





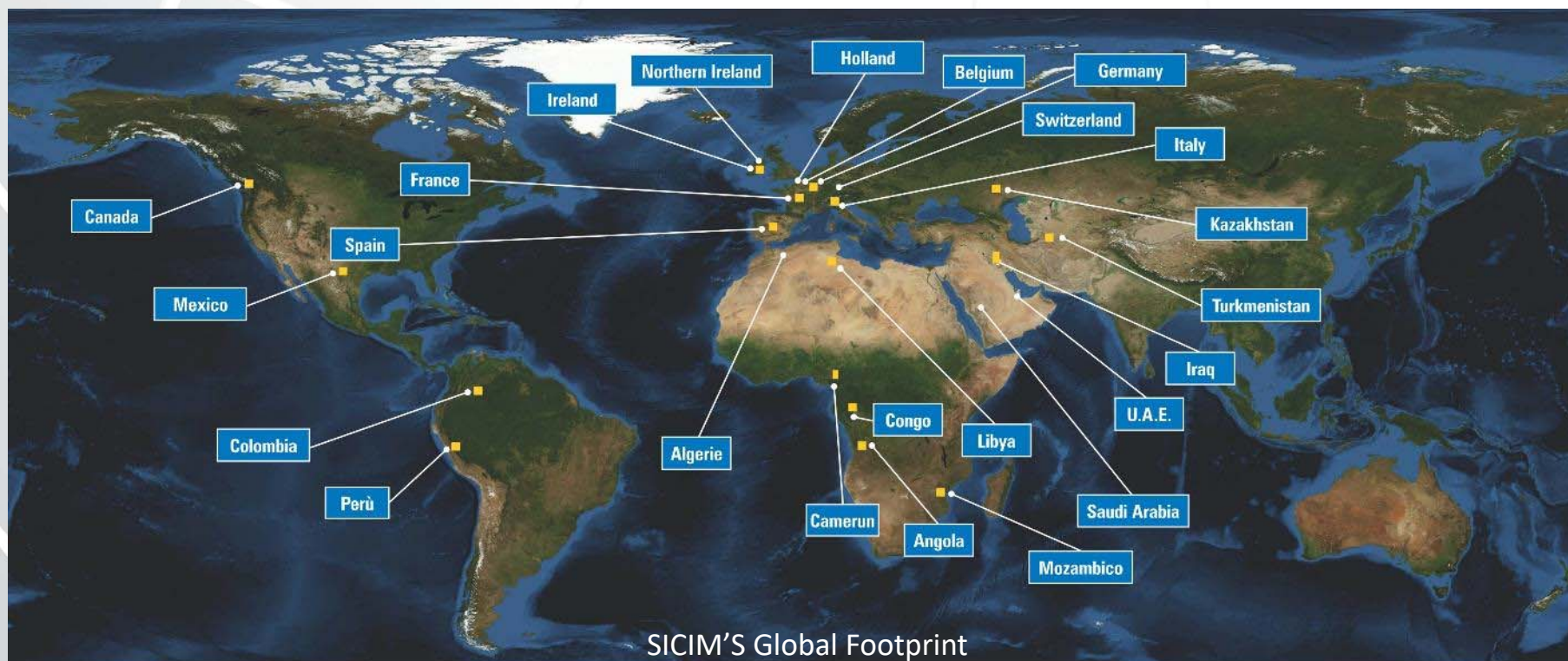
BUSINESS PROFILE:

HEAD OFFICE

⇒ BUSSETO (PARMA) – ITALY

DATE OF ESTABLISHMENT

⇒ 22nd January 1962





56 years of experience

SICIM is a Construction Company established in 1962 and offering all types of services related to the installation of pipelines and relevant ancillary facilities for the transmission and distribution of oil and gas on international basis.

Our past, including the installation of over than **15'000 km** of pipelines and **25'000 tons** of steel in facilities world-wide, is a guarantee of success.

Range of services

- ⇒ Project Management;
- ⇒ Engineering and Procurement for EPC works (approx. 200.000 hrs/year);
- ⇒ Pipelines and Flowlines for oil, gas, petroleum and other industry's products, water, etc., including rehabilitations of existing pipelines;
- ⇒ Oil/gas plants & facilities.

	2013	2014	2015	2016	2017
Manpower	4.929	5.531	5.077	7.022	7.234
Man-Hours	17.194.920	17.640.503	16.789.011	23.413.125	25.803.142





BUSINESS PROFILE:

MANAGEMENT SYSTEM CERTIFICATES





FINDINGS:

SICIM has an impressive fleet of machines that are property of the company and can be shipped anywhere around the globe. This includes pipe-layers, paywelders, excavators, dumpers and boring machines that are used to tackle the many challenges the company faces to equip its projects around the world.

These machines are all equipped with hydraulic circuits. Hydraulic systems (or circuits) consist in a set of components filled with a fluid that is used to transmit energy under controlled conditions with great flexibility.

Hydraulic oils in this system must have technical characteristics and performances **suitable for all kinds of conditions, in order to ensure good performance of the systems and to protect all lubricated components in order to extend their length of service.**





FINDINGS:

Any spill from the hydraulic systems could cause:

- waste of oils/lubricants with consequent environmental impact
- reduction of the equipment system pressure and efficiency.



In case of spill in the soil, these lubricants can contaminate groundwater with consequences that we can easily imagine; if dispersed in watercourses or at sea, the ring (Newton ring) that forms on the surface can cause incorrect oxygenation of different life forms (algae, fish, etc.); if burnt, they can introduce highly toxic substances such as dioxins into the air.



FINDINGS:



Therefore, ensuring that there is no danger of toxicity in case of accidental spill becomes a priority for anyone who wants to adopt an eco-friendly approach.

That's why the industry willingly takes into consideration solutions that have a lower environmental impact than the traditional lubricants used.

This is the reason why SICIM implemented this new solution to construction machinery used in EUGAL Project:

Environmentally Considerate Lubricants (ECLs) - hydraulic oils



SOLUTIONS:

Sicim decided to chose a «pilot» project in which all heavy equipment will be fitted with a fully synthetic, high-performance and zinc-free Environmental Considerate Lubricant (ECL) for hydraulic systems: **PANOLIN HLP SYNTH 46**.





SOLUTIONS:

PANOLIN HLP SYNTH 46: Properties (1/3)

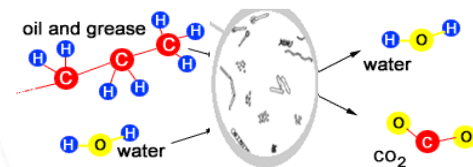


Biodegradability (1/2):

The main characteristic of any biodegradable lubricant should be the ease with which it decomposes within a reasonable period of time, due to the action of microorganisms present in the soil, rivers and oceans, exerting a reduced impact on the environment.

PANOLIN HLP SYNTH if spilled into the environment is digested by bacteria and transformed into water and carbon dioxide.

A series of factors are used to measure the biodegradation capacity of a substance and its residual effect on the environment. One of the factors is the time necessary to decompose.



Biodegradability classification:

	Biodegradability
Moderately biodegradable	> 60 % in more than 28 days
Biodegradable	> 60 % in 28 days
Readily biodegradable	> 60 % in 10 days

Reference test: OECD 301 B (CO₂ evolution test) - Threshold: 60% of biodegradation in 28 days
PANOLIN HLP SYNTH 46 is **readily biodegradable** - OECD 301 B; **> 70%**.



SOLUTIONS:

PANOLIN HLP SYNTH 46: **Properties** (2/3)



Biodegradability (2/2):

Even traditional lubricants based on mineral or synthetic oils will sooner or later degrade. However, the slowness of this degradation is such that it makes the dispersion in the environment highly inadvisable. Some mineral oils, for example, can contaminate groundwater even for 100 years.

Various Ecolabels and tests confirm **PANOLIN HLP SYNTH 46** biodegradability and/or low aquatic toxicity:

- Blue Angel.
- Swedish Standard SS 15 54 34.
- RINA Green Plus.
- Japan Environment Association Eco Mark.
- Korea Eco-Label.
- Czech Eco-Label.
- ÖNORM.
- EPA Vessel General Permit 2013.





SOLUTIONS:

PANOLIN HLP SYNTH 46: **Properties** (3/3)



CO₂ reduction:

CO₂ savings: thanks to extended service interval, the product life cycle is longer (indirect CO₂ reduction) and due to smooth-running properties, we save fuels decreasing the friction inside the heavy equipment (direct CO₂ reduction).

This **saves resources and increases efficiency.**



Longevity:

The use of synthetic **PANOLIN** oils guarantees an extended period of use compared to **corresponding mineral oil products.**

Documented field tests (partly over a period of up to 20 years) are available.



PANOLIN HLP SYNTH 46 vs TRADITIONAL OIL PRODUCTS:

MSDS comparison (1/3)

PANOLIN HLP SYNTH 46	TRADITIONAL OIL PRODUCT
SECTION 3: <u>Composition/information on ingredients</u>	
3.2. Mixture	
<i>Chemical characterization :</i> <i>Mixture of different substances.</i> <i>Hazardous ingredients :</i> None.	<i>Chemical characterization :</i> <i>Mineral base oil, severely refined. Additives.</i> <i>Hazardous ingredients :</i> <i>See table with hazardous ingredients and/or with relevant occupational exposure limits. Risk and Hazard phrases.</i>
SECTION 12: <u>Ecological information</u>	
12.1. Toxicity	
<i>Not applicable.</i>	<i>General : According to the components [...] this product has a toxicity for aquatic organisms > 100 mg/l, and must not be regarded as dangerous to the environment. An uncontrolled release to the environment may nevertheless produce a contamination of different environmental compartments. [...]</i> <i>Air : This product has a low vapour pressure. A significant exposure may happen only if the product is used at high temperature, or in case of sprays and mists.</i> <i>Water : This product is not soluble in water. It floats on water and forms a film on the surface. The damage to aquatic organisms is of mechanical kind.</i>



PANOLIN HLP SYNTH 46 vs TRADITIONAL OIL PRODUCTS:

MSDS comparison (2/3)

PANOLIN HLP SYNTH 46	TRADITIONAL OIL PRODUCT
12.2. Persistence and degradability	
<p><i>Readily biodegradable (according to OECD criteria). This information is based on data from the components of the preparation, or similar materials.</i></p> <p><i>Abiotic degradation - Mechanical separation in a suitable sewage plant is possible.</i></p>	<p><i>The most significant constituents of the product should be considered as "inherently biodegradable", but not "readily biodegradable", and they may be moderately persistent, particularly in anaerobic conditions.</i></p>
12.3. Bioaccumulative potential	
<p><i>No indication of bioaccumulation potential. This info is based on data from the components of the preparation, or similar materials.</i></p>	<p><i>Not applicable for mixtures.</i></p>
12.4. Mobility in soil	
<p><i>Floats on the water surface. In the soil low mobility.</i></p>	<p><i>No additional information available.</i></p>



PANOLIN HLP SYNTH 46 vs TRADITIONAL OIL PRODUCTS:

MSDS comparison (3/3)

PANOLIN HLP SYNTH 46

TRADITIONAL OIL PRODUCT

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Content and contaminated packaging should be treated as hazardous waste. Delivery to an approved waste disposal company.

Product/Packaging disposal :

Disposal, in accordance with local official regulation.

Waste codes/waste designations according to EWC/AVV

Waste code: 13.01.12* readily biodegradable hydraulic oils.

Waste treatment options : Appropriate disposal / Package

Empty containers should be scrapped or reconditioned.

Containers, which have not been emptied properly must be treated as special waste.

Do not dispose of the product, either new or used, by discharging into sewers, tunnels, lakes or water courses. Deliver to a qualified official collector.

*Waste disposal recommendations : **European Waste Catalogue code(s): 13.01.10*** mineral based non-chlorinated hydraulic oils. This EWC code is only a general indication, and takes into account the original composition of the product and its intended use. The user has the responsibility of choosing the right EWC code, [...]*

Additional information : Empty containers may contain combustible product residues. Do not cut, weld, drill, burn or incinerate empty containers or drums, unless they have been cleaned, and declared safe.

Ecology - waste materials : The product as it is does not contain halogenated substances.



IMPLEMENTATION:

CONVERSION PROCESS FOR COMPANY EQUIPMENT

1 step

Drain

- Drain hydraulic oil from the entire system: tank, cylinder, coolers, tubes and hoses

2 step

Flushing

- Once the system has the flushing fluid installed with PANOLIN HYDROFLUSH 32, we operate the system a few times before draining - This will help release contaminants and help get any residual fluid out

3 step

Filter

- Replace hydraulic filter cartridges

4 step

Filling

- Fill with the PANOLIN HLP SYNTH 46

5 step

Filtration

- Oil cleaning from impurities with specific machine

6 step

Control

- Contaminants check

END

NO

draining and top up
should be done to meet
fluid cleanliness

Oil sample consignment form

PANOLIN

Oil sample point: _____

Working fluid volume: _____

Remarks: _____

To be completed by PANOLIN: _____

**Oil sample
consignment
form**

YES

Equipment operative



ACHIEVEMENTS:

Launching pilot lubricants conversion process

involves approx **ONE HUNDRED HEAVY EQUIPMENT**

- *33 sidebooms*
- *11 crawler excavators*
- *18 crawler paywelders*
- *2 crawler pipecarriers*
- *2 hydraulic pipe bending machines*
- *6 tracked dumpers*
- *3 cranes*
- *8 other crawler machines*





ACHIEVEMENTS:

PERFORMANCE IMPROVEMENT AND TECHNICAL ADVANTAGE

- Prolonged lubricant life;
- Lower fuel consumption;
- Greater protection and reduced wear of components

IMPACT REDUCTION AND PROTECTED RESOURCES

- Lower CO₂ emissions linked to the reduction in consumption and lower consumption of lubricant;
- Less exploitation of energy sources and non-renewable raw materials;
- Reduction of the impacts due to lubricant spillages;
- Quantity reduction and quality improvement of waste lubricant to be disposed

SAVINGS AND ECONOMIC ADVANTAGE

- Purchase of minor quantities of lubricants;
- Reduction of machine downtime for oil changes and consequent labor costs involved;
- Reduction of environmental restoration costs in case of spillages;
- Decrease mechanical failures and increase the life-span of components



ACHIEVEMENTS:

PANOLIN HLP SYNTH 46 VS TRADITIONAL OIL PRODUCT

CO₂ emissions of a major size sideboom (SUPERIOR 960)

	TRADITIONAL HYDRAULIC OIL	PANOLIN HLP SYNTH	Reduction	%
Oil change - time between services (h)	1500	10000		
N° of oil change in 10000 h	6	1		
Oil consumed (l)	2900	730		
Machine downtime and manpower (h)	30	5		
CO ₂ emissions (kg)	7'573	1'631	-5'941	-78%
Operating costs (€)	14'866	5'330	-9'536	-64%
CO ₂ emissions (kg)	1'612'300	1'596'170	16'123	-1%
Operating costs (€)	750'000	742'500	-7'500	-1%

The evaluation and quantification of **the economic cost and the reduction of CO₂ emissions** between the use of a traditional product and PANOLIN ECLs product has been developed using the software Panolin GREENMACHINE.

Input data are: 440 lts of hydraulic oil in the tank and 5 hrs of machine downtime for oil change. Other data are shown in the side table.

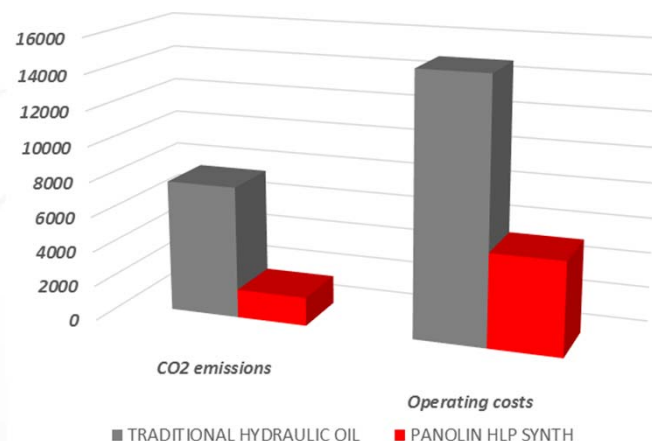
Reductions generated directly from the conversion to PANOLIN HLP SYNTH (quantified over 10000 hours of operation)

Reductions due to a 1% decrease in diesel consumption due to the better lubricating capacity of PANOLIN HLP SYNTH (quantified over 10000 hours of operation)



-78% CO₂
-64% COSTS

Lubricants conversion savings





LONG TERM PLANNING:

Accidental releases of oils, lubricants and chemicals from construction sites make up a large number of pollution incidents that occur each year.

That's why SICIM has embraced a **proactive approach to environmental management** with the knowledge that all environmental impacts *can be prevented or minimized* by adopting products and equipment that:

- are able to *reduce* the risk level
- reduce CO2 emissions
- having a longer *lifetime*, avoid or reduce the waste production.

Environmental acceptable lubricants belong to all these categories, being **ecologically, safe and long lasting**.

A **periodical monitoring activity** will allow to certify the lubricant biodegradability characteristics over time.

SICIM has planned also to extend this initiative, that till now has involved only Hydraulic Oil, to **Motor Oil and Gear Oil**. This will be applied in other projects such as Trans Mountain Expansion Project in Canada, ensuring that the Company **continuously improves** environmental issues.





CONTACTS



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