

Argo Trans

Smart containers are using Argos

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Argos and Y2K

In 1998, CLS set-up a Y2K team that checked and tested all systems to ensure that the rollover will go smoothly. For further security, our operations staff will be reinforced between December 99 and January 00.

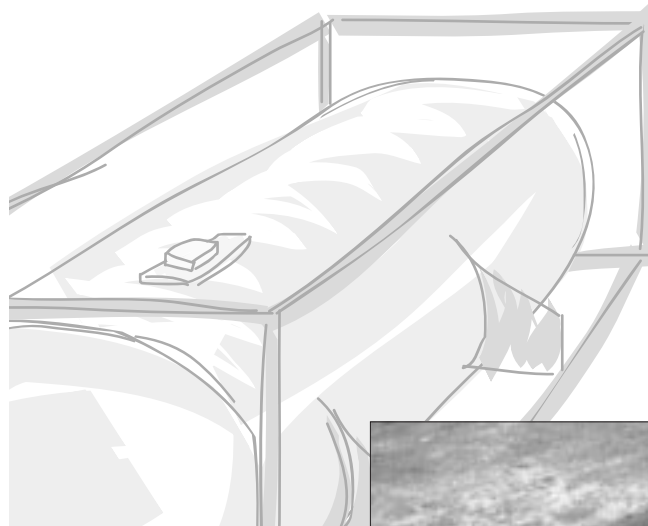
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DUPONT IS ONE OF THE OLDEST CONTINUOUSLY OPERATING INDUSTRIAL ENTERPRISES IN THE WORLD. The company was established in 1802 near Wilmington, Delaware USA, by a French immigrant, Eleuthère-Irénée du Pont de Nemours, to produce black powder. E.-I. du Pont was a student of Antoine Lavoisier, the father of modern chemistry, and he brought to America some new ideas about manufacturing consistently reliable gun and blasting powder.

Since E.-I. du Pont set up his “manufactory” in Delaware, the company has evolved far from its original business while retaining the commitment to consistent high quality.

DuPont is now famous for some of its brands that are available in our everyday life: Nylon®, Teflon®, Lycra®, Mylar® are just a few examples. And in fact, these brands are so popular that most of us have forgotten where they are coming from!

Because DuPont is committed to safety, health, and environmental excellence they have searched new ways to ensure



A typical installation on a tank car

the safe transportation of their products. For over a year now, the DuPont Fluoroproducts plant in Corpus Christi has been ensuring the safe delivery for one of their products thanks to the Argos system.

This particular product is a corrosive compressed gas that is shipped within the United States in insulated Tank Cars. It is shipped at -40 C and slowly warms up as the car is in transit. The temperature and pressure increase as the car warms up. It is very important to know where the shipment is at all times. But unlike well-known overnight carriers that deliver small packages on time and keep track of them throughout the journey, railcars can get lost for several days without a trace.

DuPont follows tank cars

DuPont is using a Railtrax unit with temperature sensor.

The Railroads use Electronic-Tags to track tank cars. However, DuPont decided they wanted more assurance that they always know where their tank cars are located. They decided to employ the Argos Railtrax system with temperature sensor on the railcars leaving the Corpus Christi site. With the small transmitter installed on the railcars, DuPont knows every day the location and temperature of their shipments, directly on the office computers. Benefits are straightforward: a better control on transport and product surveil-

Continued on page 2

How the location process works

Position = GPS?

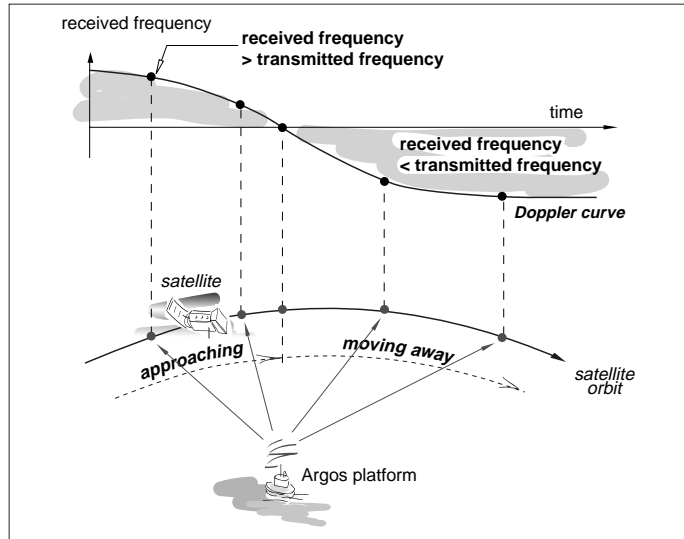
When you put the two words “satellite” and “position” together one instantly thinks of GPS.

GPS stands for Global Positioning System and is an American satellite system designed by the Department of Defense for navigation purposes. You can buy just about anywhere small electronic devices called GPS receivers. Just switch them on and you will (almost) instantly know where you are. Quite useful for sailors and treckers, a GPS receiver can only be used for tracking when connected to some kind of transmission device, such as an Argos transmitter.

While this is done in some cases, in most cases however, Argos relies on its own intrinsic positioning capability, based on the Doppler effect. Let's see how the Argos position is different from the GPS position.

Argos Location made easy

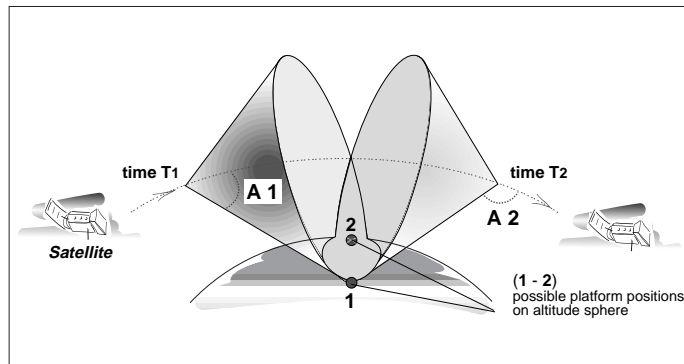
Here is a simple explanation on how it works. There are currently four satellites in orbit carrying the Argos payload. These are Low Earth Orbiting satellites, very close to earth (at an altitude of about 800km), that are not always visible from Argos transmitters. In fact, for a transmitter in Europe, they pass on average once an hour. Transmitters send a short message to the satellite every 90s that contains data such as temperature and battery voltage. When the satellite flies over a transmitter, which lasts about



Argos locations are calculated by measuring the Doppler shift

10 minutes, it records something like 6 messages. Because of the Doppler effect, these messages are received with a frequency that is different from

Washington) which compute the position of the transmitter. At least 4 messages received from the transmitter during the satellite pass are required to be



Platform active sphere

the original transmission frequency. The classic example of the Doppler effect is when an observer notices a change in the sound when a train approaches and moves away.

All recorded messages and frequency information are then forwarded to the Argos processing centers (Toulouse and

able to compute an Argos position.

The average accuracy is about 350m compared to 100m for GPS.

Argos or GPS?

In some cases, we provide transmitters with a GPS receiver to provide better accuracy.

However, relying simply on the Doppler effect has some major benefits:

- Transmitters are cheaper since they do not incorporate a GPS receiver.
 - ...and this makes them simpler, more reliable and smaller
 - The improved GPS accuracy may not be worthwhile in a lot of cases. The difference between 100m and 350m of accuracy may be interesting if you want to know on which quay a container stands, not if you just want to know that it is in Rotterdam.
 - Battery life is longer since GPS needs more energy than Argos to perform correctly. This is especially important for containers to reduce maintenance costs.
 - In some instances, Argos will provide a position when it is not possible for GPS. This is especially true for containers when they are stacked: to compute a position, a GPS receiver needs to see at least 4 satellites simultaneously which is very difficult when there is metal all around. In contrast, an Argos transmitter needs only to communicate with one satellite.
- While it is clear that GPS has valuable benefits, it seems that the Argos location meets perfectly all requirements to track and monitor tank containers:
- A simple and robust design,
 - A long battery life,
 - And a cost-effective device. ■

DuPont follows tank cars ... from page 1

lance, the ability to give accurate information to customers on shipment delivery and the possibility to react faster if a railcar is not on the right track. They are

proud, and so are we, to say that they have had no problems with delivery of the equipped railcars since they have been using the Argos System.

Being the man that Eleuthère was at his time, I'm sure that if he were alive today he too would be using Argos to track his shipments. ■

More information on DuPont is available from their web site at www.dupont.com

Atochem keeps an eye on its containers

ATOCHEM, a leading chemical manufacturer, produces a powder that needs to stay below 20°C to prevent product degradation. This product is manufactured in Southern France and shipped all around the world in refrigerated containers.

Atochem now knows exactly where the container is

Argos helps follow the track of the container and gives important status information on the temperature of the load and the status of the refrigeration engine. For instance, Atochem now knows exactly where the container is – a good way to



An Atochem container with Argos

improve control on transport and speed up procedures. Also, they can monitor the temperature of the load as well as ambient temperature: in case the refrigeration engine stops for

any reason, the knowledge of outside temperature gives them the time they have to correct the problem before the temperature of the chemical gets too high.

Atochem is using our ACT-AL with CLD antenna and alkaline battery pack

Argos has demonstrated that it is working perfectly under very difficult condition. In fact reefer boxes are the most challenging containers to track: there is no space for the antenna and they are always stacked on ships. However, with a reading transmitted every 2 hours on average, Atochem is getting enough data to improve its logistics process. ■

You can find Atochem on the Web at www.atochem.com

On the Wild Side

Mike Horn, a modern *Tintin*

THOSE FAMILIAR with Argos certainly have heard of Mike Horn in the past: a modern adventurer, he is known for a number of achievements such as solo crossing South America on HydroSpeed on the Amazon river and participating in numerous sailboat races.

His new challenge is called Latitude 0: a solo circumnavigation of the world along the equator using only his own resources, i.e. non motorised transport. This is a 6 leg journey that started in June 1999 on the West Coast of Africa, crossing the Atlantic Ocean. This was achieved on a trimaran in just 19 days: Mike entered the Amazon river basin on June 22, 1999 and is currently somewhere (Argos can tell!) in the middle of the South American continent. He expects to reach

his starting point (0 Latitude / 0 Longitude) in October 2000 after a 16 months journey of 40 000 km.

What makes this new challenge so special is that Mike always stays along the equator and that he will only walk, bike, paddle, sail or glide... His logistics team only supports him at the starting point of every leg: in between he is on his own. For example, crossing South America should take him six months. He has a bicycle, a dugout canoe and a limited amount of food supplies. He has to live on what he can find in the rainforest, since he is very unlikely to meet anybody along the equator!

Beyond the human challenge, Mike is using the latest satellite technology to help him achieve Latitude 0. For instance, he is using a GPS re-



ceiver to know his exact position to stay on the equator. While the GPS is adversely affected by the dense rainforest foliage and requires openings to make a fix, it is sufficient for his slow progress. He is also taking with him an Iridium satellite phone to keep in touch with his team. However, he can only scarcely use it since the battery lasts only 2 days. Finally, the most efficient system in this environment is Argos. He carries an Argos unit with more than 3 months of auton-

omy, that provides regular position updates to his team and supporters, whatever the density of forest over him. This transmitter also includes a messaging capability and can send a request for assistance signal. Many lives have been saved in the past this way.

At Argos, we all wish the best of luck to Mike for this new adventure! ■

You can follow Mike's progress on his web site at www.mikehorn.com.

CLS upgrades AGT transmitter

THE AGT is the most popular transmitter used for tracking tank containers. Hundreds of units are currently in the field, giving regular position reports.



An AGT on a tank container.

We have noticed in the past months that this transmitter is more and more used for temperature monitoring as well. This has been an option for a while on this unit.

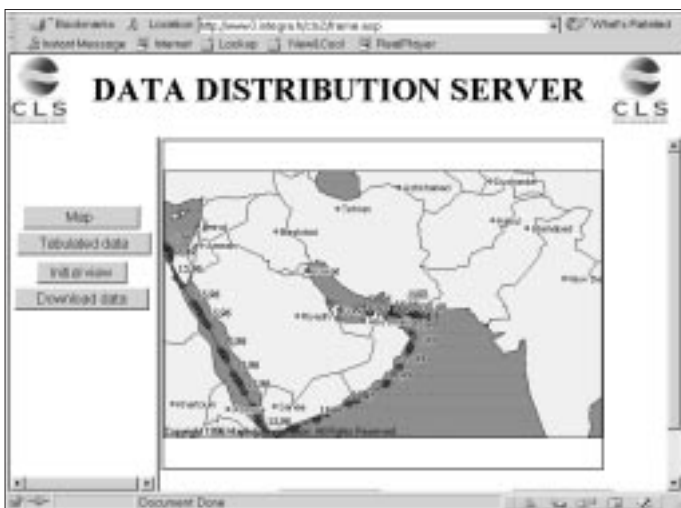
To face the interest, we have decided that the AGT will become standard with an LM35CZ temperature probe. This is a versatile thermistor that provides temperature readings on a 100°C band between -50°C and +150°C with an accuracy of +/-1°C. The standard temperature range is 0°C to 100°C, but can be factory set to anything within -50°C to +100°C.



The temperature probe installed on a tank.

So, from now on, the AGT will provide position information plus one temperature reading and the internal battery level. ■

Improved WEB site



CLS officially launched its new ArgosDataWeb site on September 27, 1999. You may remember the version 1 of the ADW that was featured in ArgoTrans #1. Based on the feedback from our customers, we have improved our web site to bring you easier access to more information.

The first remark we received was to be able to display historical data i.e. the track of the container. Now it is possible to

get up to the last 10 days of data. The advantage is that now you can see the track of a container on the map and that you can save in a table 10 days of sensor readings. This table can be imported directly into popular software like Excel. Instant benefit: no need to look at the data all the time, once a week is enough to get all the data that's available.

Another remark from a tank operator who is more concerned with quick read-out of

the information was the possibility to get sensor information on the map. Version 2 of ADW now features just that: choose one sensor, and you will see on the map, right after Login, the value of this sensor next to the position of the container.

While we were at it, we also added some small features to make your life easier: display of location class and message compression index and a simpler interface where you zoom and pan in just one mouse click instead of two.

The result is a tool that is hopefully more useable for the Argos community. And of course we always welcome your comments to help us improve this new service. ■

You can have a look at the ADW at www3.integra.fr/argosdataweb where some live demo data is available.

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