Intelligent Drivesystems, Worldwide Services

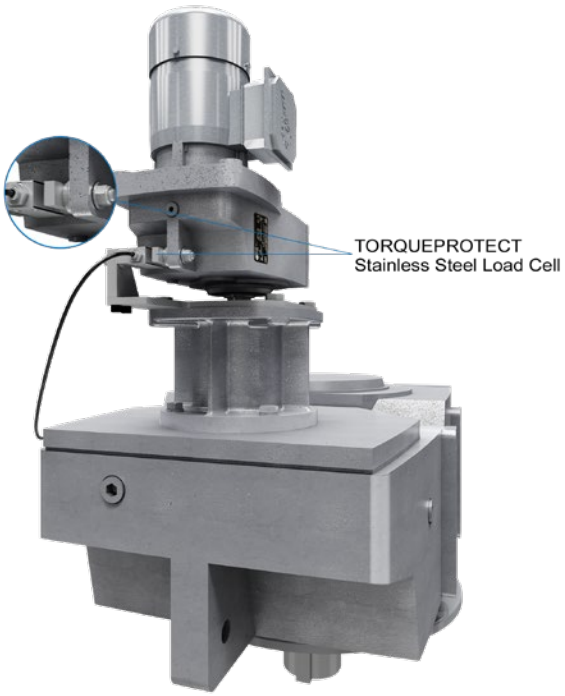
TORQUEPROTECT™ SYSTEM FOR WASTE WATER & POWER GENERATION

US

REAL-TIME MONITORING
CONTINUOUS FEEDBACK

NORD® DRIVESYSTEMS

TORQUEPROTECT™ SYSTEM



TORQUEPROTECT provides 24/7 torque load monitoring that can eliminate costly drive equipment and operational failures. Centralized and remote monitoring are available.

NORD's continuous, real-time torque monitoring system makes older amp draw and spring compression/limit switch systems obsolete.

TORQUEPROTECT™ is a torque and load monitoring system designed for industries such as wastewater, mining, power generation and other water treatment applications that use extremely low speed, high torque drive systems. An example is a wastewater clarifier. With an accurate measurement system, users can monitor the operational demands of their equipment to ensure continuous operation – avoiding unexpected machine failures.

NORD Gear Corporation's TORQUEPROTECT system provides this solution. Our robust product delivers accurate load monitoring and continuous real-time feedback. Plus, TORQUEPROTECT offers easy setup, maintenance and customer-specific configurations.

This solution is ideal for customers using very high ratio, low speed, high output torque, where the torque developed by the motor can exceed the torque capacity of the gearbox.

The TORQUEPROTECT system offers two packages to provide customer- and application-specific drive solutions.

Basic TORQUEPROTECT

The NORD gearbox package includes:

- NEMA 4x stainless steel control panel using Avery Weigh-Tronix scale head with proprietary NORD firmware
- Torque is continuously monitored by an IP67 sealed stainless steel load cell, which includes 20' of cable and a stainless steel torque arm. Our torque monitoring method uses a sealed load cell with no moving parts and can be easily replaced without further calibration
- Torque is transmitted to the digital display, which provides continuous torque monitoring feedback, displayed as a percentage (%) of maximum acceptable load – defined by the customer
- The system includes three user-adjustable relay set points and corresponding indicator lights on the front panel
- A fourth relay and indicator light is actuated at 5% load to ensure the system is fully functioning, wiring is correct and load cell is active
- All four normally open / normally closed relay contacts can pilot user-supplied devices (stack lights, buzzers, warning beacons, etc.)

Advanced TORQUEPROTECT

The package includes all features of Basic TORQUEPROTECT, plus:

- A 4-20mA analog output module that allows remote monitoring. With this module, customers can monitor and log gearbox torque on a PLC and/or SCADA system. The output is scaled linearly: 4mA = 0% and 20mA = 100%.

Custom Programming

Basic and Advanced TORQUEPROTECT include four programmable relay set points and corresponding indicator lights on the front of the panel. During operation, the display shows the gearbox output torque as a percentage of the programmed maximum torque value. The relays and lights are non-latching, so as the torque drops below each set point, they will reset to their previous state. Reverse operation does not cause damage or pose relay actions.

1. **OK** (Green Light) – The gearbox is producing acceptable torque and system controls and wiring is functional. (Default is 5% load)
2. **WARNING** (Yellow Light) – The gearbox is producing more torque than it should and the system is currently operating above normal load. (Typically set at 80% predicted maximum load)
3. **PRIMARY SHUTOFF** (Red Light) – The gearbox surpassed its torque limit. Motor shutdown is required to avoid gear drive and equipment damage. (Typically set at 100% predicted load if a secondary shutoff is not used. Set to 95% if a secondary shutoff is used)
4. **SECONDARY SHUTOFF** (Blue Light) – Optional relay set point. Can be used as an ancillary shutdown contact as required by customer specifications or wired in series with a primary shutoff for redundant contacts set. (Typically set at 100%)

Each set point includes one indicator light and one FORM C relay with both Normally Open (N/O) and Normally Closed (N/C) contacts rated at 16A @ 250VAC. These relays can be used as required to pilot a motor starter, illuminate a warning strobe, input to a PLC etc.

The TORQUEPROTECT system provides peace of mind. It provides continuous, real-time torque load data to a control panel. If the acceptable load levels are exceeded, warning or shut-down alerts on the panel are triggered to avoid system failures.

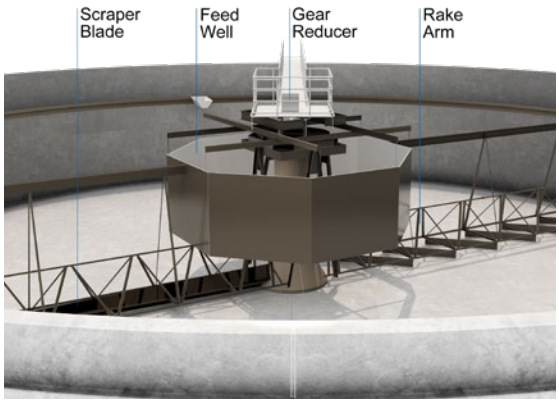
Amp Draw and Spring Compression: Things of the Past

In the past, customers depended on two torque-monitoring methods: amp draw or spring compression/limit switches. Unfortunately, neither system offered accurate or continuous feedback to prevent system damage. Traditional spring load monitoring systems only provide readings when a switch has been triggered at a specific maximum load rating (70%, 90%, 100%). The result: costly equipment replacement, service/repair fees, and multi-day operational delays.

An advantage of TORQUEPROTECT is the digital display accurately provides continuous maximum load rating feedback at any percentage – no more relying on ranges of operational demands. This will allow users to know when loads are trending higher or lower than expected, allowing repairs to be performed.

The TORQUEPROTECT system provides financial and operational peace of mind. Our customer-specific engineered solution delivers continuous, instant relay feedback that monitors crucial equipment torque loads. With password-protected programming, customers have full control over the entire performance measuring process.

For more information, locate your NORD sales representative or authorized distributor at www.nord.com/locator.



TORQUEPROTECT provides accurate and continuous torque load feedback for extreme low speed, high torque drive applications, such as for wastewater clarifiers.

NORD DRIVESYSTEMS® Group

Headquarters and technology center
in Bargteheide, Germany

Innovative drive solutions
for countless applications in more than 100 industries

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