

RECOVERY OF VAPOR EMISSIONS FROM OIL AND PETROLEUM PRODUCTS DURING TRANSSHIPMENT AND STORAGE

Condensation and vapor dispersion complexes
of oil and petroleum products (KKR 10 – KKR 50 000 m³/h)

For gas stations, oil depots, oil refineries, terminals for transshipment
of petroleum products and oil (sea and river)

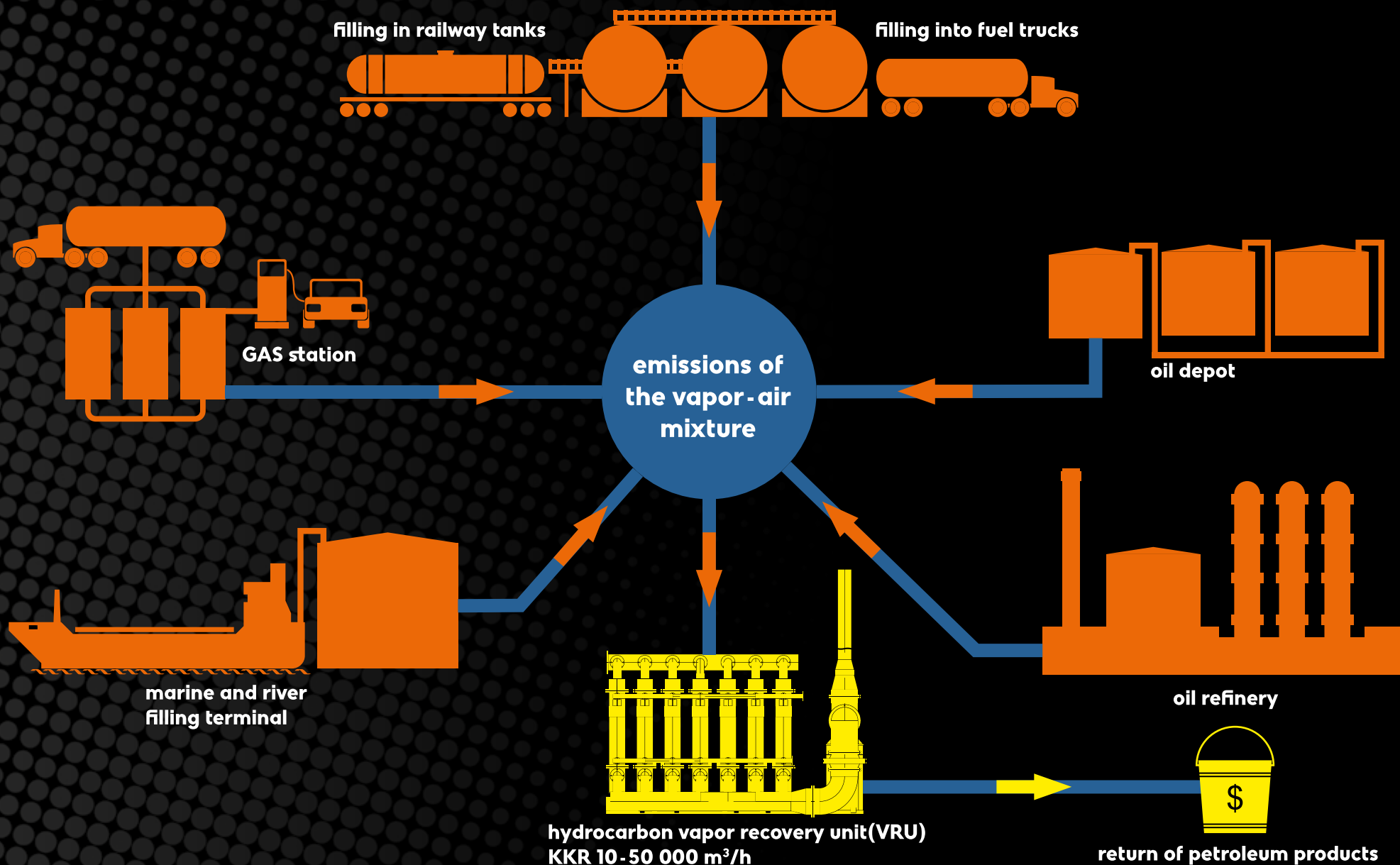


GAZSPECTEHNICA LLC

Design,
manufacture, implementation
Founded in 2000

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GAZSPECTEHNICA COMPANY

The team of Gazspectehnica LLC is based on highly qualified engineers in the field of environmental and industrial safety during testing of rocket and space technology and during transportation and storage of highly toxic and fire- and explosive components of rocket fuels.

Having its own production and experimental base, since 2006 the company has been developing according to Customer requirements, producing and putting into operation vapor recovery units (VRU) for capturing and recovering gasoline and petroleum vapors with a capacity of 10 to 50,000 m³/h and since 1993 industrial gas cleaning units.

- By developing and producing hydrocarbon recovery units we offer solutions to your environmental, commercial and safety challenges.
- Our solutions meet the current requirements of technical regulations Customs Union (TR CU).
- We develop product documentation in full compliance with the unified system of design documentation.
- The possibility of servicing by the manufacturer is the key to reliability and durability, and warehouse support for ALL consumables is stability.
- Continuous development, analysis and implementation of unique solutions and the best practices - today we offer 4 generations of units!

KEY ADVANTAGES OF VAPOUR RECOVERY UNITS(VRU) PRODUCED BY GAZSPECTEHNICA (LLC)

	TYPE «M»	TYPE «N»	TYPE «K»	TYPE «NN»
The unit can be used for a wide range of chemical and petroleum products: oil, refined petroleum products, all types of fuels, solvents, alcohols, esters, purification of associated petroleum gas.	+	+	+*	+
Due to the presence of a multi-stage cleaning system and a "hot gas defrost" system, the VRU is not critical to the high moisture content of the steam-gas mixture or the presence of mechanical contamination.	+	+	+	+
The VRU can operate at any load from 0 to 100% and also allows a serious excess in relation to the nominal value	More then 200%	More then 200%	More then 25%	More then 50%
The use of primary hydrocarbon condensate as an absorbent makes it possible to completely abandon the intake of the absorbent from the tank farm and its transportation through pipelines	+	+	+	+
Absence of a replaceable adsorbent and problems associated with its acquisition and disposal	+	+		+
Increased service life of the adsorbent due to work with conditioned gas			+	

* — It is possible to change the type of adsorbent

KEY ADVANTAGES OF VAPOUR RECOVERY UNITS(VRU) PRODUCED BY GAZEPECTEHNICA (LLC)

	TYPE «M»	TYPE «N»	TYPE «K»	TYPE «NN»
The VRU allows operation without the use of a post-treatment stage. At the same time its efficiency remains at the level of up to 90%			+	+
Obtaining condensate of marketable quality with precise consideration of its quantity and quality	+	+	+	+
The resulting condensate does not contain mechanical pollutions and moisture	+	+	+	+
Efficiency by weight of hydrocarbons	50–99%	70–99%	99%	99%
The VRU is effective for suppressing odors	+	+	+	+
Simple design	+			
There is no need to supply nitrogen and compressed air for the VRU to work	+	+	***	+
Residual emission of hydrocarbons on the section of the dispersion pipe*** is less than, g/m ³	50	35	10	10

** — Some types of vacuum pumps require inert gas sealing (taking into account the ultra-low nitrogen consumption the system provides nitrogen supply from the cylinder and from the main line)

*** Excluding Methane (CH₄) and Ethane (C₂H₆)

KKR 3000

**Novorossiysk Fuel
oil Terminal**



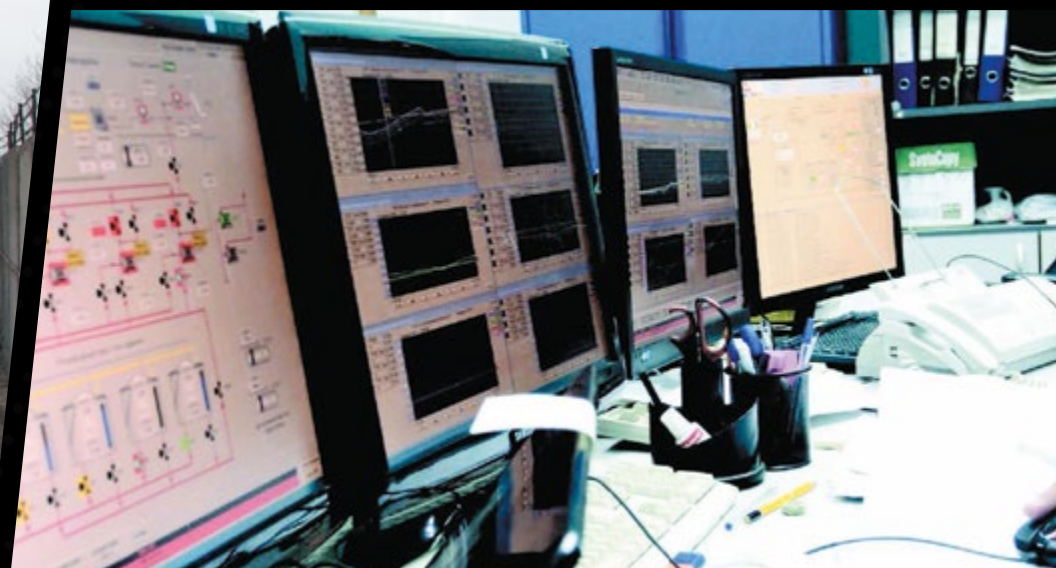
**Pipelines for the removal of vapors from reservoirs
to the gas equalization collector**



**The first and second cooling circuits
in the power unit of the KKR 3000**



**The KKR 1000 recovery unit was put into operation
at Azovproduct LLC (Rostov region) in 2014**



The KKR 600 recovery unit was put into operation as part of the automated filling system(AFS) at the Ruchi oil depot PTK-Terminal LLC, St. Petersburg in 2009. Vapor-air mixture(VAM) capacity — up to 500 m³/h



ROSNEFT

Rosneft oil depot 2011-2012,

Rostov-on-Don, KKR 200 and KKR 400 as part of the AFS(gasoline VAM)



The KKR 700 recovery unit has been put into operation as part of a filling terminal for refueling river tankers with petroleum products Rostov-Terminal LLC, Rostov-on-Don, in 2011.

VAM capacity up to 700 m³/h



TATNEFT

Tatneft gas station, Kazan, 2013,

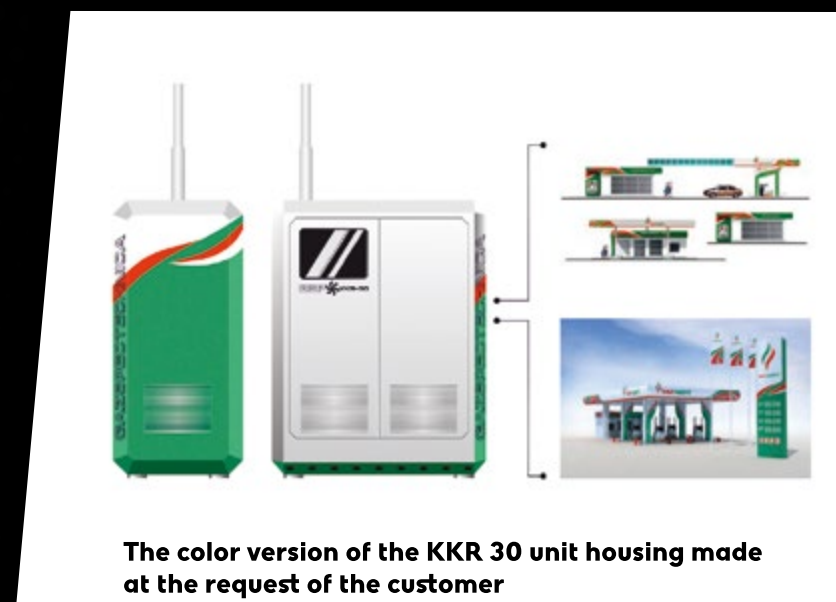
KKR 50 as part of a gas petrol filling station (gasoline VAM)



New design of the KKR 30 unit

Main technical characteristics of KKR 30

The volume of incoming VAM to the unit is	up to 30 m ³ /h (KKR 30)
Condensation temperature	up to -35 °C
The cooling capacity of the refrigerating machine is	up to 5 kW
Refrigerant	freon 507
Power consumption (max. at a temperature of -35° C)	3.5–4 kW/h
Purification efficiency	93-95% (Central Specialized Inspection of Analytical Control protocols)
The concentration of hydrocarbons at the outlet of KKR 30 is	10-35 g/m ³
The KKR 30 operating mode is	automatic (from the input pressure sensor)
Electrical design	in explosion-proof design



Installation of KKR 30 as part of a gas station, Kazan



JSC "Ivkhimprom", Ivanovo.

KKR 100 M, 2 units (auto filling, railway filling)



**KKR 1200 for recovery of gasoline vapors from three sources:
AFS for 11 gasoline tables + two tank farms,
oil depot Fanipol, Republic of Belarus**



LUKOIL

Unit KKR 5000 (railway filling)

Lukoil-Volgogradneftepererabotka LLC, Volgograd



KKR 50 M (as part of a gas station)
LLC "Managing Oil Company", Korolev, Moscow region



TATNEFT

KKR 100 (auto-filling, tank farm)

Tatneft-Gas Station Center LLC, Bavly, Republic of Tatarstan



GAZPROM

KKR 3000 (gallery railway filling) azpromneft – Omsk Oil Refinery JSC, Omsk

Gazpromneft — Omsk Oil Refinery JSC, Omsk



KKR 100

LLC "PROMAPPARAT Production Association", Orenburg



TRANSNEFT

KKR 3000 (railway overpass of the Sokur LPDS tact filling)

JSC Transneft Western Siberia, Novosibirsk



TRANSNEFT

KKR 4000 (filling of straight-run gasoline in marine tankers)

Novorossiysk Commercial Sea Port LLC, Novorossiysk



**KKR 100 H + FMU 1-100-3 (the big and small breath of the tank farm, railway filling)
Surgut Perevalka LLC, Surgut**



**KKR 100M (the big and small breath of the tank farm)
Vostokbunker(JSC), Vladivostok**



KKR 100M (auto-filling overpass)
RegionSnab(LLC), Krasnoyarsk



THE REFERENCE LIST

Customer	Years	Amount of works
"Oil depot", Sergiev Posad. Mini refinery, Sergiev Posad	2007–2008	Carrying out a full range of work on the development, manufacture, installation supervision, commissioning, testing KKR 100 and KKR 200 and training of personnel
Bobrovsky Mini Refinery, Voronezh region	2008–2009	KKR 200 (VAM of gasoline, oil, gas condensate, fuel oil)
Ruchi oil depot, St. Petersburg	2008–2009	KKR 600 as part of the AFS, auto-filling (gasoline, diesel fuel VAM)
Mini refinery, Orel	2009–2010	KKR 200 (VAM of gasoline, oil, gas condensate, diesel fuel)
Novoshakhtinsky Refinery, Rostov-on-Don	2010–2011	KKR 700 as part of the loading terminal for river tankers (gasoline VAM)
ROSNEFT Rosneft oil depot, Rostov-on-Don	2011–2012	KKR 200 and KKR 400 as part of the AFS (gasoline VAM)
Novorossiysk Fuel Oil Terminal, Novorossiysk	2012–2013	KKR 3000 as part of a tank farm (VAM of fuel oil and oil)
"Azov product", Azov	2012–2013	KKR 1000 as part of a tank farm, filling into tankers (Gasoline VAM)
Belarusneft oil depot, Minsk	2012–2013	KKR 1000 as part of the tank farm, auto filling (gasoline VAM)
TATNEFT Tatneft gas station, Kazan	2012–2013	KKR 50 as part of a gas station (gasoline VAM)
Khazar Service LLP, Aktau, Kazakhstan	2012–2013	The project has passed the state expertise. KKR 4000 and KKR 5000 as part of the filling of marine tankers (VAM of oil and gasoline)
ROSNEFT Rosneft oil depot, Ulyanovsk	2013	The project has passed the state expertise. KKR 1000 as part of the AFS (VAM gasoline)
LVZH-701 Company LLC, Gatchina, Leningrad region.	2014	KKR 400 as part of mini refineries (large and small breathing of tanks and auto-filling)
Transit City Group of Companies, Kazan	2014	KKR 50 as part of a gas station (gasoline VAM)

THE REFERENCE LIST

Customer	Years	Amount of works
LUKOIL LUKOIL-Volgogradneftepererabotka LLC, Volgograd	2015	KKR 5000 (railway filling), commissioning
JSC "IVKHIMPROM", Ivanovo	2015	KKR 100 M, 2 units (auto filling, railway filling), commissioning
RUE Belorusneft-Minskoblnefteprodukt, Fanipol, Republic of Belarus	2015–2016	KKR 1200 for the recovery of gasoline vapors from three sources: AFS for 11 gasoline tables + two tank farms
LLC "Managing Oil Company", Korolev, Moscow region	2016	KKR 50 as part of a gas station (gasoline VAM)
GAZPROM Gazpromneft — Omsk Oil Refinery JSC, Omsk	2017	KKR 3000 (gallery railway filling)
TRANSNEFT Novorossiysk Commercial Sea Port LLC, Novorossiysk	2017–2019	KKR 4000 (filling of straight-run gasoline in marine tankers)
TATNEFT Tatneft-Gas Station Center LLC, Bavly, Republic of Tatarstan	2018	KKR 100 (auto filling, tank farm)
Production Association LLC PROMAPPARAT, Orenburg	2018	KKP 100
TRANSNEFT Transneft - West Siberia JSC, Novosibirsk	2018–2020	KKR 3000 (railway filling overpass LPDS "Sokur")
Surgut Perevalka LLC, Surgut	2021	KKR 100 H + FMU 1-100-3 (the big and small breath of the tank farm, railway filling)
Vostokbunker(JSC), Vladivostok	2022	KKP 100M (the big and small breath of the tank farm)
RegionSnab(LLC), Krasnoyarsk	2022	KKR 100M + FMU 1-100-3 (auto-filling overpass)

**THANKS FOR YOUR
ATTENTION!**

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