

➤ Diagnostic system for urban vehicles for optimized fleet management

LubAnac CITY is a diagnostic system for engines and transmission systems, based on the scientific interpretation of in-service oil analysis, which allows the fleet manager to reduce the maintenance costs of their machine park.

LubAnac CITY has been specially developed for monitoring urban vehicle fleets. The parameters measured according to last generation methods are both adapted to the severity of these machines and take into account the constraints of the manufacturers. The value of TBN is one of the characteristics imposed by the manufacturers for a relevant and effective follow-up.

LubAnac CITY is recommended for:

- ✓ A systematic follow-up of the behavior of the wear of the mechanical parts and the lubricant.
- ✓ Prevention of breakdowns.
- ✓ Reinforcement of the longevity and the reliability of the material.
- ✓ Optimization of the maintenance actions for a better control of the cost price by kilometers.

➤ Measured characteristics

Wear of mechanical parts :

Emission spectrometry (ICP) of elements: Fe, Pb, Cu, Sn, Cr, Al, Ni (ppmc)

Lubricant contamination:

Silicium (ppm), Water (%) for all applications

Soot (%), Cooling liquid (presence), Fuel (%) for engine oil applications

Lubricant characteristics:

Kinematic viscosity (mm²/s) at 100°C for engine oils and transmission oils

Kinematic viscosity (mm²/s) at 40°C for hydraulic systems.

TBN (mgKOH/g) according to OEM requirements, Oxidation, Nitration, Sulphated Ash for engine oil applications.

Option :

Additive elements Ca, Zn, P, Mg, Mo, Ba, V, Na, B, Ag

➤ New functionalities

- **TBN:** This measurement is necessary for low mileage applications under severe working conditions. This measurement provides a check of the alkalinity reserve of the lubricant which is extremely important, especially for an accurate follow-up of gas engines. LubAnac CITY automatically applies the measurement method preferred by each manufacturer (ASTM D 2896 or ASTM 4739).
- **Oxidation (IR) :** This measurement on engine-oils confirms the adequacy between the lubricant and the severity of the service and thus validates the correct drain interval. This parameter is essential in the event of optimizing the drain intervals
- **Sulphated Ash :** The content of sulphated ash is an important element in the protection of after-treatment devices for Exhaust Gas Recirculation system and Diesel Particulate Filter system on engines of the latest generation with low emissions. This measurement ensures that the lubricant used is adequate with the vehicle's engine technology.
- **Graphs :** Representation of measured characteristics as graphs for a more direct and quicker reading.
- **Call-Back :** Better understanding of your results : on the website lubanac.totalenergies.com, a simple click on the Call-Back button and our technicians will contact you as soon as possible

➤ Diagnosis and comments

The diagnosis and comments are generated by the LubAnac CITY system which is based on:

- More than 45 years of experience and supply of the LubAnac database, more than 8,5 million analyses on more than 1 000 000 monitored parts.
- More than 1000 analyses per day
- Customer feedback on successful corrective actions.
- A comparison between the measured values and the wear references thanks to algorithms excluding variable parameters such as oil replenishments or excessive drain intervals
- A network of more than 30 laboratories all around the world feeding the database.

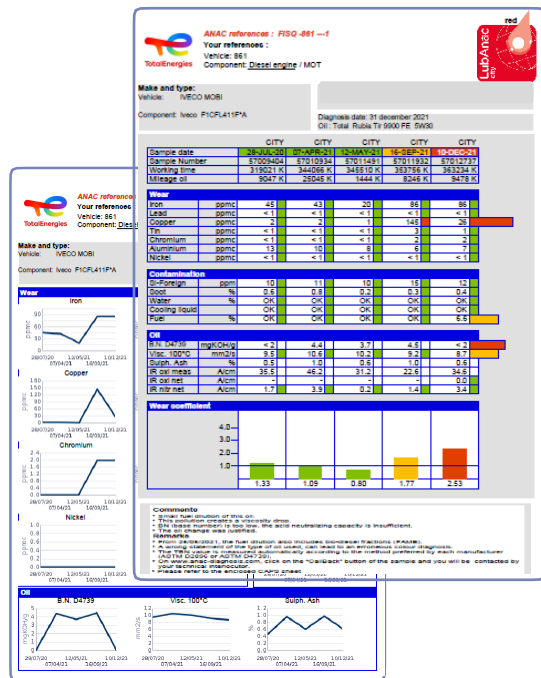
➤ Presentation of results

The results of the diagnosis are available 3 days after reception date for 90% of the samples.

- Pre-data entry on the website
- Sending results by mail
- Online posting of results on the secure website lubanac.totalenergies.com.
- Compatible with smartphone and tablet

ENGINE

The history of the last 5 diagnoses is recalled on the report.



Color code : green, orange, red

Customer, machine, part and sample data

Wear elements and color code

Contamination elements and color code

Physico-chemical characteristics: viscosity, TBN (in function of OEM), sulphated ash, oxidation, nitration

Wear Coefficient : : assesses the state of wear of each type of engine compared to identical engines in the LubAnac database in 1 figure

Comments and recommendations

Graph visualization



Satisfying diagnostic



Slight deviations



Anomaly found

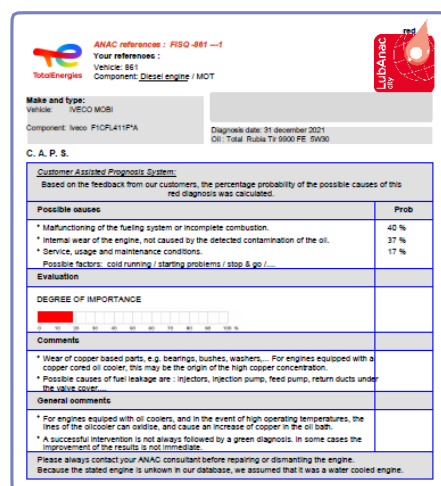


Dangerous situation

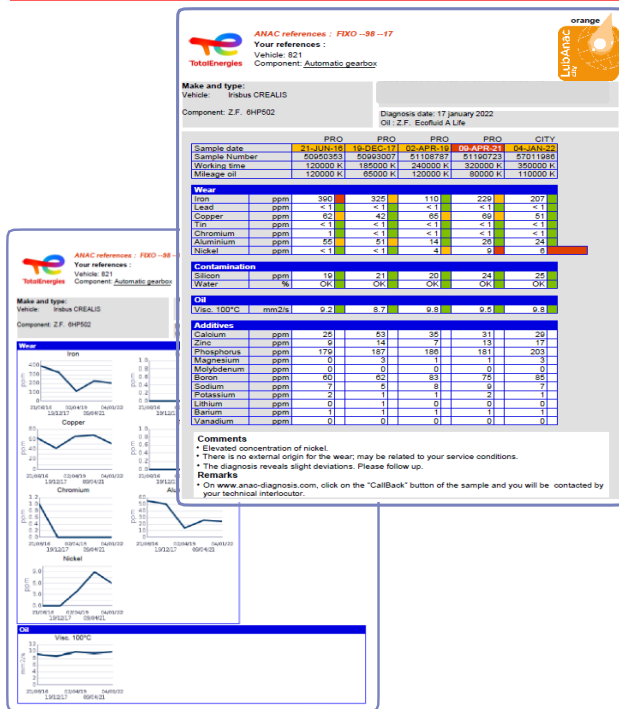
CAPS (Customer Assisted Prognosis System) :

Only in case of red diagnosis. Relies on feedback from customers.

- Possible causes and recommended interventions are indicated by percentages of probability.
- The degree of urgency assesses the necessity of the intervention to be carried out.
- The displayed comments focus on the peculiarities of this type of part.



LubAnac city



Non-Engine Parts

Control and diagnosis of the wear elements in function of the make, the type and the mechanical part.

Graph Visualization

Did You Know ?



The acid compounds formed especially during the combustion have a corrosive effect on the metal parts of the engine..



The TBN (Total Base Number) value of the lubricant provides the necessary alkalinity reserve to neutralize these acidic compounds.

- TBN monitoring is used to check the oil's ability to remain in service.
- There are two methods of measuring TBN: ASTM D 2896 and ASTM D 4739. They are based on the same principle of titration * but with a different solvent. The nature of the quantized bases is thus specific to each method.

* titration = assay technique used to determine the concentration of a chemical compound in solution

