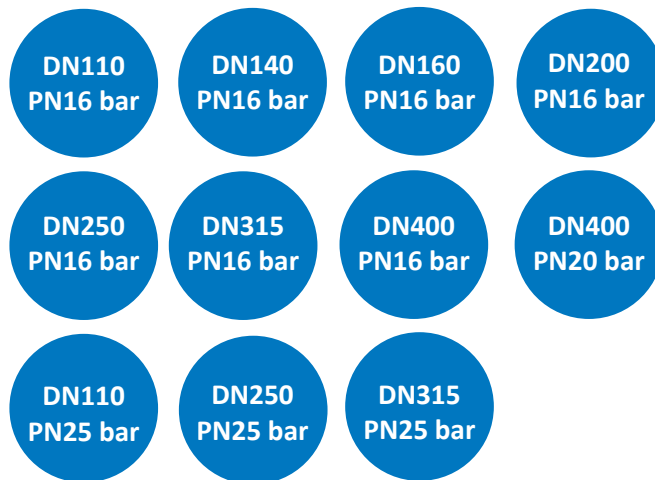
### Description

The sanitation project in the cities of Brazzaville and Pointe Noire intervenes in the two main cities of Congo for a total of approximately 48.7% of the population. Among the main results of the project at the end of the 48 months provided for its implementation are: 12 kms of sewage rainwater drainage system in Pointe Noire; and an institutional study of the consolidation strategy in the subsector.

Here more than 15,000 meters of TOM® PVC-O pipes, 110-315 mm diameter at 12.5 and 16 bar pressure have been projected.

## Implementation of the irrigation plan in the Irrigators Community of Montilla, Córdoba, Spain

- **Application:** Irrigation
- **Year:** 2011
- **Country:** Spain
- **Region:** Montilla, Córdoba
- **Constructor:** UTE Montilla
- **Promoter:** CR Montilla
- **Engineering:** Tecag S.L.
- **Total length (m):** 20,202



### Description

The implementation of the Irrigation Plan allows the irrigation of around 600 hectares of vineyards and olive land. This Plan consists of collecting water from the industrial water treatment and pumping it into a first raft from which it proceeds to the irrigation area of Jarata and pumping it again into a second raft from which the branches carry water to irrigators.

In this project more than 20,200 m of TOM® PVC-O pipes DN100 mm to DN315 mm at pressures of 16, 20 and 25 bar were installed.

## Supply and distribution AEP, France

- **Application:** Potable water supply
- **Year:** 2010
- **Country:** France
- **Region:** Thoire sur Dinan, Sarthe
- **Constructor:** Sner
- **Promoter:** Siaep de Bercé
- **Engineering:** Safège du Mans
- **Total length (m):** 2,370

DN110  
PN25 bar

DN160  
PN25 bar



### Description

In the city of Thoire sur Dinan, province of La Sarthe, there were installed around 2,300m of **TOM® PVC-O pipes DN110 mm and DN160 mm at PN25 bar** pressure for the creation of a water supply network in the same locality.



## ASA de la Bietre and ASA de la Bietre 3<sup>rd</sup> phase, France

- **Application:** Irrigation
- **Year:** 2010
- **Country:** France
- **Region:** Dijon, Burgundy
- **Constructor:** Sade and GEDELEC
- **Promoter:** ASA de la Bietre
- **Engineering:** Cabinet Merlin Dijon
- **Total length (m):** 70,679

DN140  
PN16 bar

DN160  
PN16 bar

DN200  
PN16 bar

DN250  
PN16 bar

DN315  
PN16 bar

DN400  
PN16 bar



### Description

Collective irrigation project involving 23 farms of "ASA of Biétre" (Association Syndicale Autorisée de la Biétre). This project is part of the closure of the sugar factory of Aiserey in the Southeast of Dijon, south of the A39 and A31 highways, of the Dijon-Bourgogne airport, and West of the l'Ouche river.

The project covers 1,800 hectares of irrigated land. The demand consists of collective organization of water supply of the new vegetable crops created as part of the agricultural transformation, following the closure of the sugar factory and the stop of beet growing. The water needs of farmers is estimated at 1,200m<sup>3</sup>/ha.

In this project more than 70,679 m of TOM<sup>®</sup> PVC-O pipes DN140 mm to DN315 mm at 16 bar pressure were installed.









# The most efficient solution for the conveyance of water under pressure



## Institutional support



## R+D and machine manufacturing center

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