



# RESINEX

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## THE MOORING MASTERS

Safety mooring for the small boat and the big ship

### GRAND HARBOUR MARINA

It is probably the largest specialized touristic port for big luxury yachts in the Mediterranean ([www.ghm.com.mt](http://www.ghm.com.mt)). In the centre of the Mediterranean inside the citadel of Malta, the largest most luxurious mooring point for big yachts is coming to life. Here, in October 2004,



Resinex supplied 26 mooring buoys which made the most of an innovative chain-through system to guarantee a safer and more stable mooring for the most luxurious yachts in the world. The Resinex PEM 30 type buoys (3-metre diameter and 2.8 metre height) guarantee a 13.600 kg net buoyancy with a proof load of 70 tons. The project for the entire system kept Resinex and other mooring accessory suppliers engaged for 24 months. The final result is one of a safer mooring in the most enchanting and historical setting night in the centre of the Mediterranean.



*Big buoys and yachts at La Valletta*

### Luxurious Versilia

Azimuth Benetti ([www.azimutyachts.net](http://www.azimutyachts.net)) opens a new port in Viareggio in Versilia (Tuscany, Italy). The king of the big "made in Italy" yachts has chosen Resinex mooring buoys for its new



Viareggio Port. Compact, strong and maintenance free, our Resinex PEM 21 (diameter 2100 mm) with a net buoyancy of 2600 kg guarantees an extremely high mooring stability. The floating structure is made from solid plastic material and the principal mooring points in stainless steel making it maintenance free.



### Safety in Sardinia

In a few months, from Spring 2004, the large big ships which cross from the Italian mainland to Olbia will be safer. They know that on arriving in Sardinia they will find



a convenient and strong mooring point. Resinex has supplied directly to the Olbia Port Authority, through Stemasub, four Big Pem 30 mooring buoys destined to be positioned at the Industrial Port and at the Isola Bianca of Olbia for the mooring of big ships. The buoys, which have been tested for a mooring of 75 tons, have a diameter of 3 meters and a buoyancy of 7700 kg.

### Mooring for the Italian Financial Corp

Also the Italian Financial Corp, which has its own patrol boats stationed in Messina, has chosen Resinex E15 type mooring buoys with a net buoyancy of 2200 kg. The moorings are of the crucifix type and have the particularity of being easily identifiable by their loud colours of Italian Financial Corp.



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## THE HARBOUR MASTERS

### Large fenders for Japan

The large ship of the type FSO which Chevron Texaco commissioned at Ishikawajima Japan ([www.ihj.co.jp](http://www.ihj.co.jp)) is completely rigged with a Resinex safety system formed of 20 Resinex  $\phi$  1200 x 2000 mm fenders together with 1 jumbo fender  $\phi$  2440 x 4880 mm and a complete system of application and maintenance totally in stainless steel.



The complete package was supplied by Resinex in the Spring of 2004 even if the feasibility and resistance studies required many months of work by the Resinex Technical Office before consignment. It needs to be noted that all the metallic parts used are in stainless steel AISI 316, which together with all the standard Resinex fenders (high density polyethylene and the high abrasion resistance elastomer polyurethane) guarantee a limited level of maintenance and a high level of safety.



### Venice Mose: shallow waters and Racon

Resinex's signalling participation in the Mose Project is continuing. Besides Malamocco and Chioggia, work has begun at the entrance to the Lido where it is now signalled with Resinex buoys of all types (high and low depth).



Racon Phalcon 2000

Outside our normal range we would point out our delivery of seven shallow water buoys, which through the utilization of special project solutions, are able to have an elevated visibility standard (height of focal plane and completeness of the lantern system) even in very shallow water (until 5 metres).

Still concerning the Mose project and even more relevant from the point of view of safety is the installation of an elastic beacon with Racon at the Malamocco entrance of the lagoon.

The complete Resinex beacon/lantern 155/ Racon Phalcon 2000 system results in being the safest port approach packet at the disposition for the Harbour Masters.

The Racon Phalcon 2000 installed on the beacon couples the stability and precision positioning of the Resinex elastic beacon to the technical perfection of the radar signal characteristic of the Racon Phalcon 2000.



As of today, at Malamocco, the captains of small and large vessels equipped with radar will have a continuous, precise and punctual response as to the position of the Resinex beacon.

Navigation as well as the safety of men and things will surely be improved.

### Harbour Masters in brief

A continuous supply of **small sized fender** to the Spanish Navy began in the first months of 2004.

Small, compact and very solid, they were assigned to small sized vessels.

Also in this case the metallic parts are in stainless steel.



These **fenders**, similar to those supplied to the Spanish Navy were shipped to **Russia** where the water is "slightly" colder. Also here, Resinex supplied a maintenance free, safer metallic part in stainless steel.

The entrance to the Port of Senigallia is signalled by a **Resinex Land Beacon**, totally made in stainless steel with Pharos Marine 155 lanterns. The primary characteristic is their high reliability and, also in this case, the absence of maintenance costs; the 6 bulbs in the beacon need only to be controlled every 1000 hours.



This big **Signalling Starboard Buoy** has been installed at the entrance of the port of Naples: focal plane of 5 mts.

The mouth of Port Nogaro has always created problems. Now four **lightweight Resinex beacons** have been positioned there increasing safety and satisfaction.



### Ugly, but good

In the Mediterranean, in 2004, two big buoys, 2.5 metre diameter, 6.7 metre height, and supported by a 2000 kg net floating capacity, were placed in order to signal the channel of a port.

Maybe they are not very aesthetically becoming, but they are certainly very noticeable and this is fundamentally what they are there for.





## INNOVATION

The Resinex Research and Development is continuing with two single missions:

- to make its *surface systems* always more stable in the most extreme meteorological and marine conditions;
- to make its *deep water systems* always lighter and more buoyant, reaching even greater depths.

### MOX/Resinex a mathematic binomial

After months full of obstacles and difficulties, the original brand new programme for the simulation of the behaviour of buoys and elastic beacons came into being. Resinex commissioned MOX to project and create a simulation programme which took into account the main meteo-marine variables and apply these to the hundreds of Resinex models so as to highlight the behaviour of the thousands of product/meteo-marine condition combinations. Buoys with both standard and virtual mooring (jumper) were taken into consideration as well as all types of beacons.

The programme allowed us to visualize with extremely clear and explicit images (3D) the behaviour of any typology of Resinex product within the three primary categories for an extended period.

Moreover, the programme can simulate the behaviour of various products also following a variety of pressures or loads that the product is exposed to. It is therefore ideal also for simulating the behaviour of mooring buoys even in the most extreme meteorological conditions.

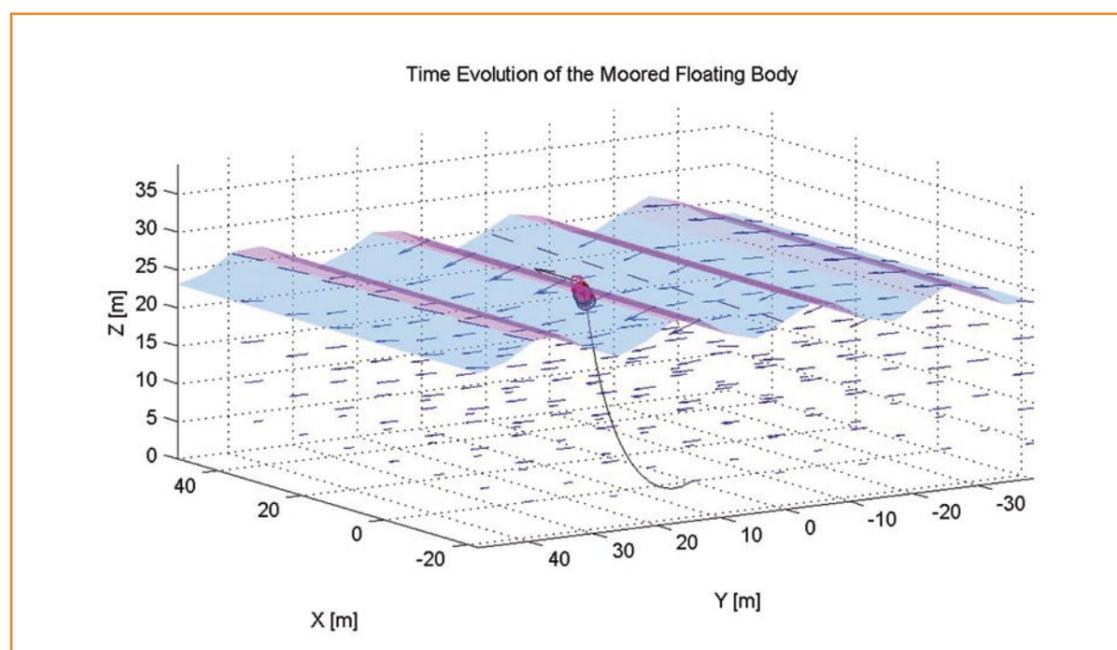
From an analysis of the actual programmes on offer in the market, it would seem that such a comprehensive system of mathematical analysis capable of simulating many different envi-

ronmental at the same time has not been developed.

Certainly this is a considerable competitive advantage which Resinex is obliged to exploit over the following years to make the projects safer both for Resinex and its clients.

#### What is MOX?

MOX (Scientific Calculation and Modelling) is a centre of excellence in the Mathematic Department of Milan Politechnics, which operates in the field of mathematics design and numbers simulation. It has many diverse ventures with the mechanical sectors of the industrial world, the environment, sport, energy and health with the aim of supplying advanced methodological numeral mathematics in the area of computerized fluid dynamics, process optimization, mechanic or electrical devices. For further information: <http://mox.polimi.it>



### 5000 and..... 7000 metres!



Resinex is continuing its efforts to offer the market compounds of high reliability, always lighter and resistant with more depth capacity. In the course of 2004, Resinex R&D has studied, tested and produced the Synt 5000 and Synt 7000, a Resinex syntactic foam compound which with the utilization of a particular hardening system and microspheres can resist up to 500 and 700 bar pressure and so reach a depth of 7000 metres. The compounds have been utilized, once again, for the realization of the floats, used for the submarine acoustic positioning systems manufactured by Sonardyne (UK) [www.sonardyne.co.uk](http://www.sonardyne.co.uk).



# RESINEX

Offshore

The big open-sea oil drilling industry is still today Resinex's main market. In addition to our standard products (deep-water floats, support buoys, etc), Resinex is able to offer custom-made products suited for particular needs to the giant oil companies in the world.



Resinex Pem 18 Support Buoys in Baku

## Azeri in Azerbaijan

Resinex has supplied to Saipem ([www.saipem.eni.it](http://www.saipem.eni.it)) 20 PEM 18 support buoys for the Azeri project in Azerbaijan with a net buoyancy of 6000 kg. The batch was completed in only 4 weeks and delivered ahead of time (to the satisfaction of both parties) in July 2004.

In 2004, Shell in the Far East asked Resinex to supply them with specially designed tailor-made buoys. There were buoys of 1200 mm diameter and variable lengths with a buoyancy from 1800 to 3200 kg. The body of the buoy, which is in steel and polyurethane foam, is protected from collision by polyethylene foam and elastomer.



An installation in Cuba using small Resinex floats and an innovative Spar Buoy in steel with the characteristics of having a 85 diameter LED lantern.

Parks

Our involvement in Marine Parks [www.parks.it](http://www.parks.it) signalling is not really a novelty, but we like to point out the numerous successes our products have had and many Marine Parks which chose us during 2004. Not only is Resinex recognized as the undisputed leader in the signalling sector but has now entered into the market for supplying equipment for diving mooring. Resinex products do not only signal prohibitions but today also consent we users to enjoy the splendid Italian depths.

**Protected Marine Area of Cape Gallo - Isola delle Femmine** (Palermo). In the summer of 2004, Resinex supplied and positioned five FP300 light buoys and two land beacons. The buoys were positioned with a virtual mooring system (jumper). For the same Park, Resinex also supplied 40 type E8 diving mooring units.

Still in the Summer of 2004, Resinex also supplied the signalling for the **Pelagic Isle Park (Lampedusa and Linosa)**. Eight light buoys and four land beacons. A lot of signals to protect the three zone A's of the park, which contains faunal and landscape treasures of inestimable value.

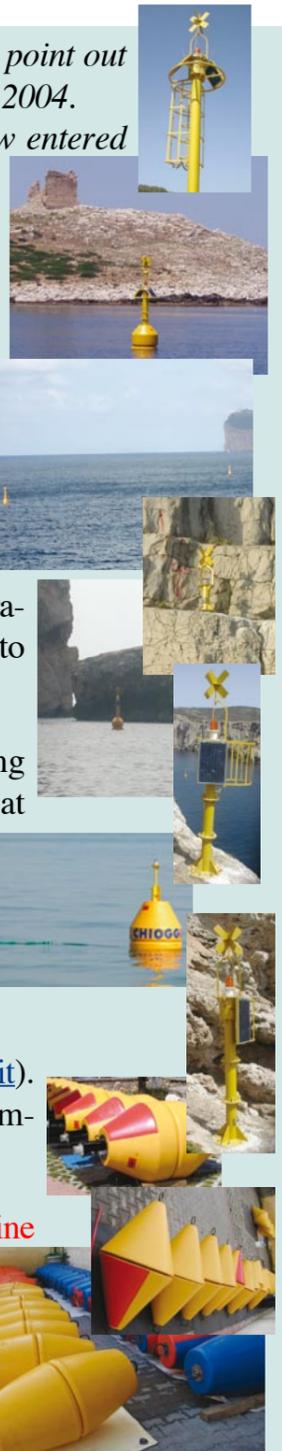
In the deep summer of 2004, Resinex supplied and positioned light buoys and land beacons in another Italian paradise: **The protected Marine area of Cape-Caccia - Piana Isle** in the water of Alghero. Also here Resinex has tried to couple the characteristics of reliability and visibility with an eye on minimizing the impact on the environment.

It was not easy for Resinex to project and supply (still in the Summer of 2004) 4 small sized buoys for mooring and signalling of the Park in the open sea. This being for the **Park of Tegnuè** ([www.tegnuè.it](http://www.tegnuè.it)) in open sea at **Chioggia** (Venice).

The same request to combine signalling with mooring in open sea was made by Lazio Lega Ambiente for the **Secche di Tor Paterno Park** ([www.parcosecchetorpaterno.it](http://www.parcosecchetorpaterno.it)). Ten bi-colour buoys with self-charging lanterns were installed during the course of 2004.

The mooring of boats for diving was requested by the **Regional Riviera of Ulisse Park** ([www.parcoulisse.it](http://www.parcoulisse.it)). Here, Resinex supplied mooring buoys, light buoys and bi-conical buoys and also bi-colour. The range is complete. The metallic parts are in stainless steel.

The Asinara was a off-limits post for many generations. Today, thanks to the new Protected **Park of Asinara Marine Area**, its underwater beauty can be visited and explored. Also here (in the Autumn 2004) Resinex supplied, through Euteknos of Sassari, the complete delimitation system of Zone A and through Impremare of Porto Torres the complete system of mooring buoys. Also in this case, to protect and preserve the extraordinary beauty of the seabed, Resinex studied and supplied a virtual system (with a jumper) both large and small mooring buoys. At Asinara the mooring point is protected with Resinex fenders in polyurethane elastomer.



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