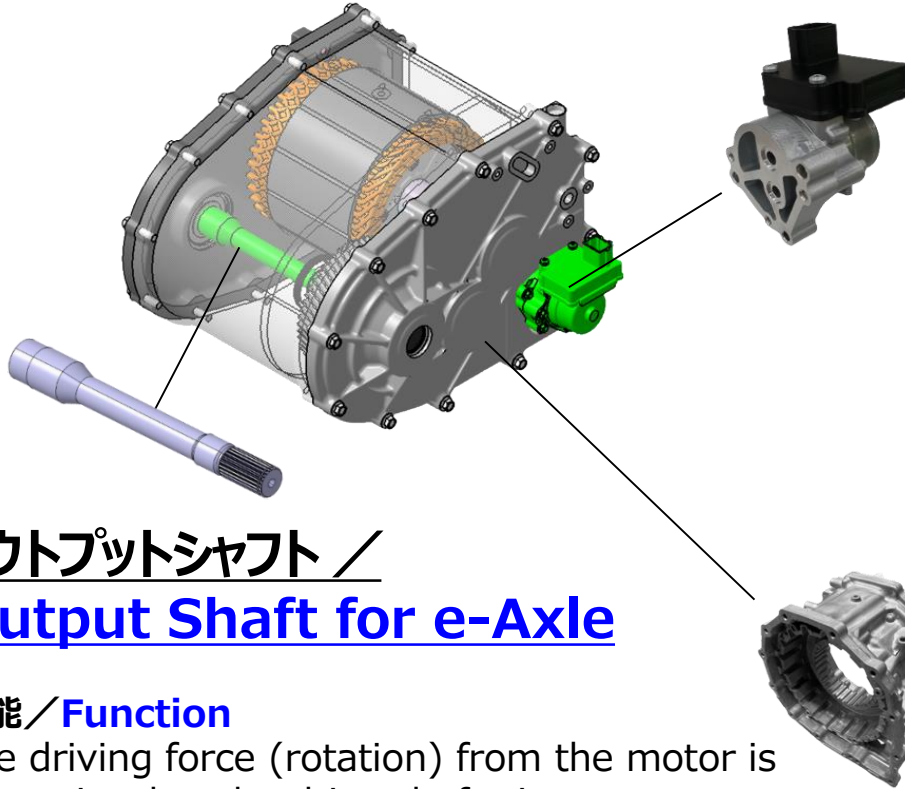


e-Axle Related Product Display Model

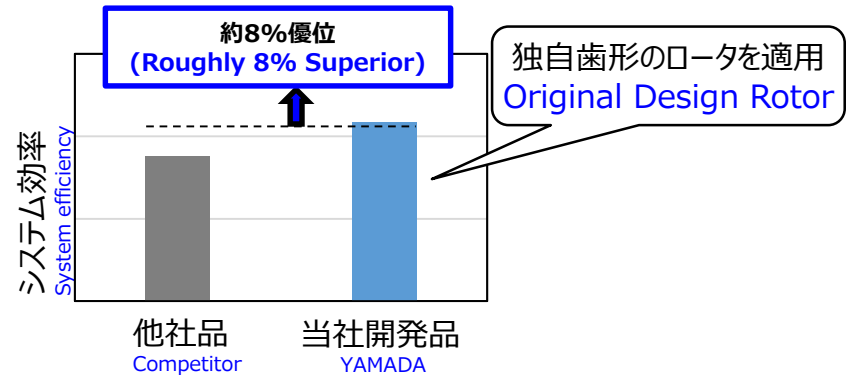
e-アクスル関連製品展示模型



電動オイルポンプ / Electric Oil Pump

特徴 / Features

By utilizing our mechanical oil pump technology, we applied a rotor with an original tooth profile allowing us to gain 8% system efficiency.



アウトプットシャフト / Output Shaft for e-Axle

機能 / Function

The driving force (rotation) from the motor is transmitted to the drive shaft via gears.

特徴 / Features

We possess a start-to-finish production system from forming, machining to heat treatment. Spline machining available for both inner and outer diameters.

鋳造品 / Aluminum Components

特徴 / Features

Using our precision dies designed in-house, we produce a wide range of thin-walled Aluminum components with very complex shapes and high precision.

Drive Shafts for Next Generation Vehicles (BEV)

次世代車(BEV)向け駆動シャフト

For BEVs

Propose products for next generation vehicles utilizing the existing shaft technology for ENG

[Motor shaft]

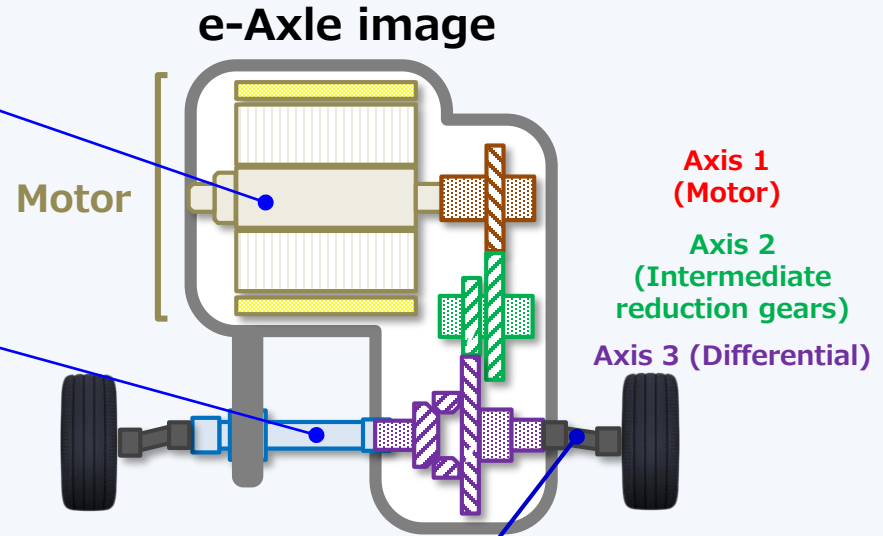
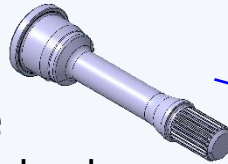
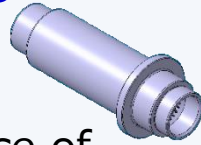
機能 / Functions

1. Transmits the driving force of the motor to the wheels.

[Output shaft]

機能 / Functions

1. Transmits the driving force (rotation) from the motor, etc. to the drive shaft via the gears.

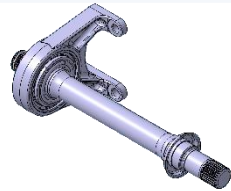


For ENG

[Half-shaft]

機能 / Functions

1. Transmits the driving force of the engine to the wheels.
2. Adjusts the length of the drive shaft on both sides, to prevent torque steering which enables straight line stability.

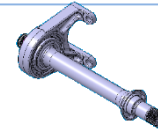


[Drive shaft]

機能 / Functions

1. Transmits the driving force (rotation) output via the differential to the wheels.

Evolution of Shaft Technology for Next Generation Vehicles (BEV) 次世代車(BEV)向けシャフト技術の進化

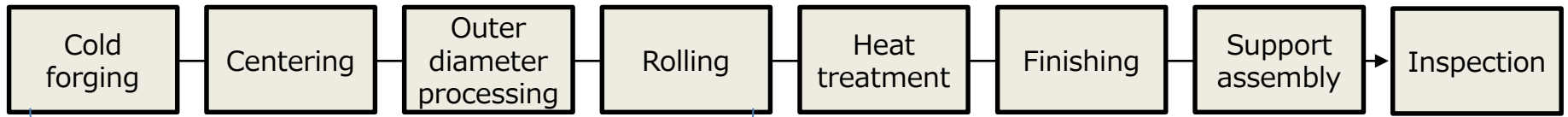


Existing technology

ハーフシャフトの特徴 / Features For Half Shaft

1. Consistent production from forging to BRG support assembly: Large-scale consistent production is possible from forging to assembly (Japan, U.S., China)
2. Propose offering low price by induction hardening: Cost reduction by energy saving is possible, by performing hardening with high thermal efficiency

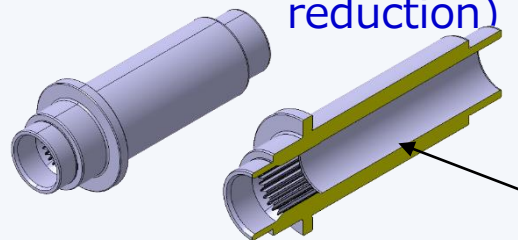
Process flow



Technology evolution

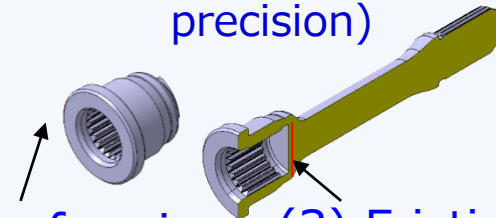
Shafts for next generation

Near net shape forming is used in the forging of hollow parts (Processing cost reduction)



(1) Hollow

The splines are formed by sintering, and are joined by friction welding (High precision)

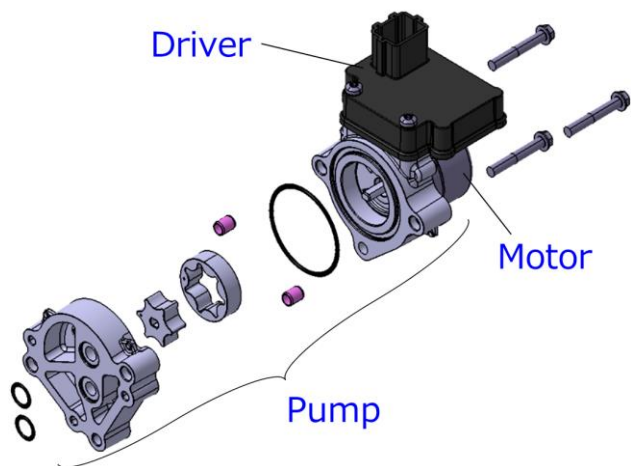


(2) Sinter forming

(3) Friction welding

Electric Oil Pump

電動オイルポンプ



機能 / Functions

The recent trend toward increasing the number of electric vehicles has pushed many of our customers to seek oil cooling systems capable of cooling the inside of the main engine motor so that the motor can be efficiently cooled.

The electric oil pump shown in the figure above is designed to cool and lubricate main motors (100kW type) mounted on electric and hybrid vehicles.

特徴 / Features

Our core expertise in mechanical oil pumps enables us to provide electric oil pumps capable of achieving their optimal efficiency.

性能 / Performance

- Discharge Pressure : 150kPa
- Discharge Flow Rate : 7.4L/min
- System Efficiency : 40%
- Operating Temperature Range
 - Ambient : -40~120°C
 - Oil : 0~120°C
- Weight : 923g

今後の開発計画 / Development Plan

Promote expansion of the electric oil pump lineup according to the future needs, in order to respond to the extensive output range and the various mounting layouts.

