NEPEAN Power

VVVF AFC

AVAILABLE FROM NEPEAN POWER

NEPEAN Power is a proven leader in the supply and manufacture of quality engineered solutions, products and technologies. Established in 1994, through the commitment of our dedicated team we have become a supplier of choice.

NEPEAN VVVF AFC Highlights

- Specifically designed for armoured face conveyors (AFC)
- Increases safety through electronic overload protection of drive train
- Reduces chain travel up to 40% by ensuring chain remains fully loaded when running
- Reduces power consumption up to 20% through optimized speed and torque control
- Reduces water consumption up to 80% through elimination of TTTs or other coupling arrangements
- Can be retrofitted on any existing armoured face conveyors

Overview

Nepean VVVF medium voltage Invertor drives, a variable speed drive (VSD) system, extends equipment life and reduces energy consumption.

The VSD is integrated with the motor to achieve better speed and torque control, resulting in softer starts/stops and faster acceleration. The variable chain speeds that match production conditions allow for increased capacity, improved cutting cycles, and greater efficiency for your longwall system.

The Nepean VVVF Invertor motor, designed for the arduous conditions found in underground mining, is approved for use in all underground mining applications.

The system includes a high-quality flameproof motor, integrated with a high-power variable frequency drive, to give a single combined power unit. The system is seamlessly integrated with all components of the transmission to provide a complete drive system.

The Nepean VVVF for AFC provides the following key benefits:

- Improves safety performance through a high level of AFC chain management, requiring less frequent manual intervention
- Enables superior material process control for improved productivity
- Optimizes speed to control for significantly increased equipment life
- Reduces operating costs and improves reliability
- Simplifies operational maintenance
- Reduces energy consumption and services usage

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Helps Increase Operator Safety

The Nepean VSD for AFC helps increase operator safety through:

- Instantaneous electronic overload protection, protecting the drive train and chain from extreme loads if the chain becomes stalled in operation
- Chain break detection, enabling instantaneous system shut-down
- Independent control of delivery and return drives, ensuring the slack chain is minimized during startup
- Full torque availability at zero speed, enabling a fully controlled system start from an overload condition

Intelligent Production Rate

The Nepean VSD for AFC provides intelligent production rate controls to minimize the peaks and troughs of traditional longwall production, including:

- Constant rate of coal flow for a consistently high output
- No risk of overloading downstream conveyor systems
- Steady-state power demand for reduced stress on electrical equipment
- Integration with longwall shearer speed to control for maximum utilization of conveyors

Increased Equipment Life and Reduced Maintenance

The Nepean VSD for AFC reduces wear to equipment components by ensuring that the chain is always fully loaded when the conveyor is running, reducing the chain travel by more than 40%. This means 40% less revolutions of the chain, sprockets, couplings, transmission and motor, resulting in significantly improved life expectancy and less downtime for equipment repairs and maintenance.

The system has low maintenance requirements and can operate in underground environments with a service interval of up to three years.

The Nepean VSD for AFC has also been optimized for easy maintenance:

- Continual monitoring of the chain position allows Nepean VSD to park the chain in a pre-determined maintenance position, allowing inspection and maintenance work to be done easily and efficiently
- Variable slow-speed running allows easy chain inspection and positioning
- Instant and controlled reverse running capability

Lower Power Consumption

In many cases, the Nepean VSD for AFC replaces a controlled slip device which normally operates at 95.5% efficiency. This, in conjunction with power saving due to optimized speed and torque during non-production and reduced-production phases, can bring a power savings of over 20% when compared to a fixed-speed, soft-start system.

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Easy Install and Commission

Since the Nepean VSD for AFC is an integrated drive and motor system, it not only saves installation space but also internally manages the motor cable, eliminating the electrical protection issues normally associated with free-standing variable speed drives. Integration also means that the setup parameters are pre-set in the system during the manufacturing process. Compared to free-standing drives, the Nepean VSD requires no setup – simply plug in and begin operation.

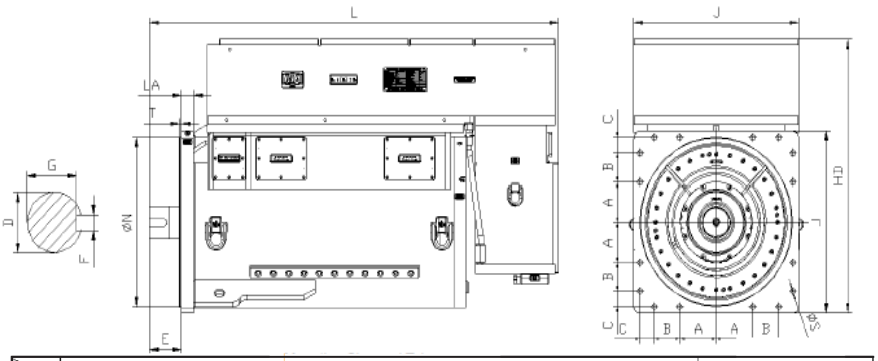
Ordering Information

Part Number	Description
VSD-3300V/1000KW	3300V 1000KW VSD-Motor
VSD-3300V/500KW	3300V 500KW VSD-Motor

VSD Integrated Motor

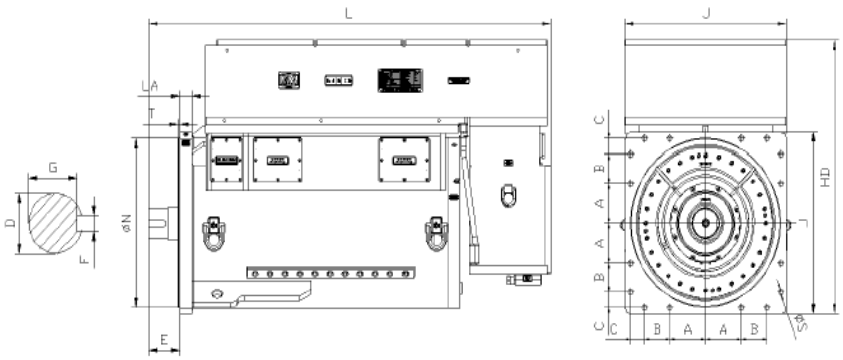
Dimensions

3300V 1000kW VSD-Motor



	Mounting Size and Tolerance											Overall Size		
Code	A	B	C	D	F	G	N	E	T	LA	S	L	HD	J
Size	210	150	80	160	40	147	880	182	10	70	32	2280	1432	950
Tolerance Limit	±0.2	±0.2	±0.15	+0.04 +0.015	-0 -0.062	+0 -0.3	-0 -0.14	+0.5 -0.5	-0 -0.12	±0.3	+0.52 -0			± 1.2

3300V 500kW VSD-Motor



	Mounting Size and Tolerance											Overall Size		
Code	A	B	C	D	F	G	N	E	T	LA	S	L	HD	J
Size	210	150	80	110	28	100	880	145	10	70	32	2060	1432	950
Tolerance Limit	±0.2	±0.2	±0.15	+0.035 +0.013	-0 -0.052	-0 -0.2	-0 -0.14	+0.5 -0.5	-0 -0.12	±0.3	+0.52 -0			± 1.2

Technical Information