



## Investment project

VM-4 Jmil light utility helicopter  
and its versions



**You need to strive for the impossible  
in order to achieve the maximum**



Aviation Company VEKTOR LLC, established in 2017, is working on the creation of a modern light multipurpose 4-seater VM-4 Shmel helicopter and its modifications. Creativity, the use of innovative solutions and modern materials, deep design study and the desire to create an aircraft that meets the requirements of the modern aviation market - this is the incentive that unites our aviation engineers and specialists.

Possessing a number of utility model patents, the company has the opportunity to significantly expand its priorities and opportunities for creating a line of original helicopter designs that have no analogues in their weight category. A high level of flight safety and flight performance is one of the factors that will ensure the competitiveness of the helicopter in the international light helicopter market.

The company has repeatedly taken part in various exhibitions, business forums and other events, including international ones, offering the general public a new innovative project.

# Description and performance of VM-4 Jmil light utility helicopter



## Helicopter design

VM-4 Jmil light utility helicopter and its versions is a streamlined flying machine made of composite and aluminum materials equipped with two piston engines. Schmel is a single-rotor helicopter with three-blade main rotor and two-blade tail rotor.

## Promotion of safety

**Installation of two engines improves operation capabilities of the helicopters, enlarges their implementation area and improves in-flight safety.**  
**In case of engine failure the helicopter is capable to continue controlled full-load horizontal flight until safe landing.**

## Operation conditions

The equipment onboard the helicopter allows to operate it in the daytime under visual meteorological conditions. Above that, installation of special equipment set is possible which will allow to operate it at night and in adverse weather conditions.

## Scoup of aplication the helicopter VM-4 Jmil



- the administrative apparatus of regional, city and district administrations;
- energy company;
- naval aviation (deck and shore);
- oil and gas, forestry and water management;
- sanitary aviation;
- power structures
- business structure;
- city air transport (excursions, air taxi, air patrol, ambulance);
- fishing control;
- rescue operations in the mountains, in forests, in water areas;
- flight schools;
- agriculture;
- the private sector.

# VM-4 Jmil helicopter



Light multi-purpose helicopter  
with two engines

Performance	Value
Number of seats	1+3
Take-off weight (max.), kg	1100
Load weight, kg	480
Operating speed, km/h	220
Max. speed, km/h	250
Steady-flight ceiling, m	1,500
Dynamic ceiling, m	4,500
Engine type	piston engine
Engine take-off power, h.p.	130 (150 max)
Number of engines	2
Engine power, h.p.	260-300
Fuel	MOGAS A-92, A-95, A-98,
Flight time, h	3.0
Flight range, km	500



Video

<https://youtu.be/dzdzqfsBZjn0>



# Hybrid power point



In parallel with the development of the basic model of the VM-4 "Jmil" helicopter, the design of a hybrid power point is being developed.

The hybrid power point (HPS) will significantly reduce the weight of the aircraft and improve its flight performance. In addition, its application will ensure the reduction of harmful emissions and improve the environmental performance of the helicopter.

This reduces the number of nomenclature of mechanical units and assemblies, increases the reliability of the power point. It becomes possible to achieve a reduction in the production cost of a helicopter and, accordingly, to ensure a competitive price for a helicopter in the aviation market.

# MD-500 counterpart helicopter



Performance	Value
Number of seats	1+4
Take-off weight, kg	1,600
Empty weight, kg	672
Load weight, kg	689
Operating speed, km/h	239
Max. speed, km/h	280
Steady-flight ceiling, m	2,590
Dynamic ceiling, m	4,227
Engine type	Rolls-Royce 250-C20 jet engine
Engine take-off power, h.p.	420
Number of engines	1
Engine power, h.p.	420
Fuel	Jet kerosene
Fuel consumption, l/h	80
Flight time	2.8
Flight range	431



# Robinson R44 counterpart helicopter



Performance	Value
Number of seats	1+3
Take-off weight, kg	1,080
Empty weight, kg	720
Load weight, kg	380
Operating speed, km/h	210
Max. speed, km/h	240
Steady-flight ceiling, m	1,500
Dynamic ceiling, m	4,250
Engine type	Lycoming J-540 piston engine
Engine take-off power, h.p.	225 (260 max)
Number of engines	1
Engine power, h.p.	225 (260 max)
Fuel	B91/115 aircraft gasoline (100LL)
Fuel consumption, l/h	57-62
Flight time	3.5
Flight range	650





# VM-4 Jmil versions

## VM-4S Paean medevac helicopter



Bell-47 he  
medevac operations during the wars in Vietnam  
and Korea



Video

<https://youtu.be/dzdzqfsBZjn0>



Video



# Helicopters in medevac operations



• The helicopters were first used by French military for mass evacuation of wounded men during Indochina war in 1946-1954.

- From April to July 1954, **10,820 wounded** and ill men were evacuated and **38 pilots were rescued**.

Indochina  
1946-1954

Korea  
1950-1953

- The Americans used light and medium helicopters for evacuation of wounded men from battalion aid stations.
- In the process of evacuation they ran **blood transfusion procedures** onboard the helicopters.
- In total, about **50,000 wounded men** were evacuated during Korean war.

• Due to US medevac helicopters, **up to 95% of wounded men were evacuated; the aid was provided within 1-2 hours after they had been injured.**

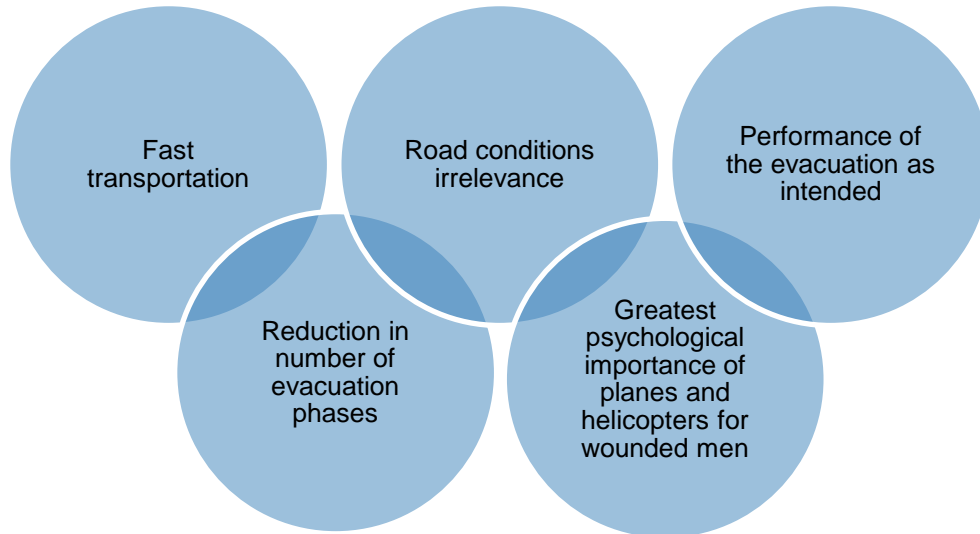
- Whereas the lethality was about 8 % during the first world war and about 4.5% during the second world war, **it reduced to about 1.5%** during Vietnam events.

Vietnam,  
1957-1975 .

# Advantages of helicopter medevac operations



The time passed from the moment of being injured or disease manifestation to the moment when the incapable man is taken to the medical facility is a key factor determining his further life, severity of developing complications, the degree of incapacitation, terms of return to normal labor or restoration of the combat power. From that point of view, the aerial evacuation of wounded or sick men is of the utmost importance.



383 637 wounded men were rescued by Americans with the use of medevac aircraft from July 1944 to May 1945; only **5 men were lost then.**

**The lethality** among the total number of 1,250,000 wounded men evacuated by US medevac aircraft was about **0.0065%**

# VM-4P Patrol police helicopter



River police



Urban air police



Highway air police



## Main areas of use of VM-4P Patrol police helicopters



### City borders control

- Patrolling over large highways and urban settings
- Patrolling over critical, manufacturing and transportation facilities

### Rapid response to urgent situations

- Evacuation of victims from crash sites
- Transportation of special police teams, assistance to operative groups in detention of lawbreakers, coordination and support of operative actions.

### Ecological control

- Illegal dumping spots detection within and out of city borders.
- Monitoring of forestry and water areas, poachers detection.

# Application of the VM-4 helicopter in the national economy, private, administrative and corporate sectors



**Repair and maintenance of high-voltage power lines**



**Monitoring of forests, mountains and water areas**



**Administrative and corporate sectors**



**Private sector**



**Agriculture**



**Helicopter taxi**



# Application of the VM-4 helicopter in the national economy, private, administrative and corporate sectors



**Oil and gas facilities**



**Aero  
movies and photography**



**Flights over the city**



## Deck helicopter VM-4M



The deck version of the helicopter VM-4M "Cruise" is equipped with inflatable floats and can be used on cruise ships and large yachts. This will allow for air tours over the sea or ocean area, as well as the evacuation of sick or injured people to provide them with further medical care.





## Size parameters of the helicopter



# The stand of the aviation company "VECTOR" at the exhibition "AVIASVIT-XXI" - 2021



# Participation in the XI Festival of innovative projects "Sikorsky Challeng 2022: innovative transformation of Ukraine" (Igor Sikorsky Kyiv Polytechnic Institute).



# Participation in the All-Army Competition "Best Invention of the Year"



# Patents



Light multi-purpose helicopter with two engines



Helicopter with hybrid power point



Medical and evacuation helicopter



## Contact info



**General director**  
**Anatoliy Kozubenko**  
**phone +38 (097) 798-69-29**

**Commercial director**  
**Yehor Shyshenok**  
**phone +38 (050) 681-35-35**

**Aviation company “VECTOR”, LLC**

**[www.ak-vector.com](http://www.ak-vector.com)**

**[akvector17@gmail.com](mailto:akvector17@gmail.com)**