

# EFRA Project – Effective Refining, i.e. innovation of the 21st century

Initiated in 2015, the EFRA Project is a groundbreaking endeavour in Grupa LOTOS' history. The project will improve our financial efficiency and product margins, as well as reduce our dependence on crude oil price fluctuations. After its completion, Grupa LOTOS will become the most advanced refinery in the European Union and one of **the most technologically advanced in the world**.

With the new units, our Gdańsk refinery will produce an additional 900,000 tonnes of high quality high-margin fuels and 300,000 tonnes of petrochemical coke, without increasing crude input volumes.

The EFRA Project will facilitate the pursuit of sustainable development goals, and the cutting-edge technologies it involves will greatly reduce our environmental footprint.



EFRA Project's main benefits for Grupa LOTOS include:

- More efficient use of heavy residue, which is the heavy end of crude oil used to make heavy fuel oil or bitumens;
- Shift in the production structure from low-margin products towards increased share of engine fuels, mainly diesel oil and aviation fuel;
- Increased flexibility of the refinery, which will allow the LOTOS Group to remain competitive also in the event of movements in the prices of feedstock and petroleum products.

First results:



# 7.7%

total progress of work under the EFRA Project as at the end of 2015, against the planned 3.6%.



# 31.3%

total progress of work under the EFRA Project as at the end of August 2016. The plan assumed 25.9%.

The EFRA Project was started on June 26th 2015 and is expected to be completed in the second quarter of 2018.

## Key events in 2015

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### January/February

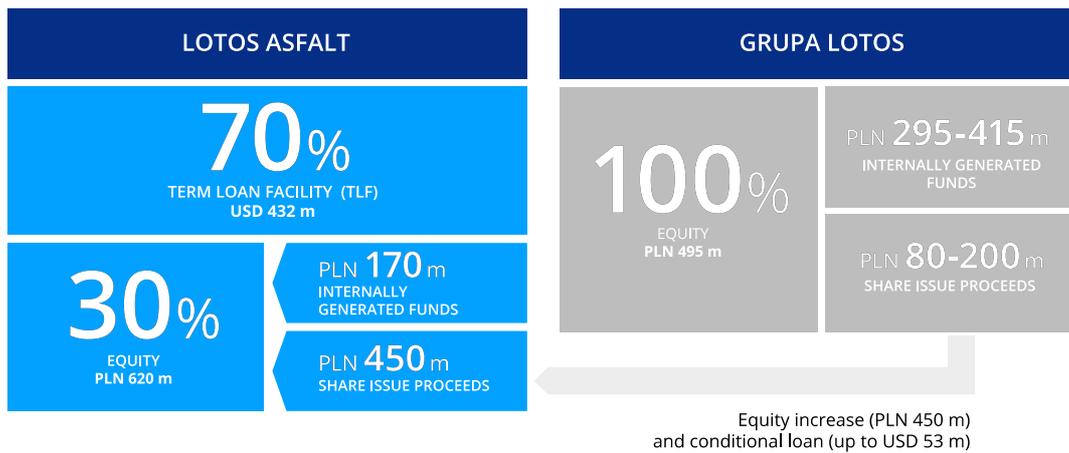
- The issue of series D shares is completed, with the proceeds of nearly PLN 1bn to be spent on the EFRA Project. The State Treasury subscribed for 53% of the new issue shares, and entered into an assistance agreement with Grupa LOTOS, committing PLN 530m to finance the investment.

### May/June

- Grupa LOTOS launches the EFRA Project together with its subsidiary LOTOS Asphalt, following approval by the Company's Supervisory Board of the terms of financing and collateral, and a share capital increase at LOTOS Asphalt.
- LOTOS Asphalt signs credit facility agreements to finance 79% of the EFRA Project investments with a consortium of eight financial institutions.

## Financing structure of the EFRA Project \*

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\* Together with borrowing costs and funds deposited in reserve accounts.

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### July/August

- As part of the EFRA Project, LOTOS Asphalt signs a PLN 1.26bn EPC contract with Kinetics Technology of Italy for three key project units.
- The cornerstone is laid for the units to be built as part of the EFRA Project.
- LOTOS Asphalt signs a coke sale agreement with Oxbow Energy Solutions B.V. of the Netherlands. Oxbow agreed to buy coke from the Delayed Coking Unit, the main component of the process line to be built in the EFRA Project. In this way LOTOS Asphalt has ensured that the entire volume of output coke will be sold.

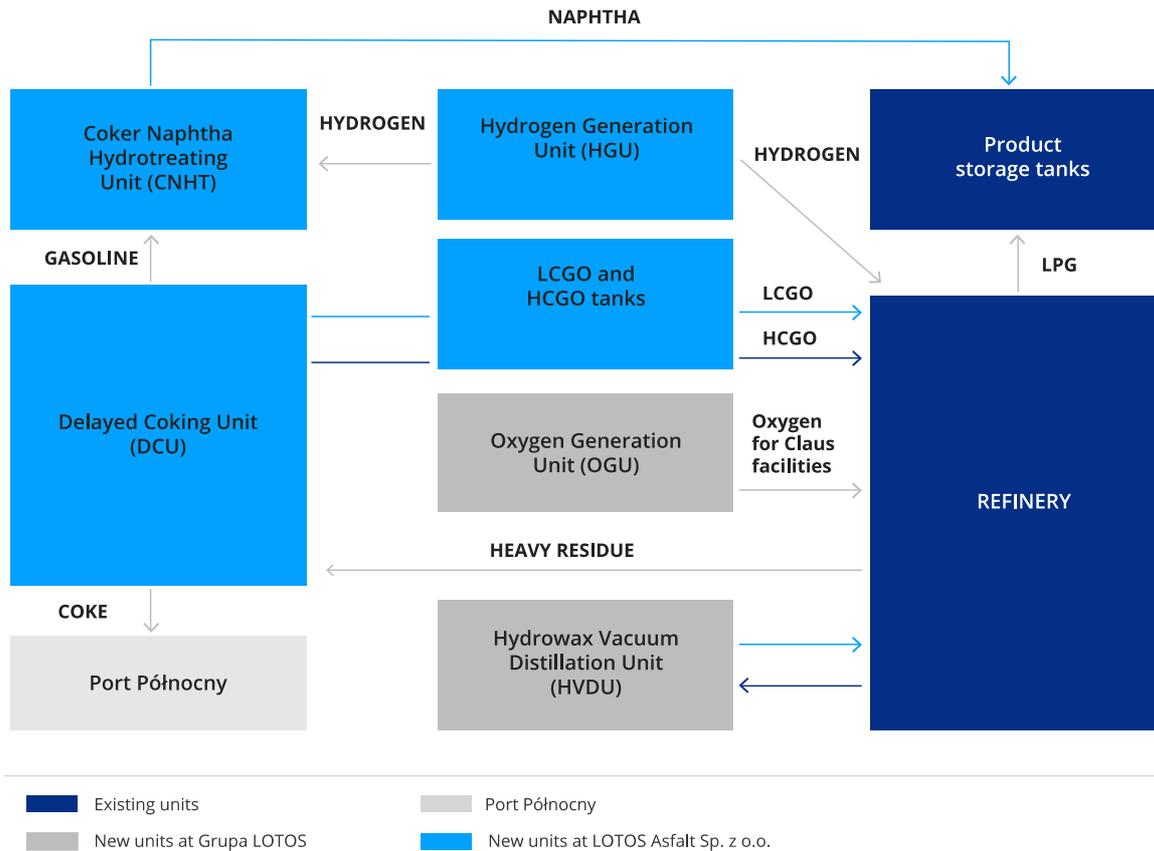
### September/October

- Lotos Asphalt enters into an agreement with Przembud Gdańsk on the construction of a power system facility as part of the EFRA Project. The company also signs a contract with Keller Polska for piling work at the site for a structure that will serve as a flyover linking the new units with the LOTOS refinery units and storage facilities.

### November

- At the EFRA Project complex, there has been a unique survey conducted, that allowed the proper preparation of support structures for the new units. The construction site has been thoroughly tested to a depth of approx. 30 meters using seismic studies by the German company Geotomographie.

## How the EFRA units work



The EFRA Project is consistent with the LOTOS Group's strategy for 2011–2015 for the refining segment, whose key objective is to ensure efficient use of the refinery's expanded processing capacities and further increase in distillate yields. The EFRA Project will allow us to fully harness the potential of production units built as part of the 10+ Programme, thus maximizing the use of Grupa LOTOS' existing assets.

The main facilities comprising the new EFRA complex will be the Delayed Coking Unit (DCU), Hydrogen Generation Unit (HGU), Coking Naphtha Hydrotreating Unit (CNHT), LPG Treatment Unit (LPGTU), Coke Logistics and Storage Facility (CS-LF), and Hydrowax Distillation Unit (HVDU).

The project is compliant with the Best Available Techniques (BAT) and carried out with respect for the natural and social environment. In some aspects, it even exceeds the BAT requirements, a case in point being the compressor to lower pressure in the coking reactor.

## Why did we select this solution?

Currently, coking units, including the one to be constructed under the EFRA Project, come with numerous enhancements which reduce their environmental impact. An additional advantage in the case of our compressor is that it will be equipped with a Closed Coke Slurry System (CCSS), a cutting-edge innovation designed to completely eliminate dust and hydrocarbon emissions during coke unloading. Furthermore, it will enable us to process hydrocarbon sediments and sludge created during sewage treatment.

## EFRA means new jobs

As anticipated in the EFRA Staff Programme, staff with specialist qualifications will need to be recruited and trained to prepare and execute the project, and then, once it is completed, manage its operation and maintenance. This will also require transfer of capabilities and staff within the LOTOS Group. The EFRA Staff Programme is scheduled for gradual implementation in 2014–2019.

From 2014 to 2019, we plan to achieve the following goals in our personnel policy:

- Manning 40 workstations with employees from the LOTOS Group by reallocating them between organizational units and companies;
- Employing 80 additional staff from the market.

The general contractor for the EFRA Project is Kinetics Technology of Italy, a leading international contractor for such projects, but a number of Polish subcontractors are also involved, as the project assumed engaging proven Polish partners and employees in the construction process.

We estimate that at the height of activity under the EFRA Project in 2017, the site will see approximately 2,000 workers, predominantly from Polish-owned companies.

Already today, such companies as Przembud Gdańsk, P.R.I. Centrum, Mostostal Zabrze and Elektromontaż Gdańsk are involved in the Project activities. What is more, Polish specialists will be assigned to work on electrical systems, road infrastructure and inter-unit connections, with 50 Polish experts from Tebodin Polska performing supervision tasks on behalf of the project sponsor. Design work for auxiliary facilities and connections between the new project and the refinery was entrusted to the Polish branch of Fluor (approximately 80 persons). The construction process will require engaging regional transport, service, catering and hospitality companies.

[More information on the EFRA Project](#)