REDUCERS

Eccentric-cycloidal gear
Gearboxes



WSA
WORLD SPORTS ALLIANCE

COMMERCIAL PROPOSAL

BRICS
International Alliance

Eccentric-cycloidal gearing and mechanisms based on it are **ahead of their time** in mechanical engineering!



Pavel Anatolyevich Parkhomenko

Advisor to the Expert Bureau for the Development of Research Activities in Mechanical Engineering.
Vice President of the Sports Center of the I nternational Alliance of BRICS Strategic Projects for Economic Development.

Email: reduktor.pro@yandex.ru
Phone: + 7 (922) 228-88-22

INTRODUCING INNOVATION IN OIL PRODUCTION



GEARBOX EFFICIENCY directly impacts the performance and durability of the entire oil production unit.

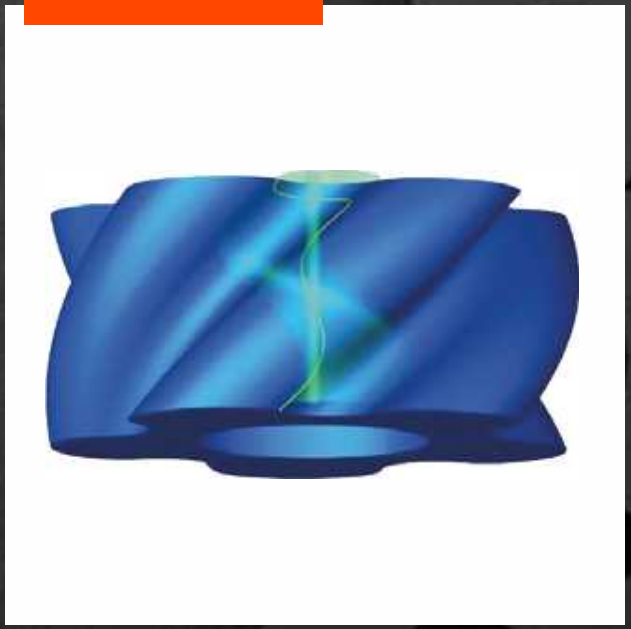
WE OFFER TECHNOLOGY THAT WILL REVOLUTIONIZE INDUSTRY

OBSERVED ADVANTAGES COMPARED TO A STANDARD GEARBOX:

1

Low contact stresses in the engagement (150 Mpa),
with 21 teeth in constant contact (compared to 3 teeth in a standard engagement).
The advantage of this innovative design is that, compared to involute gearing, the gearing used has linear contact and transmits 25% more torque, and therefore, more power.





EC-ENGAGE
has linear contact

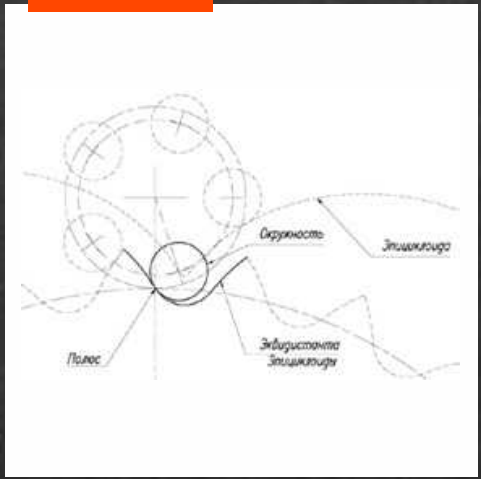
OBSERVED ADVANTAGES COMPARED TO A STANDARD GEARBOX:

2

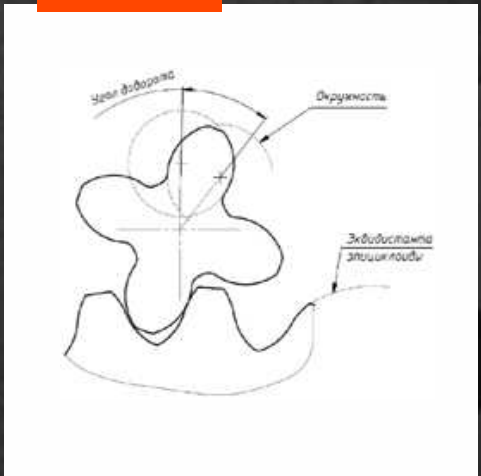
Linear speeds in the gear engagement are reduced by a factor of 10, resulting in low noise and the absence of vibration and heat in the oil and bearings. Therefore, scheduled oil change intervals have been increased to once every two years, compared to twice a year for the standard gearbox.

Thus, savings on oil changes alone for one gearbox amount to 160 liters per year.

The number of trips required for gearbox maintenance has been reduced by a factor of four, and the frequency of scheduled maintenance has been set at once every three years, leading to a reduction in the number of downtime days.



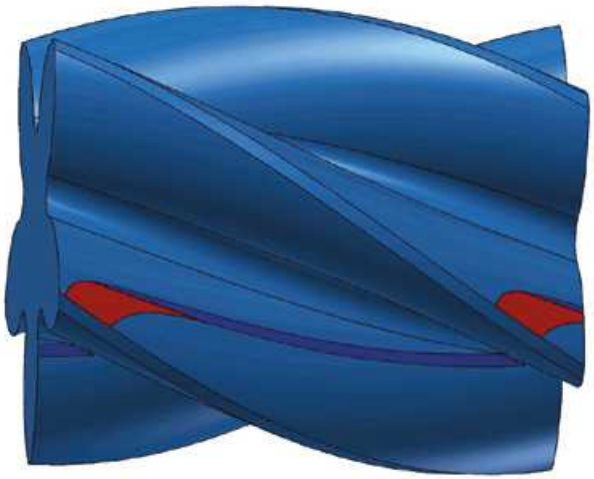
Multi-start EC gearing



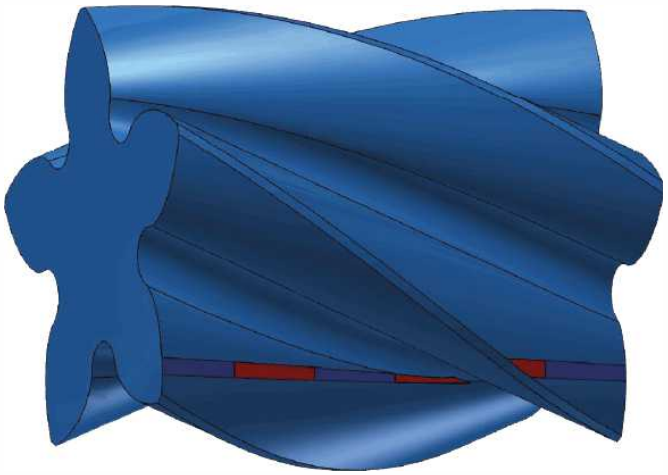
Multi-start EC gearing
Modified
with increased gear curvature radii

OBSERVED ADVANTAGES COMPARED TO A STANDARD GEARBOX:

3 The cost of ownership of the product during its life cycle has been reduced.



EC GEARING
AW = 100 mm, z = 5/31,
contact area = 72-90 mm²,
• red zone - concave contact = (44-:-23) mm²,
• blue zone - convex contact = (46-:-49) mm²,
penetration = 30 µm.
Contact patch runs along the tooth → no torque pulsation (low-noise engagement)



INVOLUTE GEARING
AW = 100 mm, z = 5/31,
contact area = 63 mm2,
entire contact area convex,
indentation = 30 µm.
Contact area runs across the tooth →
there is pulsation of the transmitted torque (vibration, noise)

OBSERVED ADVANTAGES COMPARED TO A STANDARD GEARBOX:

4

Compared to a standard gearbox, the RSKD-37-40 gearbox is **900 kg lighter.**

This weight reduction allows the RSKD-37-40 gearbox to be used not only on pumping units, but also on mobile drilling platforms, as well as in other industries with similar technical characteristics where light weight is required.



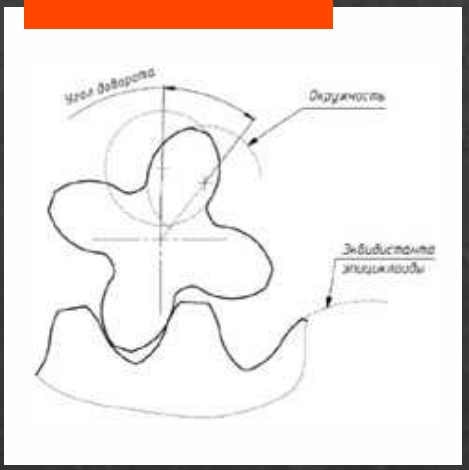


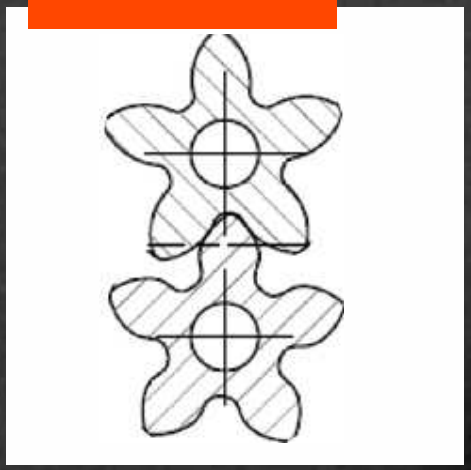
OBSERVED ADVANTAGES COMPARED TO A STANDARD GEARBOX:

5

The amount of working oil used in the housing is half as much.

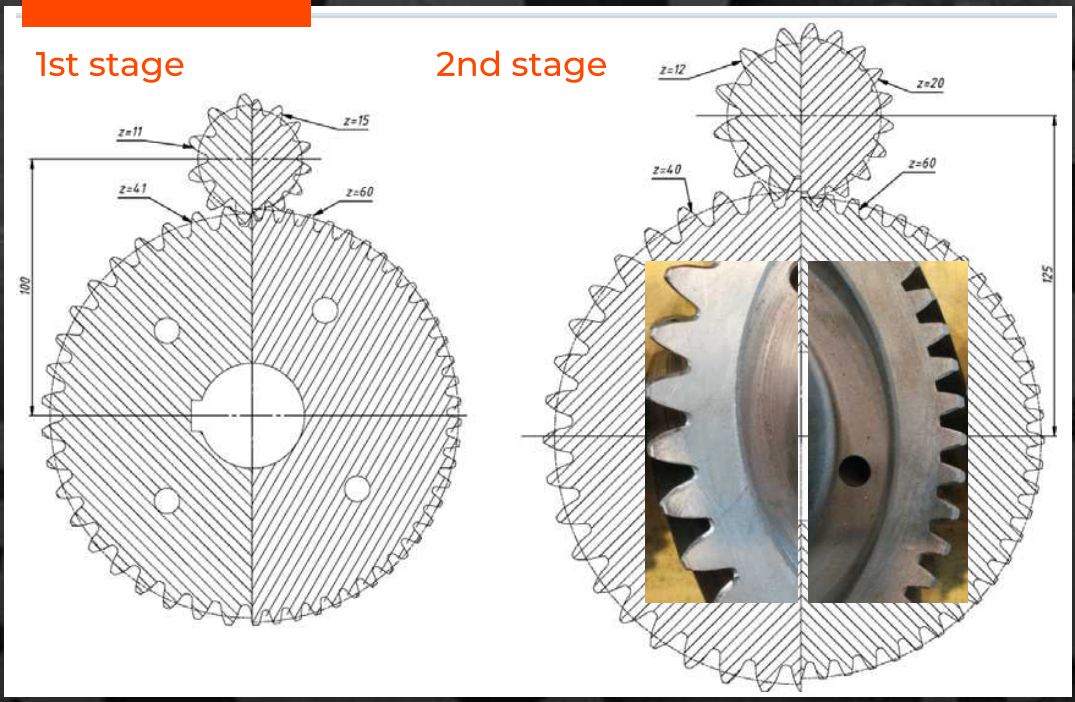
EC GEARBOX
– **Low tooth count**
(high torque transmission)
– **Pole contact** (high efficiency)





COMPARISON OF GEOMETRY EC AND INVOLVENT GEARING

ON THE LEFT IN BOTH DRAWINGS ARE EC TEETH,
ON THE RIGHT ARE INVOLUTE TEETH



OBSERVED ADVANTAGES COMPARED TO A STANDARD GEARBOX:

6 The number of revolutions per minute can be set from **0 to 20**, unlike production models, where the minimum number is 2 revolutions.

AREAS OF APPLICATION

- EC REDUCER
  +30% transmitted torque
  -30% cost
- EC PUMP (+EC HYDRAULIC TURBINE)
  -30% of consumed electrical energy
- EC-HYDROTURBINE
  +30% power generation
- EC STEAM TURBINE
  +50% of generated electrical energy
- EC-GAS TURBINE (BLADE REPLACEMENT)
  ~80% increased efficiency
  -90% cost reduction

OBSERVED ADVANTAGES COMPARED TO A STANDARD GEARBOX:

7 The **manufacturing costs** of the gear assembly used have been reduced by **more than half by lowering** the manufacturing accuracy level from 5 to 8, and the number of operations required for production has also been reduced.

MARKET POTENTIAL FOR EC GEARING

METAL STRUCTURE 34%

GEARBOX ENGINEERING 33%

EC-conical
EC-planetary
EC-rack
EC-hypoid

EC-up to 60% of the market

ENGINE ENGINEERING 33%

Screw EC-ICE
EC-hydraulic motor
EC-pneumatic motor
EC-screw pump
EC-screw compressor
EC-gear pump
EC-hydroturbine
EC-Steam Screw Machine

up to 30% of the market

PROJECT PRICE, INCLUDING ALL DEVELOPMENTS: US$50 MILLION.

WE OFFER YOU MORE THAN JUST TECHNOLOGY, BUT A STEP INTO THE FUTURE!

WE'LL HELP YOU EVERY STEP OF THE WAY.
FROM BRANDING AND LOGO DEVELOPMENT
TO PLANT CONSTRUCTION AND PRODUCTION
LINE LAUNCH.

AND ALSO, INTERNATIONAL CONNECTIONS
FOR IMPLEMENTATION IN THE BRICS SPACE
AND BEYOND!

BRICS
International Alliance

CONTACT

Phone: + 7 922 228 88 22
+7 918 004 04 82