

New anti-corrosive additive for automotive LPG



OIL & GAS INSTITUTE
National Research Institute, Poland



INSTITUTE ACTIVITIES

Since 1945, **The Oil & Gas Institute** has been engaged in research projects in the area of crude oil and natural gas, from the exploration and exploitation of hydrocarbons reservoirs, through the storage, transport, distribution and utilization of natural gas, crude oil, and petroleum products, ending with development of technology of crude oil and gas processing.





PEOPLE OF THE INSTITUTE

Employed: **400 people**
including: **83** scientists
61 technical researchers
143 technical engineers
29 EU specialists.

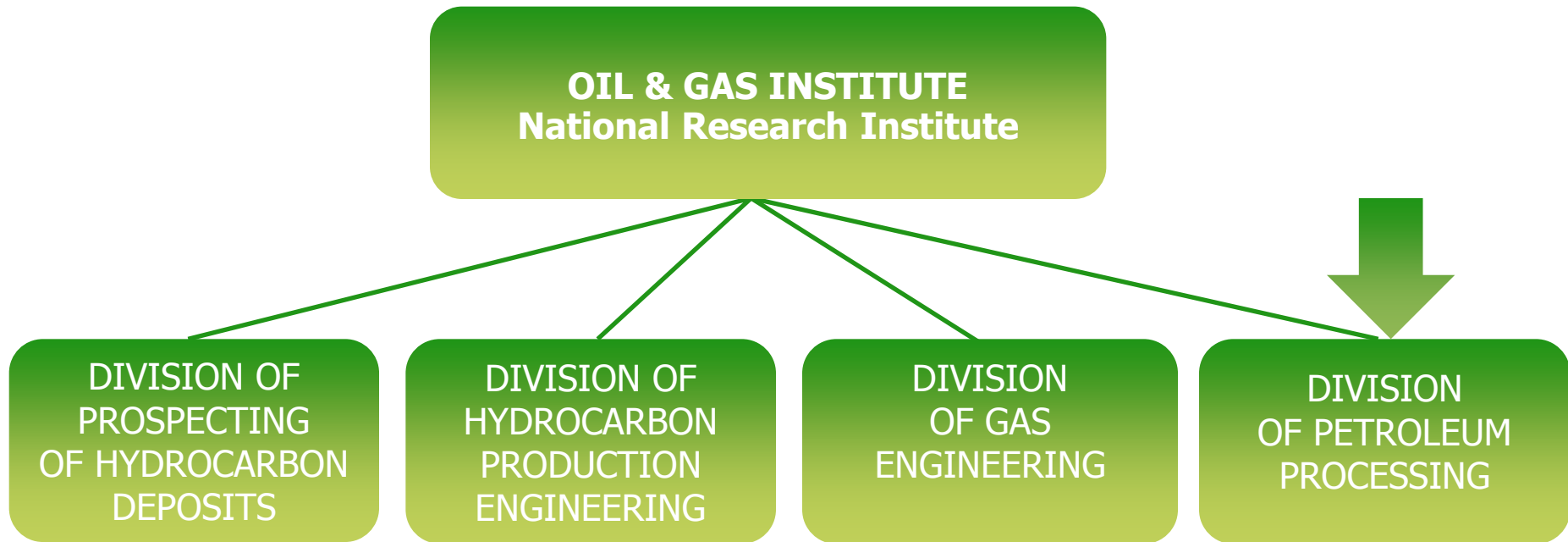
3 locations: Kraków - Krosno - Warszawa

Over **50** people with PhD





THE STRUCTURE OF THE ORGANIZATION





DIVISION OF PETROLEUM PROCESSING – RESEARCH ACTIVITIES

- Detailed crude oil analysis
- Determination of chemical composition and quality evaluation of petroleum products;
- Making new fuel additives along with development of technologies of their creation;
- Assessments of the practical-operational properties of fuels and lubricating oils in operational tests;
- The development and improvement of technologies of production of LPG, gasoline, aviation fuel, diesel fuel, biofuel;
- The development and modification of technologies of production of base oils, lubricants, parafins, special waxes, asphalts.





WORKING WITH QUALITY SYSTEMS

- The Institute has implemented ISO 9001:2008, certified by *Bureau Veritas Certification*.
- **20 accredited laboratories** according to PN-EN-ISO/IEC 17025:2005 (500 accredited research methods).
- **Bureau of Certification in the Institute** certifies equipment for combustion of gas fuels, gas – electric systems, also certifies Quality Management Systems.
- The Institute is **UE notified body (nr 1450)** in the area of 6 directives.
- **Technical approval department** approves products for building industry, that were not normalized by polish standards



AB 009



AB 041



AB 1313



AB 493



AP 152



AC 010



AC 116
QMS



COOPERATION WITH NATIONAL ADMINISTRATION

- The Institute evaluates national regulations, also work in the expertise area for national administration,
- The institute experts respect the correct application of sampling methods for petroleum products, liquid fuels, LPG, bio-components and biofuels;



In the period of 2010-2015 Institute performed and finalized **1.200** expertise works:

- quality of fuels and other petroleum products,
- falsifying of fuels and illegal use of fuels,
- illegal sampling of natural gas and incorrect operation of gas counters






NORMALIZATION ACTIVITY

The Institute holds three Technical Committees:

- **No. 31 for Mining of Gas and Oil,**
- **No. 222 for Petroleum Products and Exploitation Liquids**
- **No. 227 for Gas Industry**

People of Oil & Gas Institute represent polish national standardization body (PKN) on international meetings of European Technical Committees (CEN/TC19).





NORMALIZATION ACTIVITY

Our representative in CEN/TC19/WG23 „LPG group“ works with the new version of EN 589:2008.

New items to be included in new version of EN 589:

- Warning for materials having contact with LPG in distribution chain (UE works on plasticizers solubility)**
- New method of oil residue in LPG determination**
- Lowering the limit for sulfur content in LPG**



MONITORING OF FUELS QUALITY

CERTIX is a system of quality monitoring, implemented by Oil & Gas Institute – National Research Institute, directed to owners of gas stations and fuel storages.



More information on the web page:

WWW.CERTIX.PL

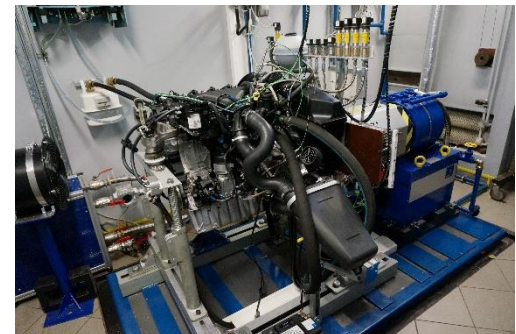




LABORATORIES WITH UNIQUE TEST STANDS

Oil & Gas Institute has unique engine test stands with Mercedes M102E i Mercedes M111 engines, which are used for evaluation of gasoline tendency to form deposits in the engine fuelling system in combustion chambers, we also have Peugeot XUD9 engine for testing the coking tendency of injectors in compression - ignition engines.

These stands are used for the realization of research and development projects in the area of fuels production technology, and also for the evaluation of additives working in the fuels, for polish companies (PKN ORLEN, LOTOS) and International companies (BASF, TEXACO, MOL).





INNOVATIONS

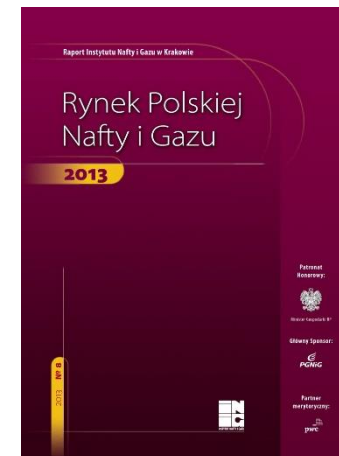
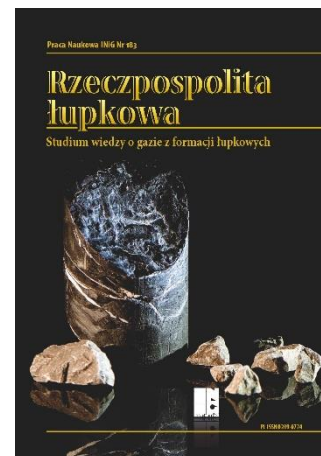
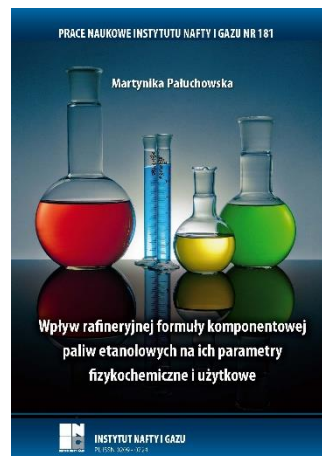
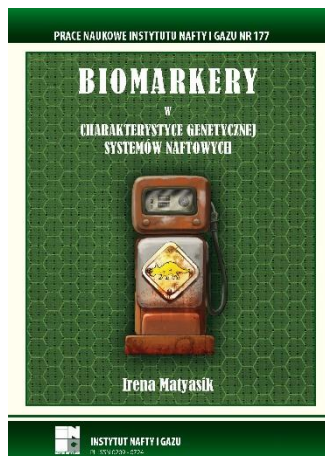
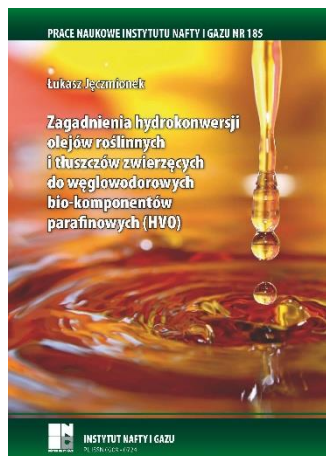
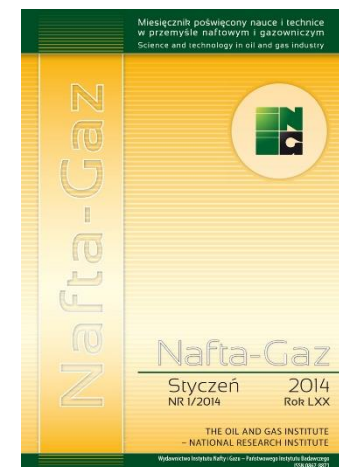
- During years 2010-2015 Oil & Gas Institute had **68 patents** published in Poland and also had **63 published innovations** (many of them in the area of additives)
Many of these solutions were implemented in industry.
- Innovations of the Oil & Gas Institute were presented on international expositions, and were awarded with **400 awards** (Brussels, Nuremberg, Taipei, Zagreb, Kuala Lumpur, Seoul and Taiwan).





PUBLICATION ACTIVITY, OWN MAGAZINES

- The Oil & Gas Institute owns a magazine *Nafta-Gaz*, and also once a year we print *Rynku Polskiej Nafty i Gazu*. The main aim of these magazines is to spread the knowledge in the area of energetics, especially hydrocarbon fuels. **These articles are available online: www.inig.pl**
- In years 2010-2015 our scientists published 532 articles, including 46 articles in group A magazines, 470 – group B, and also 26 monographs





SOME PICTURES OF OUR LABORATORIES





LABORATORIES – NATURAL GAS MEASUREMENT





LABORATORIES - OUR EQUIPMENT





DEVELOPMENT OF LPG ANTI-CORROSIVE ADDITIVE

In Poland we notice problems with copper strip corrosion for LPG obtained from Bielarus, Kazachstan and Russia.



The Oil & Gas Institute started research at once and developed the technology of production of LPG additive.

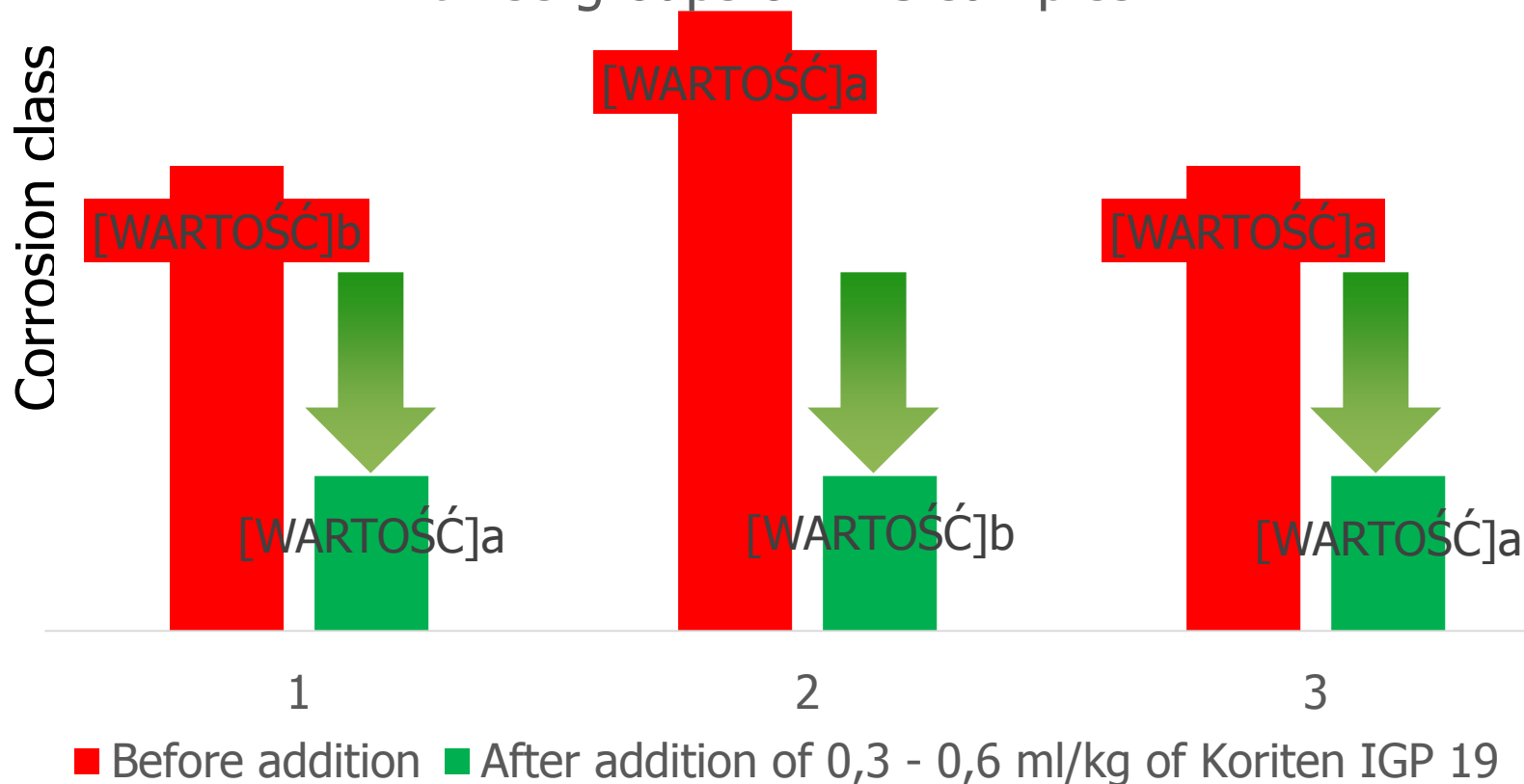


The additive called Koriten IGP 19, eliminated corrosive properties of LPG.



DEVELOPMENT OF LPG ANTI-CORROSIVE ADDITIVE

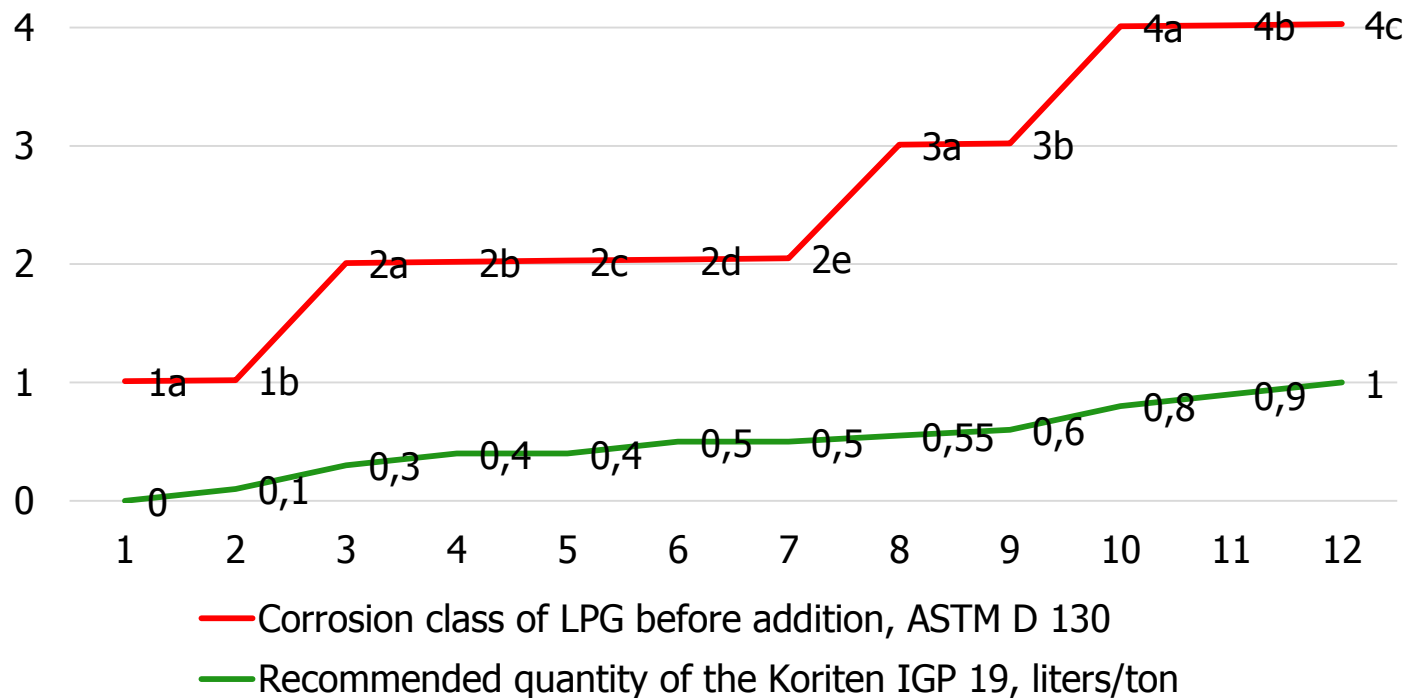
The influence of the addition of Koriten IGP 19 on the corrosion class of LPG, three groups of LPG samples





DEVELOPMENT OF LPG ANTI-CORROSIVE ADDITIVE

Reccomended quantity of Koriten IGP 19 added to LPG, depending on a corrosion class of LPG, for obtaining class 1a of final product





DEVELOPMENT OF LPG ANTI-CORROSIVE ADDITIVE

Conclusion



**Developed technology of anti-corrosive additive
Koriten IGP 19 is optimal for LPG
with unacceptable class of corrosion.**



**The lever of dosing of the additive depends on the class
of corrosion of LPG. It varies from 0,1 to 1,0 liters / ton.**



THE RIGHT STEPS FOR THE BEST QUALITY OF LPG

Formulating of the LPG according to specification EN 589



Selection of additives for LPG and dosing level



**Taking care of the product in logistic chain,
Especially implementing procedures at every step**



SOLVING PROBLEMS ASSOCIATED WITH THE QUALITY OF LPG

**The Institute is solving problems with LPG on Polish
market, for individual clients and institutions**



We are open to other countries, to share our experience



**The idea is to solve any problem associated with
the use of LPG as a fuel for automobiles**

Thank You!

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