

REDUCING TEMPERATURES IN E-BIKE MOTORS

INDUSTRY:
Sport/Recreation

APPLICATION:
E-Bikes

COMPONENT:
Electric Motor

LOCATION:
Michigan



BACKGROUND

A leader in the production of advanced automotive steering, driveline, and automated driving technologies recently ventured into the sports and recreation market to collaborate with other OEMs on a new project. Nye was brought in during the design phase to assist on an E-bicycle assist power drive system they were developing. Modern gearbox designs often require high power transfer with minimal noise and heat generation. During initial testing, the customer experienced problems with the electric motor generating temperatures that exceeded 140°C. This customer needed a lubricant for the planetary and rotary motor gears that would reduce failure and ensure safety.

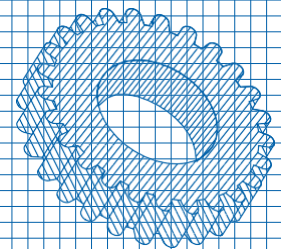
CHALLENGE

- Can the lubricant reduce the amount of heat generated by the electric motor?

SOLUTION INSTRUMENT GREASE 794A

A clay thickened, medium viscosity, ester blend grease.

- Handles harsh environmental conditions
- Excellent wide temperature performance of -20 to 150°C
- Water resistant
- Good for high-load applications



RESULTS

When tested against competitor lubricants, Instrument Grease 794A proved superior in all areas including durability and life-cycle requirements. The customer chose to use our grease to lubricate the gears in their e-bike assist mechanism. The first unit of these bikes will go on sale in the second quarter of 2019.

| Base Oil Properties | Conditions | Instrument Grease 794A | Test Method |
|--------------------------|---------------|------------------------|-------------|
| Chemistry | | PAO / Ester / Clay | |
| Temperature Range | | -20 to 150°C | |
| Kinematic Viscosity | 40°C | 440 cSt | ASTM D-445 |
| Viscosity Index | | 105 | ASTM D-2270 |
| Grease Properties | | | |
| NLGI Grade | | 2 | ASTM D-217 |
| Oil Separation | 24 hrs, 150°C | 0.59% | ASTM D-6184 |
| Evaporation | 24 hrs, 150°C | 0.94% | NYE CTM |

Since 1844: Our performance is reflected in the value we bring to our customers.

Nye Lubricants is a leader in the innovation, formulation and provision of synthetic lubricants, enabling and improving breakthrough products and critical new technologies. We bring proven experience, deep technical knowledge and customer focus to solve our customers' toughest challenges, adding tangible value to products in a wide range of industries and applications.

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