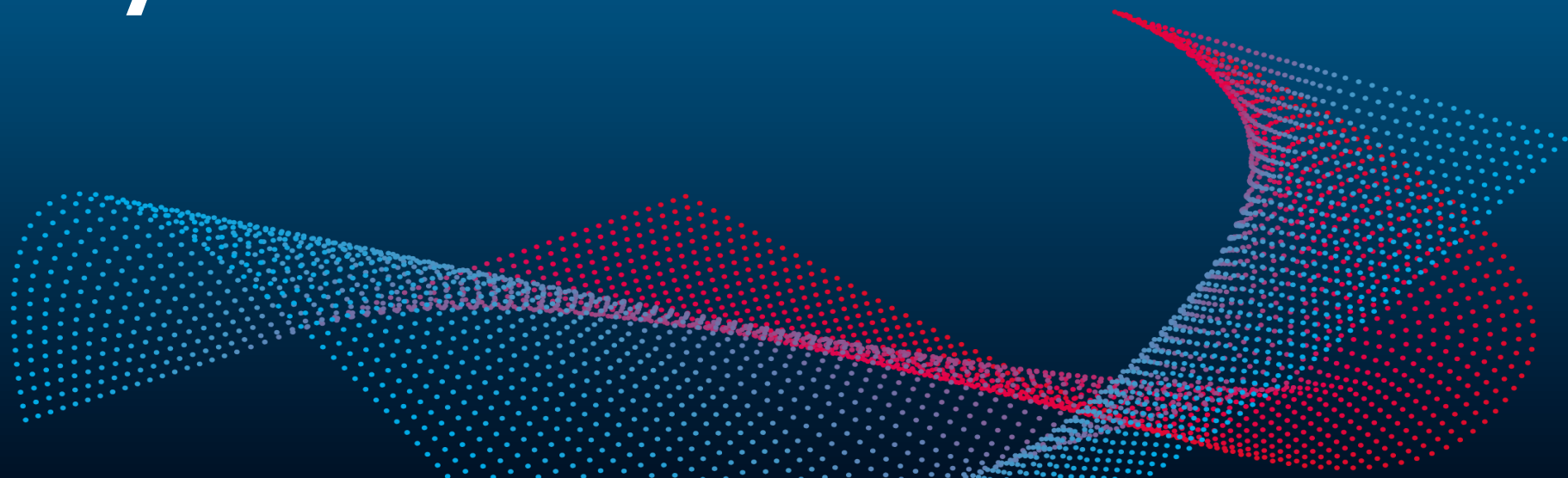




**KAMA**

**ZF KAMA LLC**

**Key data 2021**



# General Information ZF KAMA LLC

## Shareholders

ZF Friedrichshafen AG – 51%



KAMAZ PTC – 49%



**ZF KAMA LLC**  
Motornaia st., 11A  
Naberezhnye Chelny  
Tatarstan Republic  
Russian Federation



## Data of ZF KAMA

**Foundation:** 2005 г.

**Area:** 22 100 м2

**ZF KAMA is the first production site of ZF in the territory of Russian and CIS countries**

## Data for 2020

**Employees:** 458

**Production output:** 25 274 gearboxes

**Capacity:** 40 000 gearboxes



## ZF KAMA products

Gearbox  
**Ecomid**

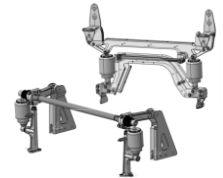


Gearbox  
**Ecosplit**



Gearbox  
**Ecosplit long**



Cab Suspension



# History of ZF KAMA LLC Development

<b>2005</b>	Foundation and registration of ZF KAMA LLC. 23rd November is the official start-up of assembly line & SOP of 16-speed Ecosplit gearbox
<b>2007</b>	Extension of the list of produced items.
<b>2008</b>	SOP of 9-speed Ecomid gearbox assembly.
<b>2010</b>	SOP of Ecomid parts, increase of capital stock, certification ISO 9001 & TS 16949
<b>2011</b>	Start of project on construction of the new building for expansion of production volumes and developing new products. Confirmation of certification.
<b>2013</b>	SOP of Ecosplit parts. Recertification audit.
<b>2014</b>	New production site. Expansion of parts production.
<b>2015</b>	Start-up of in-house heat treatment. Company's 10-year anniversary.
<b>2017</b>	ZF KAMA localized «heavy» Ecosplit 3 (16S2220 TD/TO, 16S2520 TO)
<b>2018</b>	Start of localization AMT TraXon.
<b>2019</b>	Start of Cab Suspension assembly line

# International Quality Standards

 **CERTIFICATE** 

This is to certify that

**ZF KAMA Ltd.**  
Avtoproizvodstvo site  
423800 Naberezhnyye Chelny  
Russian Federation


has implemented and maintains a **Quality Management System**.

Scope:  
Design and manufacturing of gearboxes


An audit, conducted and documented in a report, has verified that this quality management system fulfills the requirements of the following International Automotive Standard:


**IATF 16949:2016**  
(with product design)

Certificate registration no. 477499 IATF16  
Main certificate registration no. 462789 IATF16  
Issuing date 2018-08-10  
This certificate is valid until 2022-02-08  
Date of revision 2020-08-17  
IATF No. 0322812


 2-IAO-QMC-01001


**For and on behalf of DQS**

  
Nurani S. Venkatchalam  
Director-Corporate Automotive Program, DQS Holding GmbH


  
Michael Drechsel  
Managing Director, DQS Holding GmbH

IATF Contract Office: DQS Holding GmbH, Konrad-Adenauer-Allee 8-10, 61118 Bad Vilbel, Germany

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 **Annex to certificate registration no.: 477499 IATF16**  
**IATF-No.: 0322812**

**ZF KAMA Ltd.**  
Avtoproizvodstvo site  
423800 Naberezhnyye Chelny  
Russian Federation


 2-IAO-QMC-01001

**Remote Location** **Scope**

**462789**  
**ZF Friedrichshafen AG**  
Löwentalerstrasse 20  
88046 Friedrichshafen  
Germany

Human Resource; Information Technology;  
Policy making; Product design; Purchasing;  
Quality system management

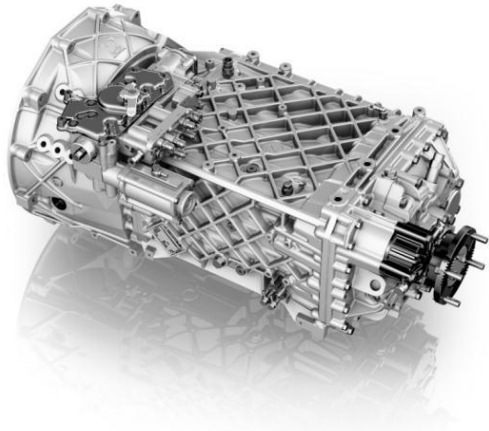
This annex (edition:2020-08-17) is only valid in connection with the above-mentioned certificate.

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# ZF KAMA Products

## Manual Transmission Ecosplit

### Ecosplit– customer values at a glance



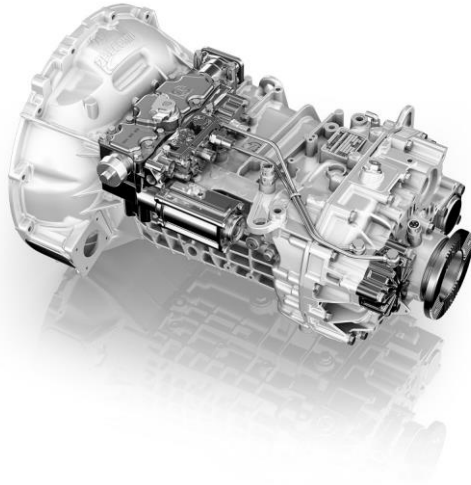
- Fully synchronized basic gearbox
- Support of Servoshift
- Low noise level
- Option: retarder (ZF-Intarder) for secure braking
- PTOs for additional upper structures

**ZF-ECOSPLIT**

# ZF KAMA Products

## Manual Transmission Ecomid

### Ecomid– customer values at a glance



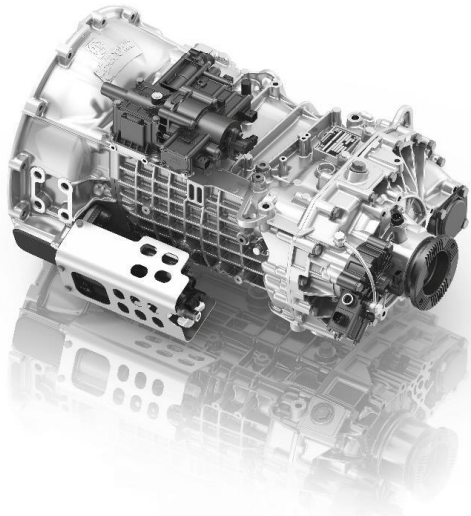
- Fully synchronized transmission with range change group (planetary gearset), 8 forward gears, and crawler
- As direct and overdrive transmission
- Shift system with superimposed H shift system with simple operation and reduction of incorrect gearshifts.
- ZF-Intarder, joint cooling circuit

**ZF-ECOMID**

# The New Product of ZF KAMA

## AMT EcoTronic mid (SoP 07/2022)

### EcoTronic mid – for medium tonnage truck



- Fully automatic transmission system
- Intelligent electronics
- Manual gear selection possible
- 9 gear steps
- Particularly powerful starting gear (crawler)
- Modular design
- Robust mechanics
- Electro-pneumatic shift system
- PTOs

**ZF-ECOTRONIC**

# The New Product of ZF KAMA AMT TraXon (SoP 01/2022)

## TraXon – customer values at a glance

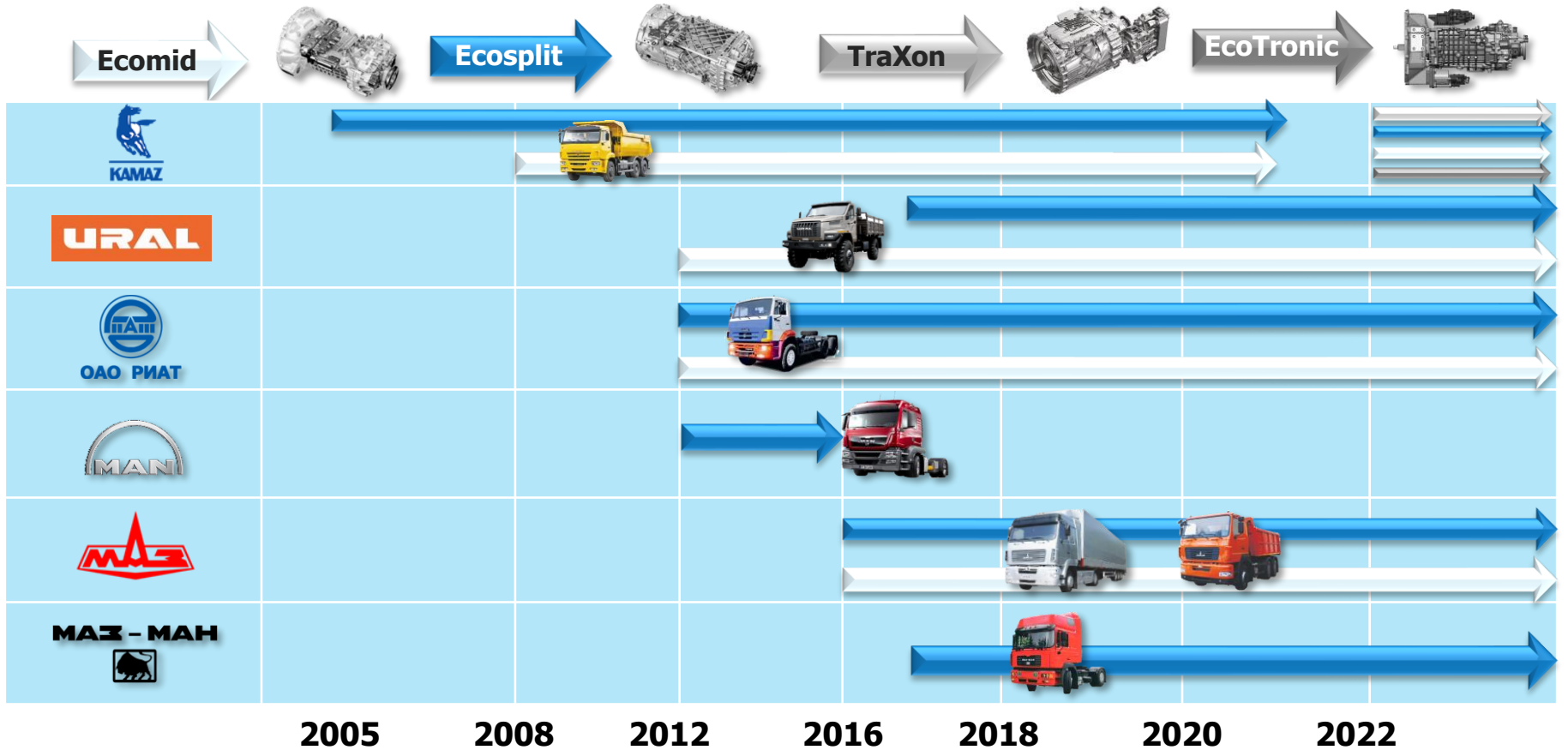


- TraXon – best values for the global market
- More payload
- Long service life and excellent reliability
- Quiet operation
- Excellent starting behavior
- Fuel-efficient
- Most cutting-edge transmission functions
- Fully-automatic safety
- Service-friendly
- For diverse applications

**TRAXON**



# ZF KAMA Customers



# Production. Gears Manufacturing

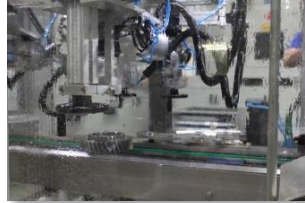
## Forgings



Production of 34 types of gears

- Forging weight from 1,3 up to 17,5 kg

## Green machining



Key operations:

- Turning
- Gear shaping
- Gear hobbing
- Tooth rounding
- Gear chamfering
- Washing

## Heat treatment



Key processes:

- Case hardening
- Quenching
- Tempering
- Shot peening

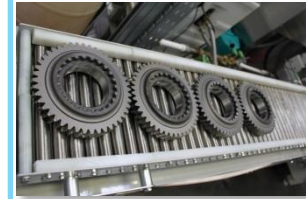
## Hard machining



Key operations:

- Hard turning/ grinding
- Gear grinding
- Washing

## Finished product



Finished product is sent to gearbox assembly

# Production. Shafts Manufacturing

## Forgings



Production of 9 types of shafts:

- primary
- secondary
- intermediate
- forging weight from 11,9 up to 26 kg

## Green machining



Key operations:

- Turning
- Shaft hobbing
- Shaft shaping
- Shaft chamfering
- Deep-hole drilling
- Drilling
- Washing

## Heat treatment



Key processes:

- Case hardening
- Quenching
- Tempering
- Shot peening
- Straightening

## Hard machining



Key operations:

- Hard turning/ grinding
- Circular grinding
- Shaft grinding
- Washing

## Finished product



Finished product is sent to gearbox assembly

# Production. Gearbox assembly.

## Parts delivery



From warehouses of production and logistics parts arrive to assembly line

## Assembly line



Assembly line consists from 2 sites:

- Subassembly of units
- Assembly line

## Test bench



100 % products undergo functional test of all the systems

- Oil filling is performed with TE-ML 02

## Painting



Coating of aqueous emulsion ink and preservation procedure protects from environmental factors

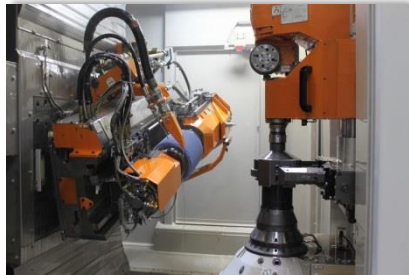
## Ready gearbox



Products are ready for dispatch

# Production Equipment

- Production equipment is represented by the leading machine-tool builders of Germany
- Equipment has computerized operation of the leading European electronic-technical groups
- Machine operation is standardized
- Regular maintenance of the machines is performed according to TPM system



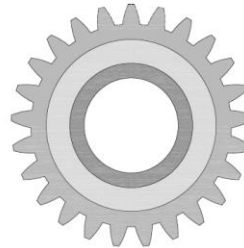
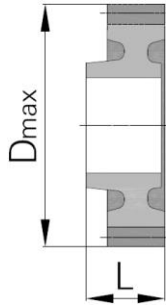
# Gear production

## Characteristics of weight and dimensions in mechanical processing



### Production now

	<u>min.</u>	<u>max.</u>
Diameter (D, mm)	75.7	233.8
Module (mm, hobbing, grinding)	2.1	4.9617
Module (mm, shaping)	2	5
Helix angle ( $\beta$ )	0°	$\pm 27^\circ$
Length (L, mm)	35.2	126
Weight (kg)	0.73	13.97



### Production capability

	<u>min.</u>	<u>max.</u>
Diameter (D, mm)	60	300
Module (mm, hobbing, grinding)	2	5-8
Module (mm, shaping)	2	5
Helix angle ( $\beta$ )	0°	$\pm 35^\circ$
Length (L, mm)	20	130
Weight (kg)	н/д	$\leq 35$

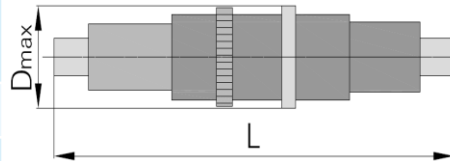
# Shaft production

## Characteristics of weight and dimensions in mechanical processing



### Production now

	<u>min.</u>	<u>max.</u>
Diameter (D, mm)	50	177
Module (mm, hobbing, grinding)	2.0	4.96
Module (mm, shaping)	2.0	2.0
Helix angle ( $\beta$ )	0°	$\pm 26^\circ$
Length (L, mm)	70	565
Weight (kg)	7.81	26



### Production capability

	<u>min.</u>	<u>max.</u>
Diameter (D, mm)	50	300
Module (mm, hobbing, grinding)	н/д	5-8
Module (mm, shaping)	н/д	5
Helix angle ( $\beta$ )	0°	$\pm 35^\circ$
Length (L, mm)	70	560
Weight (kg)	0.25	25

# Heat Treatment

Equipment: pusher type furnace and chamber furnace (Aichelin)

Main processes:

- case hardening
- quenching
- tempering
- shot peening
- straightening
- metallography testing laboratory

## Heat treatment capability

Dimensions, (LxBxH, mm)

450x450x677

Weight, (kg)

250

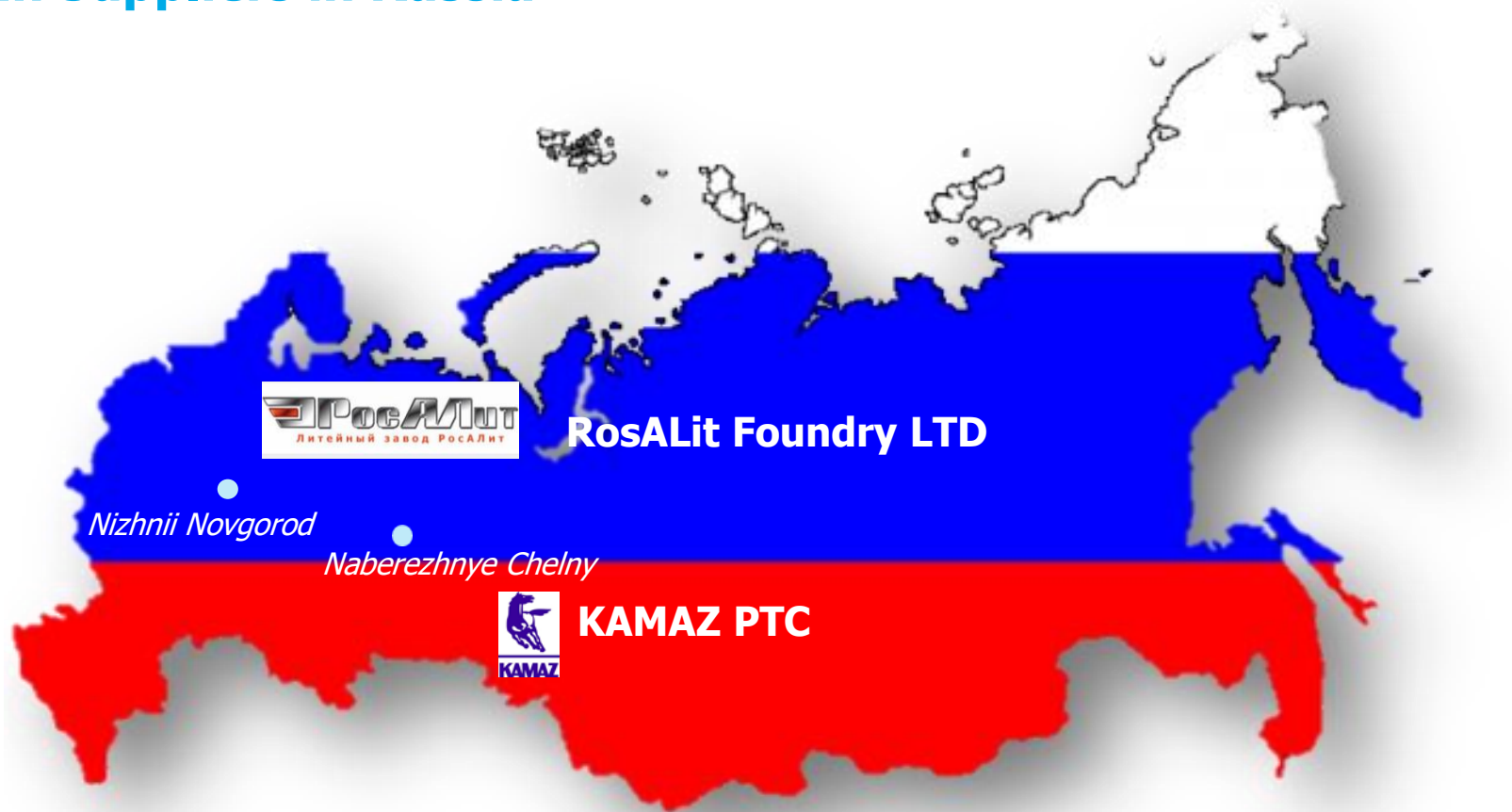




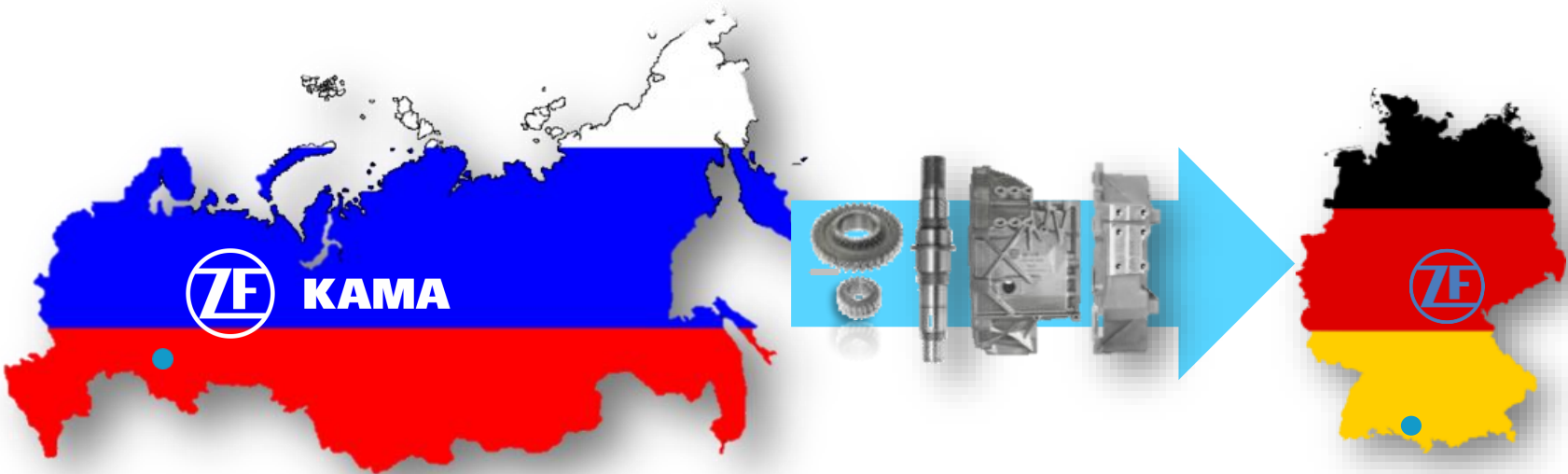
# Main Suppliers



# Main Suppliers in Russia

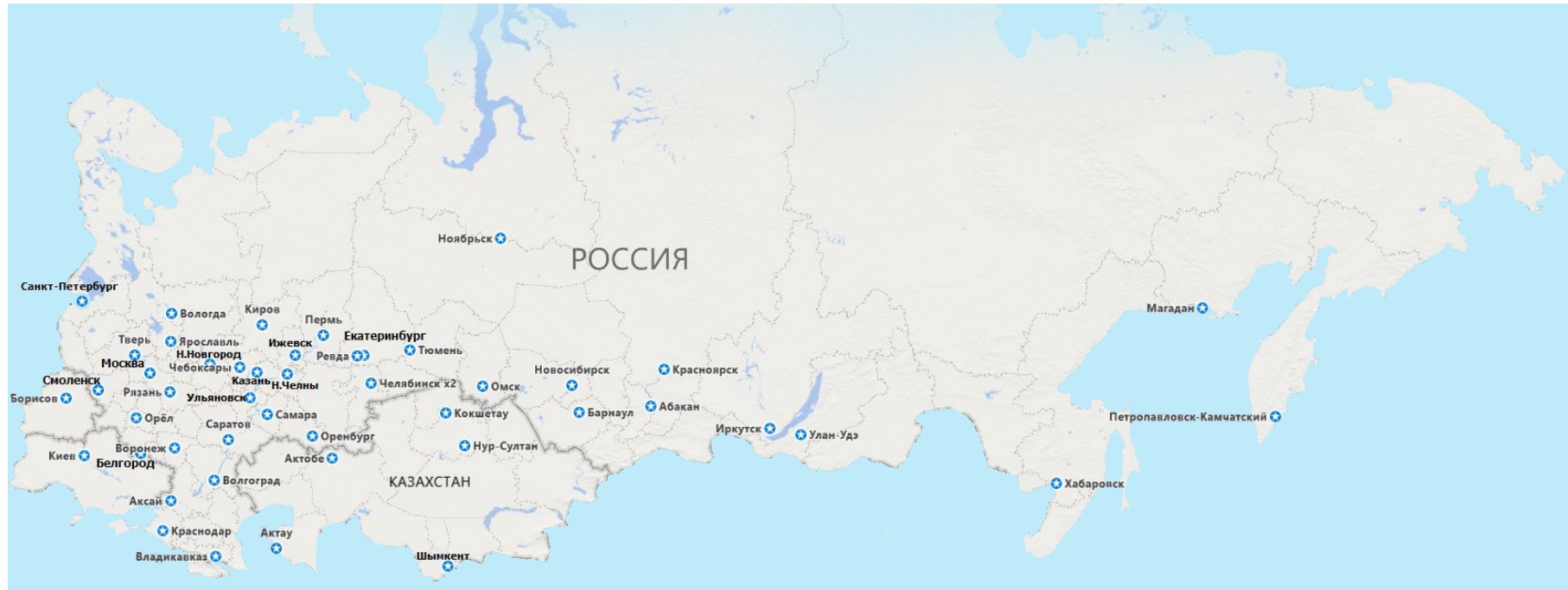


# ZF KAMA Parts Business



ZF KAMA components meet Quality standards

# Service Centers of KAMAZ-ZF



# ZF KAMA in social network



[facebook.com/zf.kama](https://facebook.com/zf.kama)



[instagram.com/zfkama](https://instagram.com/zfkama)



[youtube.com/zfkama](https://youtube.com/zfkama)

# Thank you for your attention