



Ministry of Investment,  
industry and trade  
of the Republic of Uzbekistan

# **Investment proposal: Production of brake modules and steering mechanisms**

# Production of brake modules and steering mechanisms

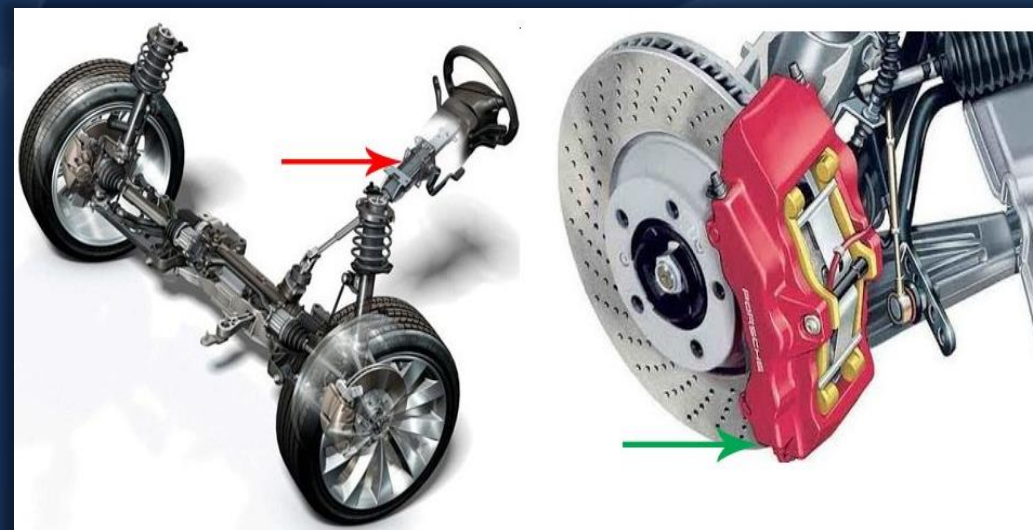
## Economic and social impact:

- Job creation: 300+ direct jobs, 1 200+ indirect jobs in the automotive component manufacturing and service sectors.
- Reduce \$70M+ annual imports of critical vehicle safety components.
- Strengthens the domestic automotive industry, enhances vehicle safety standards, and supports local vehicle assembly plants.
- R&D hub: Opportunity to develop next-generation safety systems and electric power steering (EPS) units locally.
- Growing rapidly with increasing vehicle production, modernization of transport fleets, and rising consumer demand for vehicle safety.
- Export potential: Central Asia, CIS, Middle East, and Eastern Europe (where high-quality OEM-grade components are in demand).

## Location of the project



Namangan region	
Size	7 440 km <sup>2</sup>
Population	3,1 million



## Project description:

The project involves the establishment of a state-of-the-art manufacturing facility to produce high-precision and reliable automotive components for:

- Passenger cars, commercial vehicles, and buses.
- Local vehicle assembly plants (OEM supply).
- The aftermarket for replacement parts.

The plant will produce a comprehensive range of products including:

- Brake modules: Complete brake calipers, disc brake pads, and associated hardware.
- Steering mechanisms: Steering gears (rack and pinion), steering pumps, and linkages.

## Economic indicators:



**Financing:** 55 million USD



**Area:** 3 hectares



**Revenue:** \$60 million/year



**ROI:** 26,2 %



**NPV:** ~ \$26 million (10 years)



**IRR:** ~22,5%

## Production indicators:



**Annual production:**  
300 000 units



**Domestic market:**  
120 000 units



**Export:**  
180 000 units



# Brake modules and steering mechanisms production process & product yield

## Key production stages

### 1. Raw Material preparation & quality control

- Process: High-strength alloy steels, cast iron, polymers, and sealing materials are inspected for compliance with specifications. Materials are precisely cut, blanked, and prepared for machining in dedicated preparation areas.

### 2. Machining & component manufacturing

- Process: Prepared materials undergo precision machining (CNC turning, milling, drilling, grinding) to create individual components like caliper bodies, piston housings, steering racks, and pinion gears with tight tolerances.

### 3. Heat treatment & surface finishing

- Process: Critical components undergo heat treatment (quenching and tempering) to achieve required hardness and durability. Surfaces are treated with anti-corrosion coatings (e.g., zinc plating, phosphating) and finishes.

### 4. Assembly & calibration

- Process: Machined and treated components are assembled into final modules (brake calipers, steering gears) using automated lines. Systems are filled with hydraulic fluid, bled, and functionally tested for performance and leak-tightness.

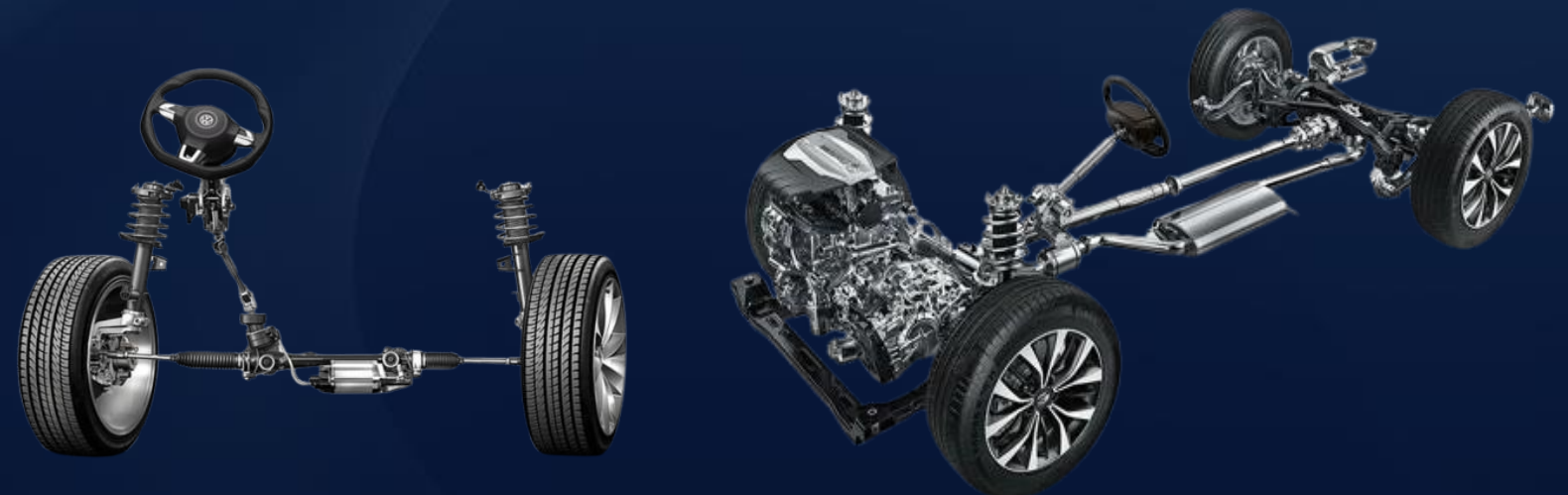
### 5. Quality testing & packaging

- Process: 100% of units undergo rigorous performance testing (pressure, actuation force, steering torque). Final products are cleaned, coated with protective preservatives, and packaged in custom, shock-resistant packaging for shipment.

## Product yield breakdown

(output from 1 ton of high-grade alloy steel)

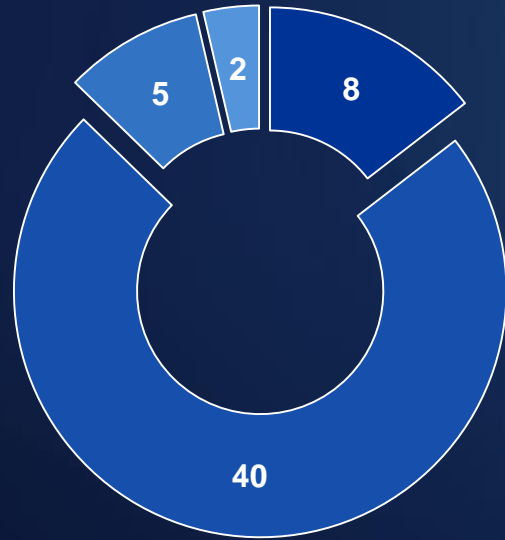
Product line	Yield (units)	Key quality standard	Final product form	Next process / use
Brake calipers	800 - 850 units	ISO 9001, IATF 16949	Fully assembled, tested caliper	Direct OEM supply or aftermarket packaging
Steering gears (rack & pinion)	550 - 600 units	ISO 9001, IATF 16949	Assembled and calibrated steering unit	Direct OEM supply or aftermarket packaging
Recyclable metal scrap	70 - 90 kg	-	Steel chips and turnings	Sent back to foundry for recycling
Process losses (waste)	~15 kg	-	-	-





## Project expenses

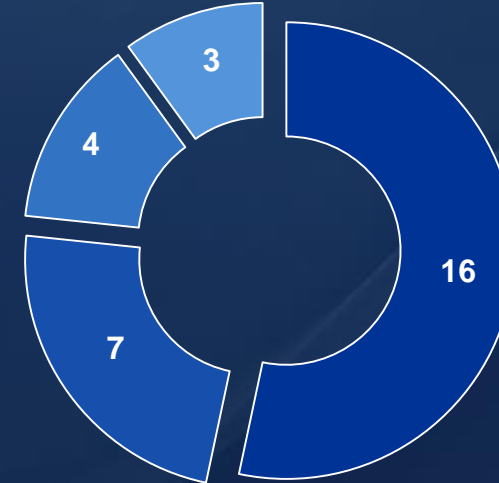
### Initial Investment (CAPEX) (mln dollar)



Total CAPEX: \$55 mln

- Land and construction
- Machinery & equipment
- Utilities & infrastructure
- Other

### Operating Costs (OPEX) (mln dollar)



Total OPEX: \$30 mln

- Raw materials
- Labor
- Utilities, maintenance & spare parts
- Sales, marketing & distribution

This financial overview outlines a comprehensive cost structure and strong profitability for the proposed brake calipers and steering gear production project. The breakdown includes both initial capital investment (CAPEX) and annual operating costs (OPEX), alongside projected revenue and profit estimates.

Product line	Capacity (unit)	Annual revenue (million USD)
Brake calipers	120 000	\$27M
Steering gears (rack & pinion)	180 000	\$33M
<b>TOTAL</b>	<b>300 000</b>	<b>60 000 000</b>

**Annual EBITDA:**  
= \$60 mln - \$30 mln - \$2 mln  
= **\$28 mln**

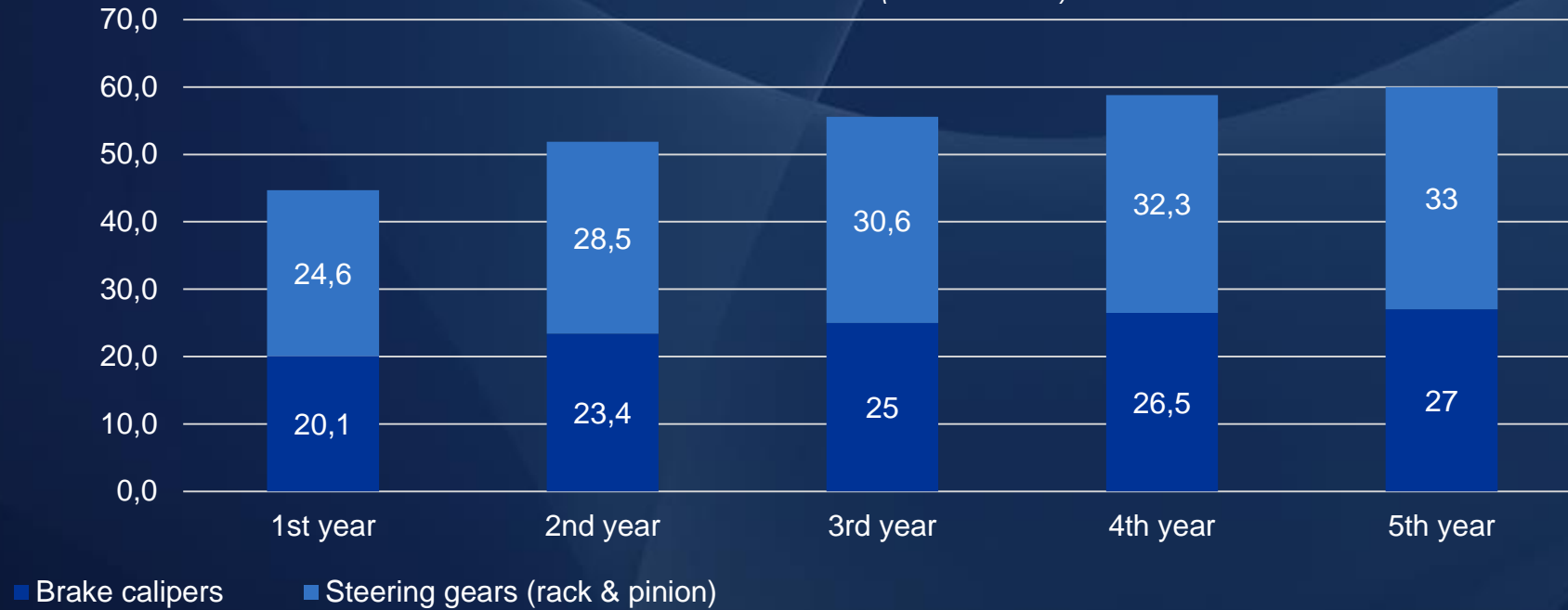
The project's strong profitability forecast is underpinned by efficient operations and high market demand, positioning it as a highly attractive investment.



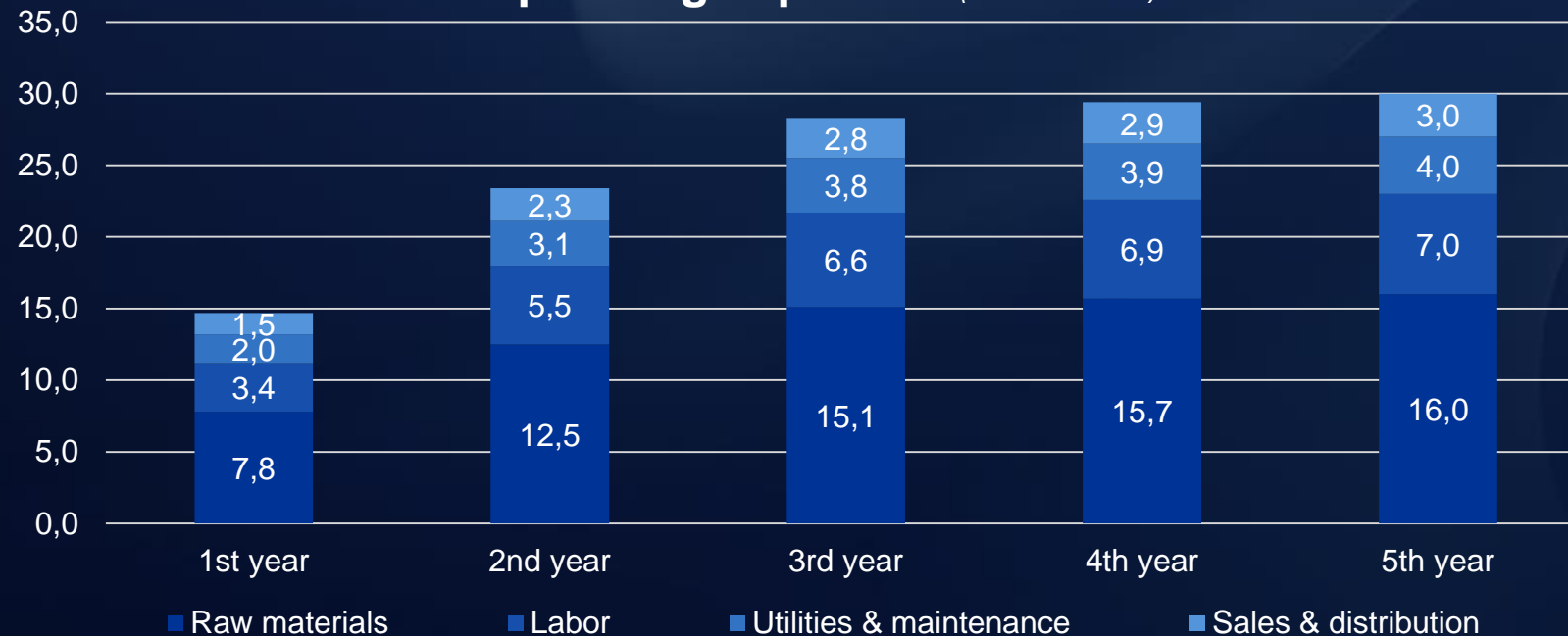
# Financial indicators

(5-year projection)

## Revenues (mln dollars)



## Operating expenses (mln dollars)



**Total 5-year revenue:**

\$271M in 5 years.

**NPV (12% discount rate):**

NPV= \$26 million (Highly favorable!)

**IRR (Internal rate of return):** ≈ 22,5%

**Payback period (PP):**

= 4-5 years

**Profitability index (PI):**

$= (\text{NPV} + \text{CAPEX}) / \text{CAPEX} = (\$26\text{M} + \$55\text{M}) / \$55\text{M} = 1,47$

**Return on investment (ROI):**

= 26,2%