

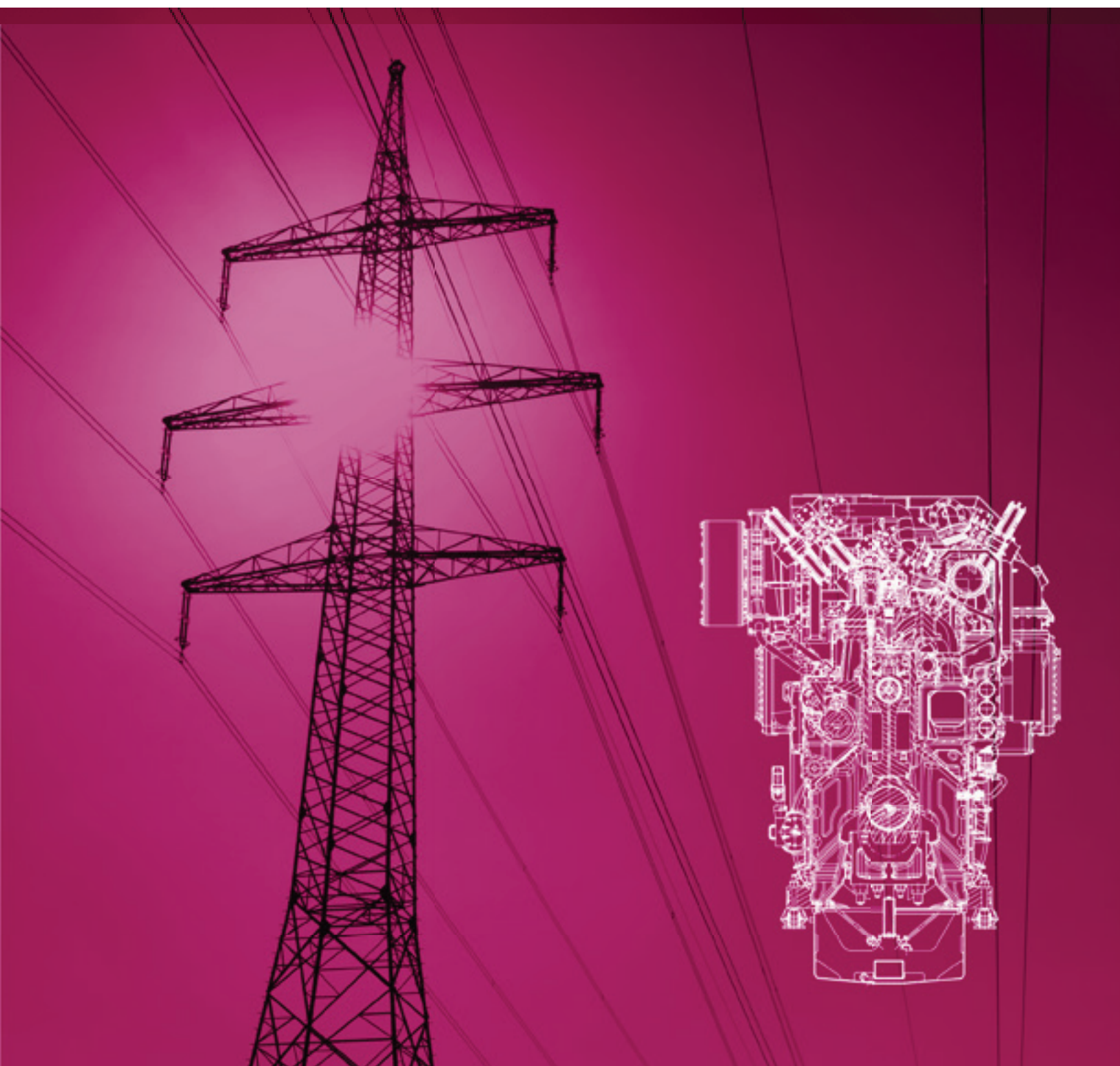


**ANGLO BELGIAN
CORPORATION**

We power your future

Generating sets

and turn-key solutions





ANGLO BELGIAN CORPORATION

We power your future

Anglo Belgian Corporation (ABC) is one of Europe's leading medium speed diesel engine manufacturers. The company can offer a century of expertise in ship propulsion, locomotive traction, marine and industrial power generating systems.

ABC was originally established in 1912 by a group of industrialists, with participation of the inventor of the diesel engine, Rudolf Diesel himself.

An important step in ABC's history was the acquisition by **OGEPAR** (1985), a strong financial holding with a large base in metal industry and engineering. Today, ABC has risen far above the standard of engine manufacturer.

The company is constantly evolving, developing new solutions in the field of **marine propulsion**, **power generation** and **railway traction**.

Through innovative thinking, ABC aims to increase sustainability and supply reliable and efficient products within a framework of ecological development. All engines are designed for **heavy duty** and **continuous operation**, straightforward applications and **maintenance**.

The best investment in order to meet all your power demands while respecting the environment

Proven experience

For 100 years Anglo Belgian Corporation supplies power solutions for electricity production. The development of the diesel engines has run parallel to the development of industry and electricity. ABC engines proved to be a prime mover compact, simple, reliable and efficient. Gensets based on ABC engines are widely used in **power plants, industrial groups** and **emergency gensets**.

Trustful and reliable power

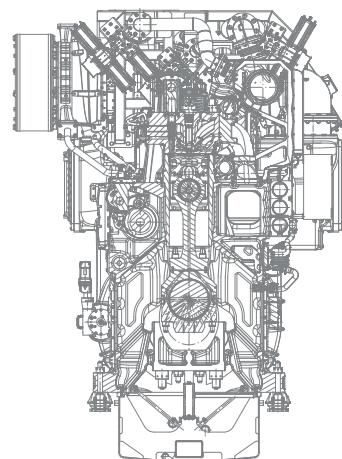
Generating electricity using ABC gensets shows that things want to be done correctly and there is no place for mistakes. The reliability of ABC engines is legendary; the speed **below 1000 rpm** and cleverly engineered distribution of the loads ensure a low mechanical wear and therefore a **long life** of the engines and components,

which extend the periods between overhauling and ensuring long periods of continuous operation. and components, which extend the periods between overhauling and ensuring long periods of **continuous operation**.

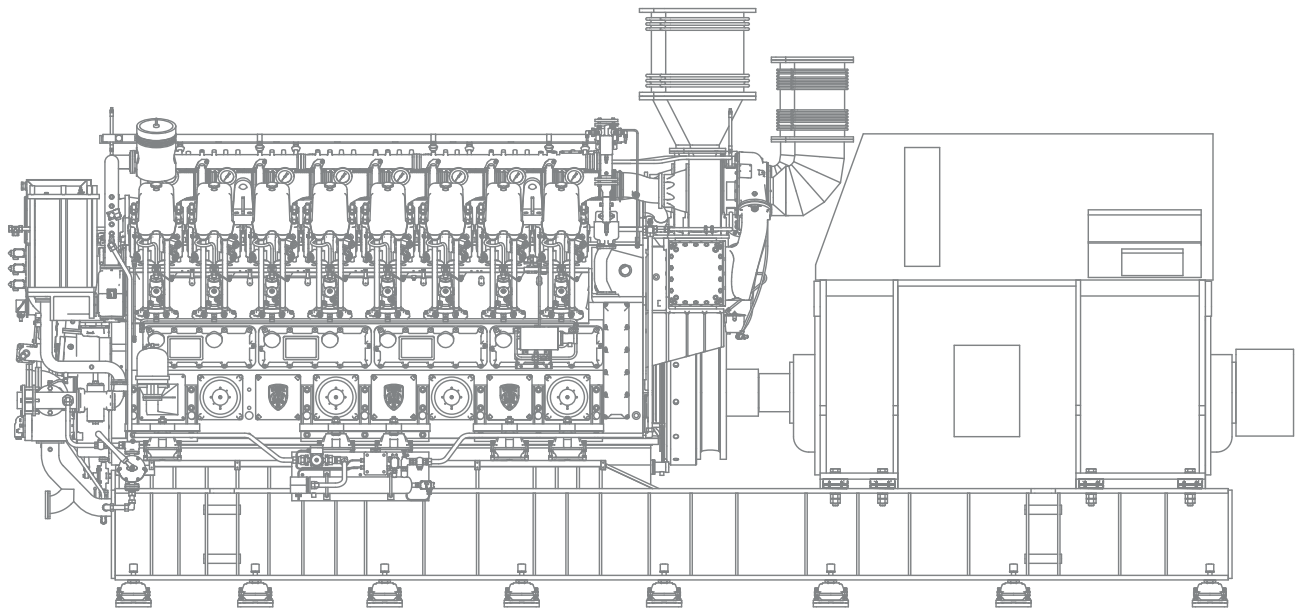
Adapting to the environment while respecting it

ABC engines are meant to operate anywhere under the hardest conditions. Fuel flexibility and respect for the environment are two of the keywords associated with ABC. Our engines are available in executions able to work on HFO, Dual Fuel, vegetable oil or animal fats.

The **gas operation mode** of the Dual Fuel engine brings the emissions to the lowest levels while operating using bio-fuels makes the ABC engine a green electricity source.



DL36



From genset to turn-key solutions

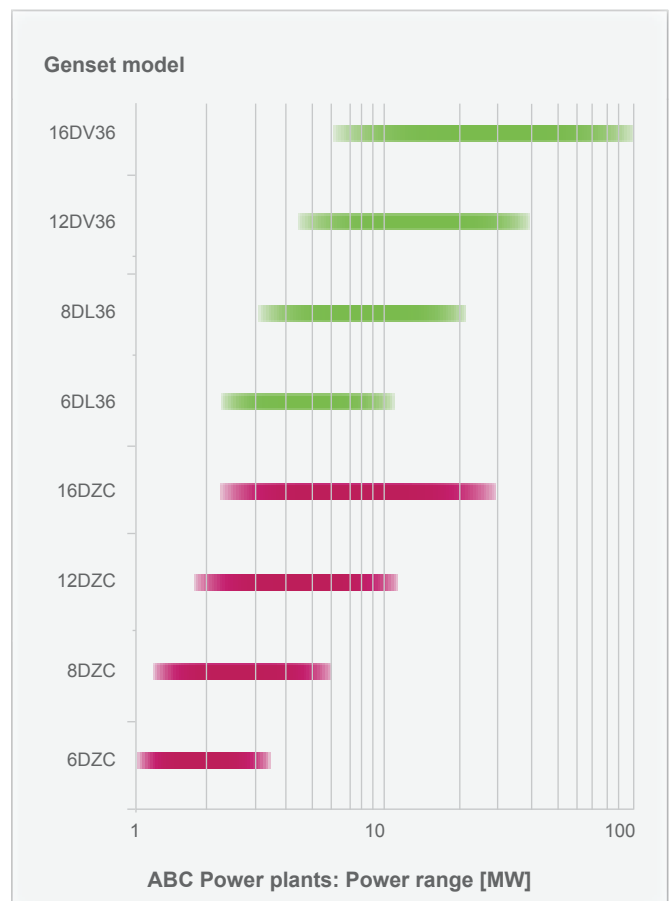
Beyond manufacturing engines

The ABC expertise in engineering combined with a reliable network of partners allows us to deliver complete or partial **turn-key solutions** all around the world. The 32.5MW power plant in Brazzaville is an example of ABC turn-key engineering, 10 x 16VDZC operating on HFO bring the necessary power for the development and stability of the zone. ABC has developed many similar projects all around the world.

Decentralized power

Tailored solutions for specific problems

As continuous power source or as emergency units, in parallel with the grid or in island operation, ABC gensets bring power to those industrial or civil projects where the availability of power is a must.





ABC Containerized power

Mobile power opening new frontiers

What about having all the advantages of an ABC Power Plant and at the same time being able to **quick start** the operation, relocate the installation if necessary and all that for a low investment.

Electricity is the base of any civil, industrial, mining or military major project. In many areas this power is not readily available, and possible solutions can take years to develop. For those cases it is necessary to possess a power source **as soon as possible**.

ABC containerized solutions are designed according to the needs of each project, including the necessary scope of supply and tailored to the environment requirements.

The system includes not only the power units but also fuel treatment systems and electric switchgear, all **integrated in containers**.



ABC Medium speed solutions

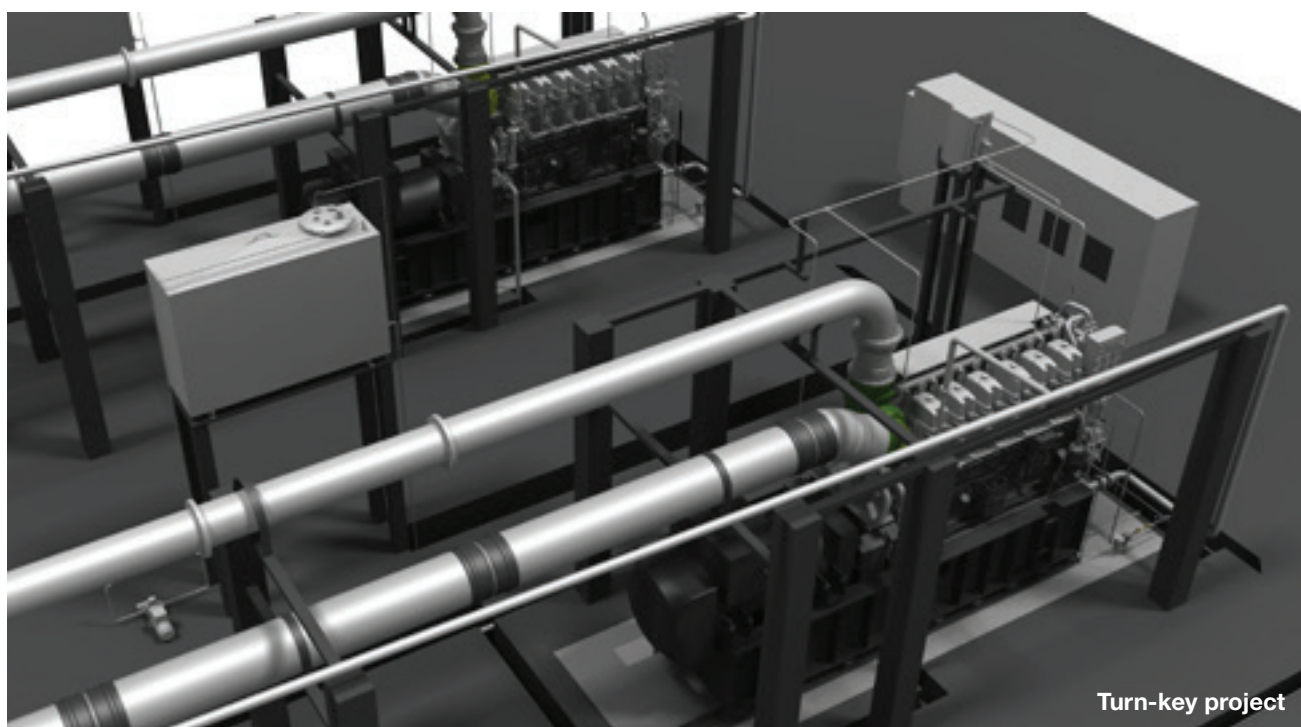
The best reliability for the lowest operational cost

Power generation requires a fuel energy source. The efficiency of processing fuel into electricity with minimal environmental impact will determine the most attractive solution.

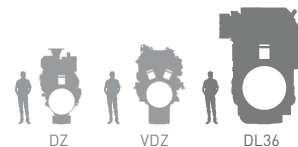
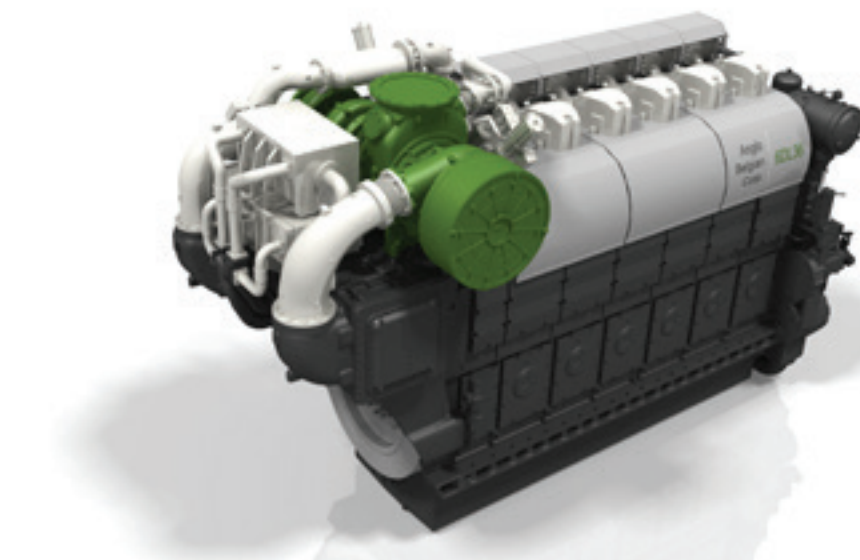
ABC engines, running always below 1000 rpm are renowned because of their reliability, low fuel consumption and easy maintenance. Those features are something more than technical advantages, because they result

into financial saving. Less fuel, less spare parts and less works required than other fast speed solution soon reveal ABC as the **best choice** to ensure the profitability of the investment.

At Anglo Belgian Corporation we will be **happy to help** you to evaluate the OPEX of a determinate power solution based on the life cycle cost of our equipments.



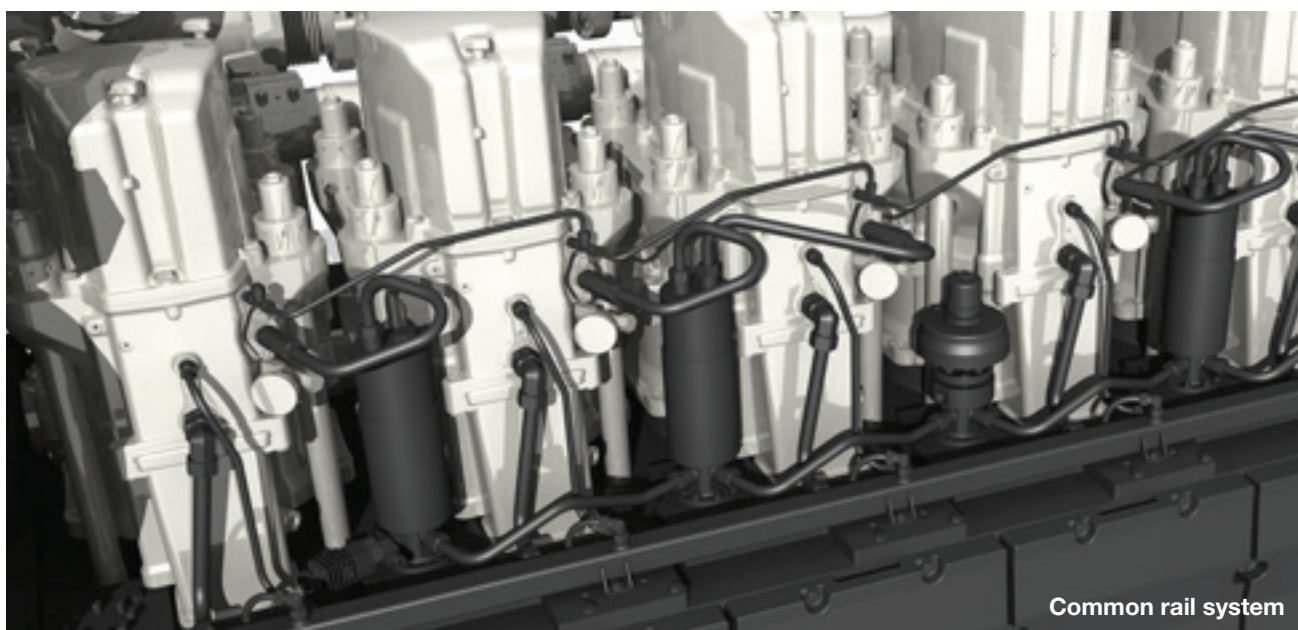
Turn-key project



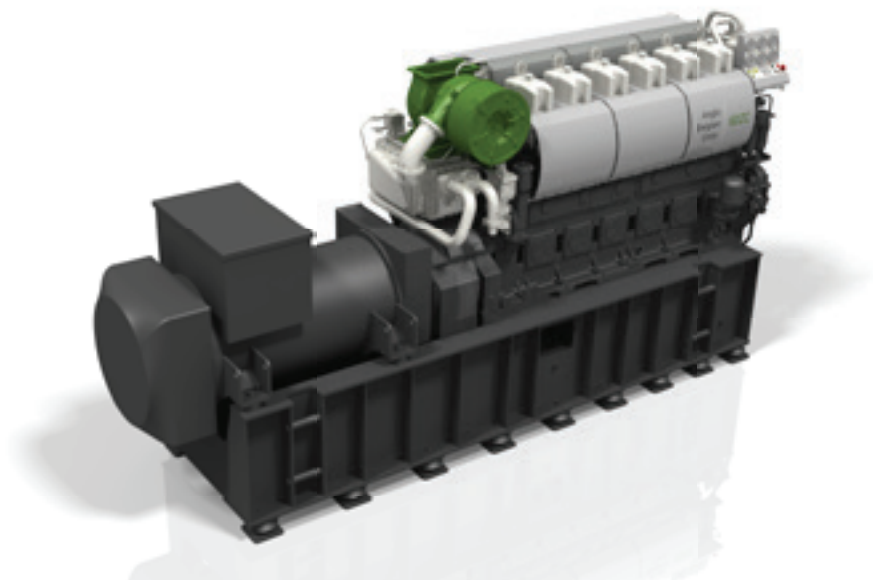
6/8DL36

With the design and development of this new engine family, ABC confirms its intention to become one of the major players on the medium speed engine market. Introducing **state-of-the-art technology** such as EGR, 2-stage turbo-charging and a radically optimized common rail system, the engines will comply with the strictest emission standards.

The gensets based on this new family range will deliver up to 5MWe with a **large flexibility** in fuels like MDO, HFO, bio-fuels and Dual-Fuel. In a medium term, the development of a v-execution with 12 and 16 cylinders will cover a new range of power; the 16DV36 will reach 10MWe per genset, and will penetrate the market of power plants with outputs up to 100 MWe



Common rail system



6/8DZC & 12/16(V)DZC

The DZ family range, both the line and V executions, has been proven to be a reliable partner in **energy generation** while offering very competitive operational costs. The characteristic fuel flexibility and low maintenance requirements made those engines a wise choice when operating in remote areas or using alternative fuel sources.

A low operation pressure and low speed leads to long periods between overhauling and long continuous operation times. The easy access to the components simplifies maintenance operations and a mechanical injection system ensures the simplicity and easiness of operation.

Bio-expertise

100 years ago, Rudolf Diesel already predicted a larger use of vegetable oil as fuel for the engines, and indeed, his first engine was designed to burn peanut oil. Nowadays the world is witnessing a growth in the production and use of bio fuels. Increasing oil prices and environmental standards are pushing governments to set up incentives for the promotion of these fuels. ABC has always understood the importance of bio-fuels, that's why a large part of the R&D budget was invested for emission reduction and bio-fuel applications. The company is always looking for new challenges in alternative fuel sources. Subject to some simple, but effective adaptations, the robust engines of ABC can run on almost all bio-fuels: The company is always looking for new challenges in alternative fuel sources. Subject to some simple, but effective adaptations, the robust engines of ABC can run on almost all bio-fuels:

- » **Vegetable Oils;** rapeseed, palm, colza, soya, nuts, etc.
- » **Animal Grease (Tallow);** pig, chicken, limb, etc.
- » **Aggregates:** used frying oil, byproducts of oil, etc.
- » **In the dual-fuel version;** natural gas, LNG, bio-gas, landfill gas, wood gas etc.

Some references



Brazzaville

Turn-key complete solution, HFO
10 x 16VDZC, 32.500 kW



Arizona

USA EuroFresh
4 x 6DZC, 4.500 kW



Leela Hotel, New Dehli

Dual Fuel project
1 x 12VDZD, 1.900 kW



Italy, Bacarelli

Bio-fuel, Rapeseed oil
1 x 6DZC, 1.000 kW



Taiwan

Containerized solution
2 x 6DZC, 2.500 kW



Tanzania

Sumbawanga
4 x 8DZC, 5.000 kW

Classification

Anglo Belgian Corporation is ISO9001:2008 certified.
All engines are individually tested on test benches,
with possibility of the presence of the client.



Overall data

				Engine power (ISO 3046 – I)		Nominal power of gensets							
						50 Hz electric - 3 phase				60 Hz electric - 3 phase			
						P _w (kW)		P _n (kVA)		P _w (kW)		P _n (kVA)	
						mdo/hfo/bio	dual fuel **	mdo/hfo/bio	dual fuel **	mdo/hfo/bio	dual fuel **	mdo/hfo/bio	dual fuel **
DL36	Engine type	rpm	kW		HP	P _w (kW)		P _n (kVA)		P _w (kW)		P _n (kVA)	
	6 DL36-600	600	3120	---	4239	2995	---	3744	---	2995	---	3744	---
	6 DL36-720	720	3744	---	5087	---	---	---	---	3594	---	4493	---
	6 DL36-750	750	3900	---	5299	3744	---	4680	---	---	---	---	---
	8 DL36-600	600	4160	---	5652	3994	---	4992	---	3994	---	4992	---
	8 DL36-720	720	4992	---	6783	---	---	---	---	4792	---	5990	---
	8 DL36-750	750	5200	---	7065	4992	---	6240	---	---	---	---	---

Conversion factors used: 1 metric HP = 0,736 kW • Generator efficiency: η_g = 0,96 • Power factor: cos φ = 0,8

VDZ	12 DZC-720-181	720	2064	1440	2804	---	---	---	---	1961	1368	2451	1710
	12 DZC-750-179	750	2130	1500	2894	2024	1425	2530	1781	---	---	---	---
	12 DZC-900-166	900	2388	1800	3245	---	---	---	---	2269	1710	2836	2138
	12 DZC-900-188	* 900	2700	1800	3668	---	---	---	---	2565	1710	3206	2138
	12 DZC-1000-166	1000	2652	2000	3603	2519	1900	3149	2375	---	---	---	---
	12 DZC-1000-176	1000	2800	2000	3805	2660	1900	3325	2375	---	---	---	---
	12 DZC-1000-188	* 1000	3000	2000	4076	2850	1900	3563	2375	---	---	---	---
	16 DZC-720-181	720	2752	1920	3739	---	---	---	---	2614	1824	3268	2280
	16 DZC-750-179	750	2840	2000	3859	2698	1900	3372	2375	---	---	---	---
	16 DZC-900-166	900	3184	2400	4326	---	---	---	---	3025	2280	3781	2850
	16 DZC-900-188	* 900	3600	2400	4891	---	---	---	---	3420	2280	4275	2850
	16 DZC-1000-166	1000	3536	2670	4804	3359	2537	4199	3171	---	---	---	---
	16 DZC-1000-176	1000	3750	2670	5095	3562	2537	4453	3171	---	---	---	---
	16 DZC-1000-188	* 1000	4000	2670	5435	3800	2537	4750	3171	---	---	---	---

DZ	6 DZC-720-181	720	1032	720	1402	---	---	---	---	980	684	1225	855
	6 DZC-750-179	750	1065	750	1447	1012	713	1265	891	---	---	---	---
	6 DZC-900-166	900	1194	900	1622	---	---	---	---	1134	855	1418	1069
	6 DZC-900-188	* 900	1350	900	1834	---	---	---	---	1283	855	1603	1069
	6 DZC-1000-166	1000	1326	1000	1802	1260	950	1575	1188	---	---	---	---
	6 DZC-1000-176	1000	1405	1000	1910	1335	950	1668	1188	---	---	---	---
	6 DZC-1000-188	* 1000	1500	1000	2038	1425	950	1781	1188	---	---	---	---
	8 DZC-720-181	720	1376	960	1870	---	---	---	---	1307	912	1634	1140
	8 DZC-750-179	750	1420	1000	1929	1349	950	1686	1188	---	---	---	---
	8 DZC-900-166	900	1592	1200	2163	---	---	---	---	1512	1140	1890	1425
	8 DZC-900-188	* 900	1800	1200	2446	---	---	---	---	1710	1140	2138	1425
	8 DZC-1000-166	1000	1768	1335	2402	1680	1268	2100	1585	---	---	---	---
	8 DZC-1000-176	1000	1875	1335	2545	1780	1268	2225	1585	---	---	---	---
	8 DZC-1000-188	* 1000	2000	1335	2717	1900	1268	2375	1585	---	---	---	---

DX	3 DX-600-000	600	138	---	188	131	---	164	---	131	---	164	---
	3 DXS-720-045	720	236	---	321	---	---	---	---	224	---	280	---
	3 DXC-750-100	750	331	300	450	314	285	393	356	---	---	---	---
	6 DX-600-000	600	276	---	375	262	---	328	---	262	---	328	---
	6 DXS-720-045	720	470	---	639	---	---	---	---	447	---	558	---
	6 DXC-750-100	750	662	600	899	629	570	786	713	---	---	---	---
	8 DX-600-000	600	368	---	500	350	---	437	---	350	---	437	---
	8 DXC-720-100	720	864	768	1174	---	---	---	---	821	730	1026	912
	8 DXC-750-100	750	883	800	1200	839	760	1049	950	---	---	---	---

Conversion factors used: 1 metric HP = 0,736 kW • Generator efficiency: η_g = 0,95 • Power factor: cos φ = 0,8

* For special applications

** Natural gas with Methane Index = 73 → Lower Calorific Value gas = 39.000 kJ/Nm³ → Lower Calorific Value diesel = 42.700 kJ/kg

Possible gases: natural gas, waste gas, landfill gas [the ability to burn other gases should be done in consultation with ABC]

In Dual Fuel mode: [VDZC engine BMEP set at 12,5 bar; DXC engine BMEP set at 10,87 bar



Fuel flexibility and dual fuel engines

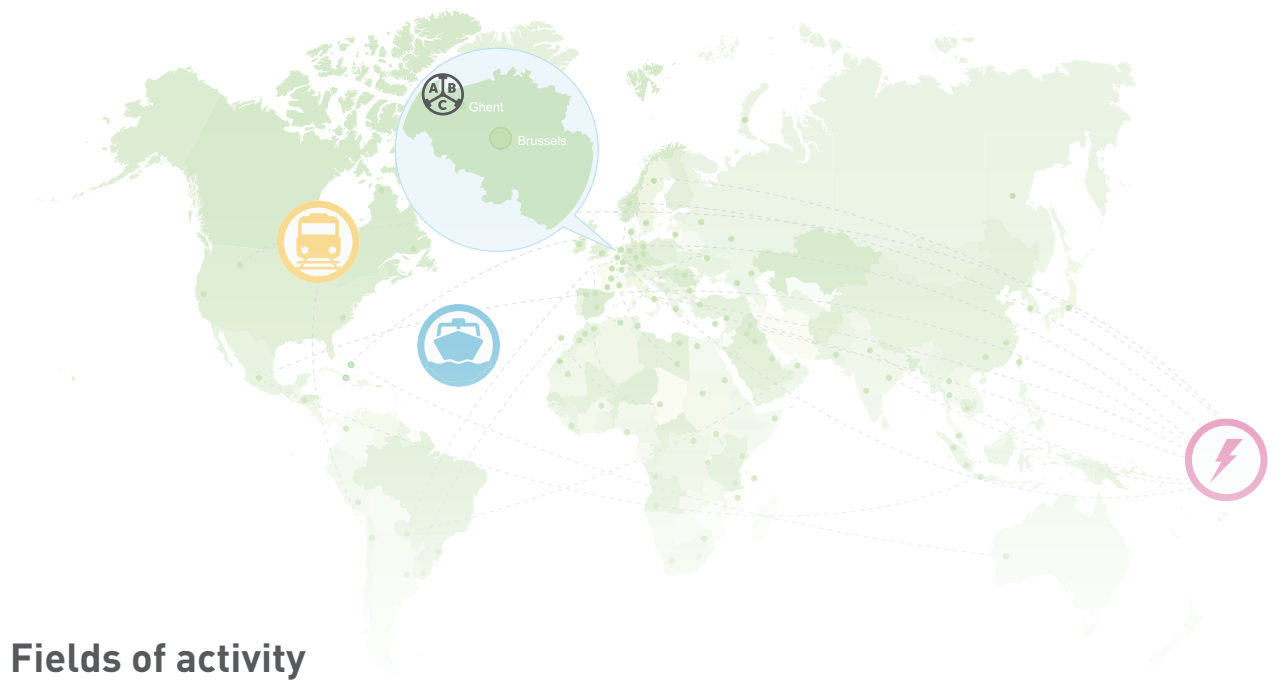
Fuel Flexibility is one of the house brands of Anglo Belgian Corporation. ABC engines can operate within a **wide range of fuels** and qualities. Besides regular diesel, ABC engines can be **specially adapted** for operating using HFO, vegetal oil, animal fats, dual fuel and other alternative fuels.

When price of gas fuels offer an advantage over liquid conventional fuels, investing in an ABC Dual Fuel solution can be an interesting option.

ABC Dual Fuel engines are **specially modified** diesel engines able to run **using gas** with a **small** amount of **diesel** as pilot fuel. Furthermore, the Dual Fuel design still allows operating the engine using 100% diesel when gas supply is not readily available.

ABC Dual Fuel engines are able to operate using natural gas, LNG, landfill gas and other alternative gases.

ABC Dual Fuel engines have worked successfully as **decentralized energy generation** units around the world. Now, with special certification of **Bureau Veritas**, the dual fuel engines take on a very important role in maritime propulsion using LNG, especially in those ships operating **close to regasification stations** and in LNG tankers.



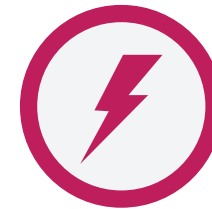
Fields of activity



Marine engines

Propulsion & power solutions

Originally, it is the marine sector where ABC has established its brand. The company is known for decades in propulsion and generating of inland ships, fishing boats, tugboats, dredgers, ferries, coasters, etc.



Generating sets

and turn-key solutions

Anglo Belgian Corporation provides energy solutions in the most remote areas and extreme environments; from industrial and mine gensets, to complete turnkey projects such as containerized power plants, CHP projects and Bio-fuel powerstations.



Traction engines

Since 1950, the company is supplying diesel engines for railway companies. Since then, over 300 engines were delivered for traction applications both shunting and mainline service. As such, ABC is powering the world's largest diesel-hydraulic locomotive.

Service and training

Anglo Belgian Corporation operates throughout the world with branches in **more than 70 countries**. These divisions provide on-site commissioning, installation works, repairs and preventive maintenance and advice for ABC engines **24/7**.

The service organization and **certified technicians** ensure to exceed the required **service level** standard. The service staff is dedicated to help ABC's customers, **maximizing** the **productivity** and uptime of the engines.

ABC's **large-scale stock** of **spare parts** ensures that components can be sent **within hours** to any location in the world. In addition to this service, **local** service stations provide the **fastest delivery** with their individual substantial stock of spares and consumables.

ABC Academy

The service department offers **tailored training** programs for clients and new partners, according to **specific requirements** and can take place at the plant in Ghent or anywhere else in the world. ABC training courses are taught by veteran and **experienced technicians** who will be glad to share their **know-how** and enthusiasm for ABC engines.

To find out more detailed information about our service and sales support, please visit our website **www.abcdiesel.be**



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