

Application Areas of Autonomous Diesel-Generator Units

Oil-And-Gas Industry:



- ✓ Oil extraction and processing
- ✓ Geological prospecting

Mechanical Engineering



- ✓ Reserve supply of remote objects
- ✓ Reserve power supply

Construction



- ✓ Permanent power supply in the absence of industrial line

Food Industry



- ✓ Reserve power supply of farming workshops and refrigerators

Housing And Communal Services



- ✓ Reserve and permanent power supply of housing (settlements, cottages, recreation centers)
- ✓ Emergency service mobile stations

Defence-Industrial Application



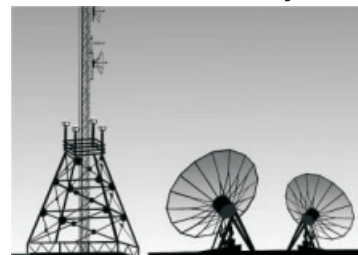
- ✓ Power supply of mobile hospitals and camps
- ✓ Emergency consequences liquidation equipment,
- ✓ Reserve supply of operational readiness systems

Medical Centers:



- ✓ Reserve power supply of resuscitation departments, surgery departments, maternities.
- ✓ Sustaining life-supporting equipment stable operation.

Telecommunication Objects:



- ✓ Autonomous power supply for mobile and stationary cellular communication plants, tele- and radio- amplifiers.

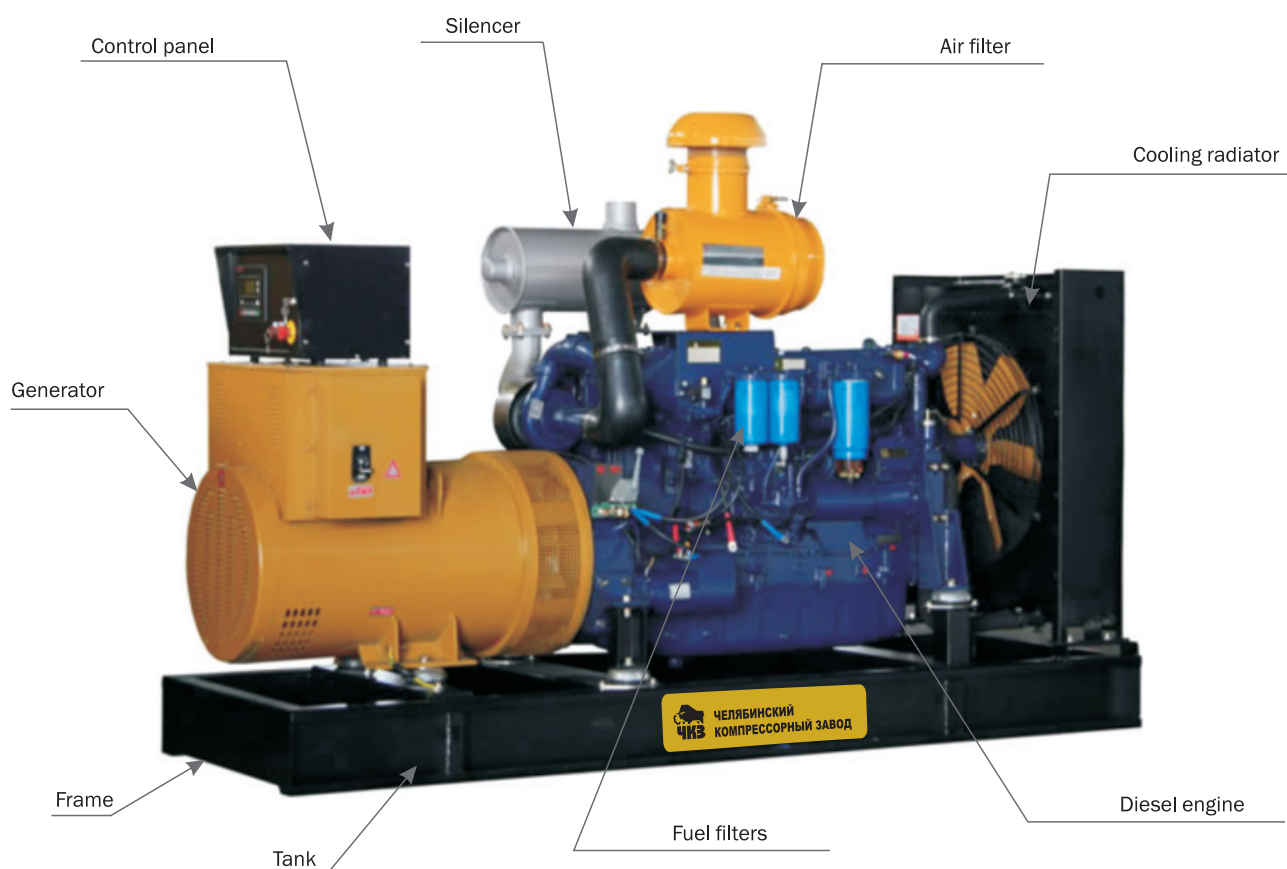
Autonomous Diesel-Generator Units: General Information

Autonomous diesel-generator unit (ADGU) is unit designed for electric energy production in autonomous conditions not depending on central power supply system.

Autonomous diesel-generator units can be also used as reserve (emergency) power sources in those industries where constant no-break power supply is required independent of voltage drops in the central electrical supply network.

At present the range of ADGU consists of products from 10kW till 500kW power, which are the most demanded on the market. Upon a special request there can be more high-powered units produced.

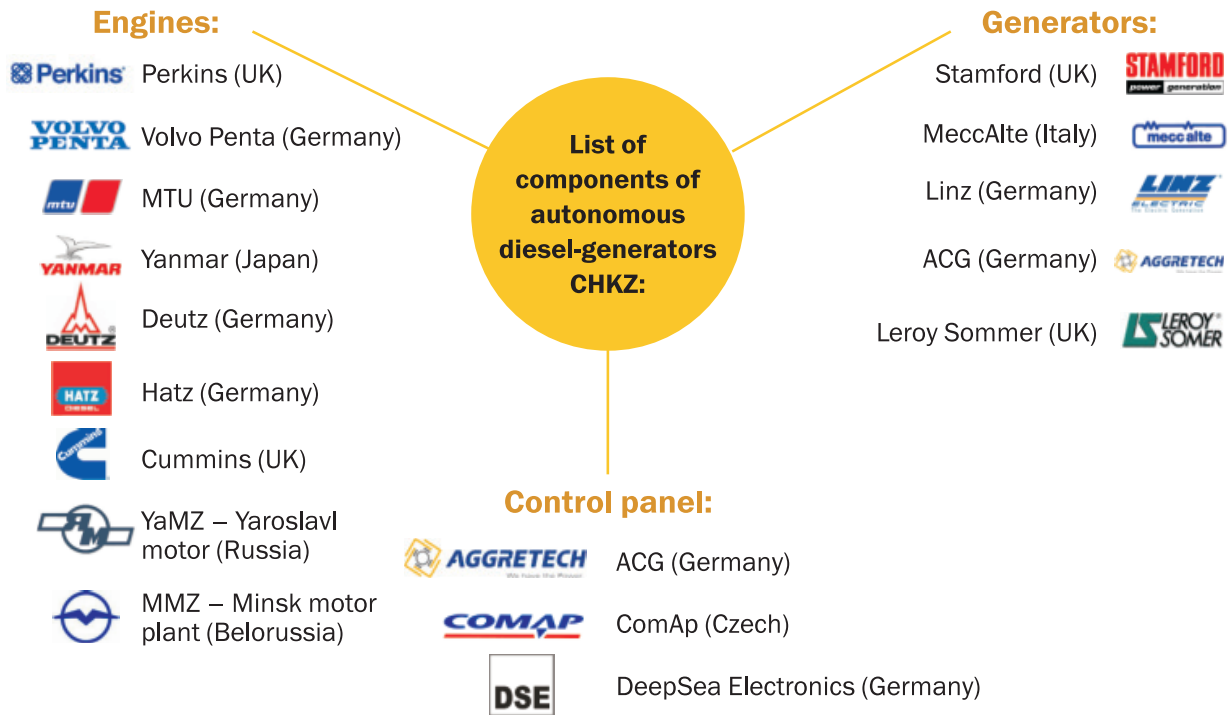
The main ADGU advantages are autonomy and mobility. The autonomous diesel-generator units which do not require capital construction are used when there is no possibility of using central power grids. For commissioning of such a unit it is needed only to deliver and to supply it with a required diesel fuel quantity, connect the unit to the local power grid and to start the operation of diesel-generator. The units could be equally efficiently applied for permanent and reserve operation, out of the country and in cities and for various facilities such as construction, trade, living or industrial area.



Pic. 29 Main elements of an autonomous diesel-generator unit

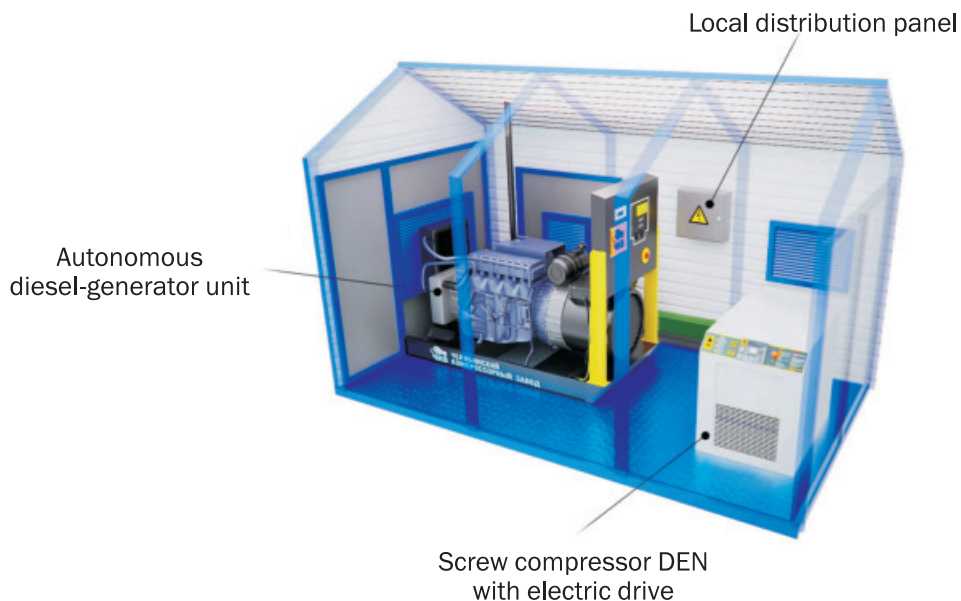
Manufacturers of the Components for ADGU

Autonomous diesel-generator units are produced from the components made by largest European manufacturers which have gained excellent reputation for the long-term period of using in Russia. Applied state-of-the-art diesel engines guarantee reduced fuel consumption and a low level of exhaust emission. Generator models installed on the stations produced by «CHKZ» have increased resistance to various operational conditions of ADGU and do not require any odd maintenance costs.



Integrated Solutions with ADGU

Integrated solution implies an ADGU installation into a block-container together with a compressor DEN which allows to use the compressor autonomously, independent of other power sources.



Scheme 30 Example of an integrated solution: ADGU with a compressor DEN

Open Autonomous Diesel-Generator Units

Open autonomous diesel-generator units (ADGU) are used in specially equipped facilities, where all the peripheral systems, which are venting, heating, exhaust gases outlet, electrical equipment control and protection, additional fuel, fire alarm and firefighting, should be mounted.

This version is used for reserve operation of autonomous diesel-generator unit as well as for regular operation and is considered to be the most convenient.



ADGU Technical characteristics

Model	Prime power, kW	Max power, kW	Phases	Engine	Voltage,V	Frequency,Hz
ADGU 10Y-O	10,2	11,0	3	Yanmar	400	50
ADGU 15Y-O	15,2	15,2	3	Yanmar	400	50
ADGU 23Y-O	23,6	24,0	3	Yanmar	400	50
ADGU 35Y-O	35,2	36,0	3	Yanmar	400	50

* ADGU - Autonomous diesel-generator units
O – Open frame



ADGU Technical characteristics

Model	Prime power, kW	Max power, kW	Phases	Engine	Voltage,V	Frequency,Hz
ADGU 23D-O	23,2	24,0	3	Deutz	400	50
ADGU 31D-O	31,4	31,4	3	Deutz	400	50
ADGU 47D-O	47,8	49,6	3	Deutz	400	50

Open Autonomous Diesel-Generator Units



ADGU Technical characteristics

Model	Prime power, kW	Max power, kW	Phases	Engine	Voltage,V	Frequency,Hz
ADGU 48P-0	48,6	53,2	3	Perkins	400	50
ADGU 59D-0	59,3	62,3	3	Deutz	400	50
ADGU 59P-0	59,4	62,2	3	Perkins	400	50
ADGU 81D-0	81,6	86,5	3	Deutz	400	50
ADGU 82P-0	82,1	90,4	3	Perkins	400	50
ADGU 102D-0	102,0	114,0	3	Deutz	400	50
ADGU 111P-0	111,0	120,0	3	Perkins	400	50
ADGU 118P-0	118,7	132,0	3	Perkins	400	50
ADGU 127D-0	127,0	133,0	3	Deutz	400	50
ADGU 147P-0	147,3	163,2	3	Perkins	400	50
ADGU 166D-0	166,0	176,0	3	Deutz	400	50



ADGU Technical characteristics

Model	Prime power, kW	Max power, kW	Phases	Engine	Voltage,V	Frequency,Hz
ADGU 199V-0	199,0	220,0	3	Volvo	400	50
ADGU 252V-0	252,0	264,0	3	Volvo	400	50
ADGU 305V-0	305,0	334,0	3	Volvo	400	50
ADGU 332V-0	332,0	360,0	3	Volvo	400	50
ADGU 364V-0	364,0	405,0	3	Volvo	400	50
ADGU 404V-0	404,0	437,0	3	Volvo	400	50
ADGU 457V-0	457,0	505,0	3	Volvo	400	50
ADGU 507V-0	507,0	564,0	3	Volvo	400	50
ADGU 222M-0	222,0	247,0	3	MTU	400	50
ADGU 246M-0	246,0	264,0	3	MTU	400	50
ADGU 291M-0	291,0	322,0	3	MTU	400	50
ADGU 320M-0	320,0	350,0	3	MTU	400	50
ADGU 372M-0	372,0	410,0	3	MTU	400	50
ADGU 412M-0	412,0	454,0	3	MTU	400	50
ADGU 480M-0	480,0	529,0	3	MTU	400	50
ADGU 529M-0	529,0	584,0	3	MTU	400	50

Autonomous Diesel-Generator Units in a Sound-Proof Cabinet

Sound-proof cabinets for generator units provide working units' sound reducing. Moreover, units in cabinets could be placed outside, because the cabinet protects the unit from atmospheric influence such as rain, low temperature etc.

Cabinet is a solid metal framework, the inner side of which is glued over with a special sound-proof material. For an ADGU maintenance there are access doors from both side of the cabinet. There are also special openings for proper venting of a ADGU and mounted silencer for exhaust gases outlet.

Cabinet allows using the unit outside as well as inside of a building, because silent-proof cabinets reduce noise for 30dB, which sufficiently lowers noise level from the one of 100-110dB of operating unit.

It is recommended to supply the ADGU with a cooling liquid heater and an accumulator battery charging device when it is placed outside a building and in the cabinet.



ADGU Technical characteristics

Model	Prime power, kW	Max power, kW	Phases	Engine	Voltage,V	Frequency,Hz
ADGU 10Y-C	10,2	11,0	3	Yanmar	400	50
ADGU 15Y-C	15,2	15,2	3	Yanmar	400	50
ADGU 23Y-C	23,6	24,0	3	Yanmar	400	50
ADGU 35Y-C	35,2	36,0	3	Yanmar	400	50

* ADGU - Autonomous diesel-generator units
C – Canopy (sound-proof cabinet)



ADGU Technical characteristics

Model	Prime power, kW	Max power, kW	Phases	Engine	Voltage,V	Frequency,Hz
ADGU 23D-C	23,2	24,0	3	Deutz	400	50
ADGU 31D-C	31,4	31,4	3	Deutz	400	50
ADGU 47D-C	47,8	49,6	3	Deutz	400	50

Autonomous Diesel-Generator Units in a Sound-Proof Cabinet



ADGU Technical characteristics

Model	Prime power, kW	Max power, kW	Phases	Engine	Voltage,V	Frequency,HZ
ADGU 48P-C	48,6	53,2	3	Perkins	400	50
ADGU 59D-C	59,3	62,3	3	Deutz	400	50
ADGU 59P-C	59,4	62,2	3	Perkins	400	50
ADGU 81D-C	81,6	86,5	3	Deutz	400	50
ADGU 82 P-C	82,1	90,4	3	Perkins	400	50
ADGU 102D-C	102,0	114,0	3	Deutz	400	50
ADGU 111 P-C	111,0	120,0	3	Perkins	400	50
ADGU 118P-C	118,7	132,0	3	Perkins	400	50
ADGU 127D-C	127,0	133,0	3	Deutz	400	50
ADGU 147 P-C	147,3	163,2	3	Perkins	400	50
ADGU 166D-C	166,0	176,0	3	Deutz	400	50



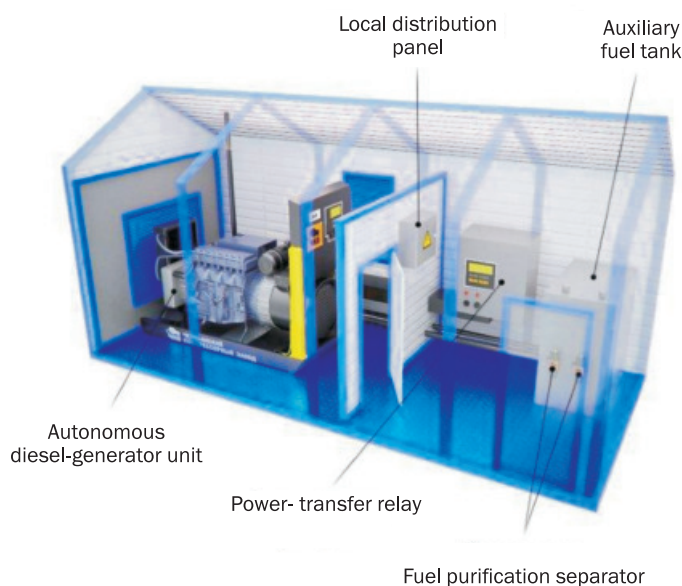
ADGU Technical characteristics

Model	Prime power, kW	Max power, kW	Phases	Engine	Voltage,V	Frequency,HZ
ADGU 199 V-C	199,0	220,0	3	Volvo	400	50
ADGU 252V-C	252,0	264,0	3	Volvo	400	50
ADGU 305 V-C	305,0	334,0	3	Volvo	400	50
ADGU 332 V-C	332,0	360,0	3	Volvo	400	50
ADGU 364 V-C	364,0	405,0	3	Volvo	400	50
ADGU 404 V-C	404,0	437,0	3	Volvo	400	50
ADGU457 V-C	457,0	505,0	3	Volvo	400	50
ADGU 507 V-C	507,0	564,0	3	Volvo	400	50
ADGU 222 M-C	222,0	247,0	3	MTU	400	50
ADGU 246 M-C	246,0	264,0	3	MTU	400	50
ADGU 291M-C	291,0	322,0	3	MTU	400	50
ADGU 320 M-C	320,0	350,0	3	MTU	400	50
ADGU 372 M-C	372,0	410,0	3	MTU	400	50
ADGU 412 M-C	412,0	454,0	3	MTU	400	50
ADGU 480 M-C	480,0	529,0	3	MTU	400	50
ADGU 529 M-C	529,0	584,0	3	MTU	400	50

Block-Modular Energy Station (BKE)

Block-container energy station is a heat-insulated container inside of which there is a diesel-generator unit supplied with all the systems necessary for normal ADGU operation in aggressive ambient conditions.

The BKE is designed to fulfill the largest Russian diesel-generators consumers' needs and in accordance with all the necessary operating requirements.



Pic. 31 Standard scheme of the BKE equipment laying

Standard BKE package

Name	Characteristics, description, brand	
1. Block-modular station with arched roof design (in required climatic implementation)	Metal cage with bordering made of 60mm width 3-layer panels without framework according to Technical Specifications TS 67-18-165-93 with 56 kg/m ³ density polyurethane foam heat insulation.	
	Room category according to Fire Code 03-105-03	Room category according to Fire Code 03-105-03
	Fire resistance degree SNiP 21-01-99	Fire resistance degree SNiP 21-01-99
1.1. Automatic firefighting system	OSP-1 – automatic powder fire extinguisher. Response temperature: +100 °C.	set
1.2. Lightening system (inside)	Fluorescent lighting	set
1.3. Lightening system (outside)	Halogen projector with symmetrical reflector, 500 W.	1 pc.
1.4. Combined extract-and-input system	Inlet and outlet windows' electric controlled jalousie (electric drive – BELIMO LM 230).	set
1.5. Heating system	Electric convector (electric radiator)	set
2. Diesel-generator	ADGU	1 pc.
3. Power supply control system	Auxiliaries board, cable input from external source, wiring layout through the block-modular station.	

Autonomous Diesel-Generator Units with (YaMZ) Engines (Russia)

Diesel-generator units applying diesel drive YaMZ are used broadly due to long-term successful operation in diverse climatic conditions in various modes. DGU are in great demand nowadays due to its high reliability, broad maintenance experience, spare parts availability and low cost comparatively to foreign analogues. Due to the same reasons these engines are installed on new technical models as well. For the present moment the units have been modernized to conform to Euro-2 and - 3 norms obligatory for operation in Russia, neighbouring countries and beyond.

Technical characteristics

Model	Nominal power, kW	Maximum power, kW	Voltage, V	Frequency, Hz	Phases	Engine	Generator	Fuel consumption, g/kW.h	Speed, RPM
ADGU-60Ya	60	66	400	50	3	YAMZ	Leroy Somer or GS-B (Kursk)	230	1500
ADGU-100 Ya	100	110	400	50	3	YAMZ	Leroy Somer or GS-B (Kursk)	230	1500
ADGU-150 Ya	150	165	400	50	3	YAMZ	Leroy Somer or GS-B (Kursk)	230	1500
ADGU-200 Ya	200	220	400	50	3	YAMZ	Leroy Somer or GS-B (Kursk)	220	1500
ADGU-315 Ya	315	346	400	50	3	YAMZ	Leroy Somer or GS-B (Kursk)	208	1500

* - without a control cabinet

Version examples:



Open frame



In a sound-proof canopy



In a block-container