



FLUXDRIVE®

Presenting

**The 'Soft-Start' Magnetic Coupling
and Belt Drive Adapter**

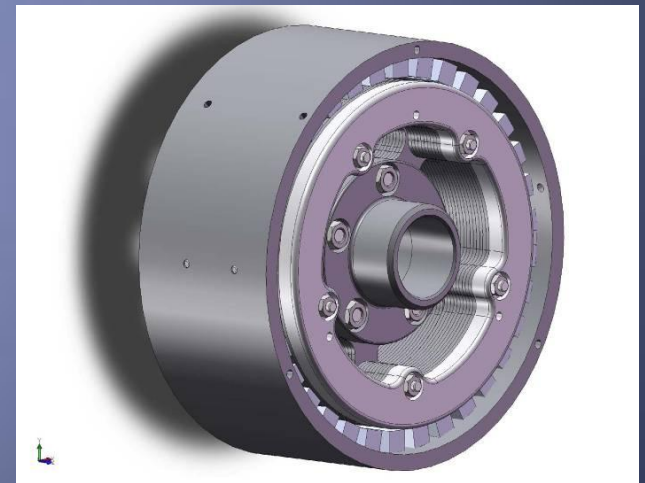
**Combined with our Energy Saving
Adjustable Speed Drive (ASD)
Technology**

Philip 'Chip' Corbin III, CEO & Inventor, Flux Drive, Inc.

Soft-Start Magnetic Coupling

The Flux Drive magnetic 'flexible' coupling transfers torque across an air gap by means of magnetic induction.

This patented magnetic coupling means that there are no parts to wear out or replace, as is the case in common flexible rubber, grid or gear type couplings.

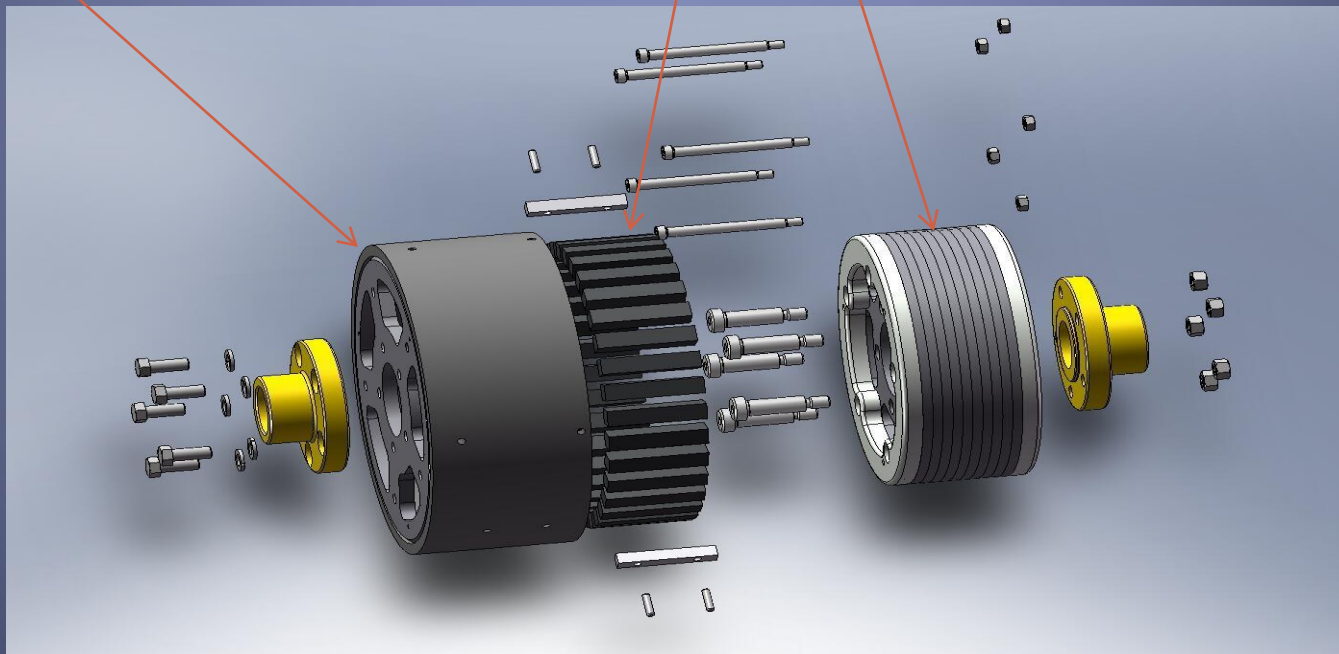


Coupling Components

- Patented - *Induction Type* Rotor Design

(Note: this is **NOT** an eddy current device)

- Magnetic Can with Permanent Magnet Array

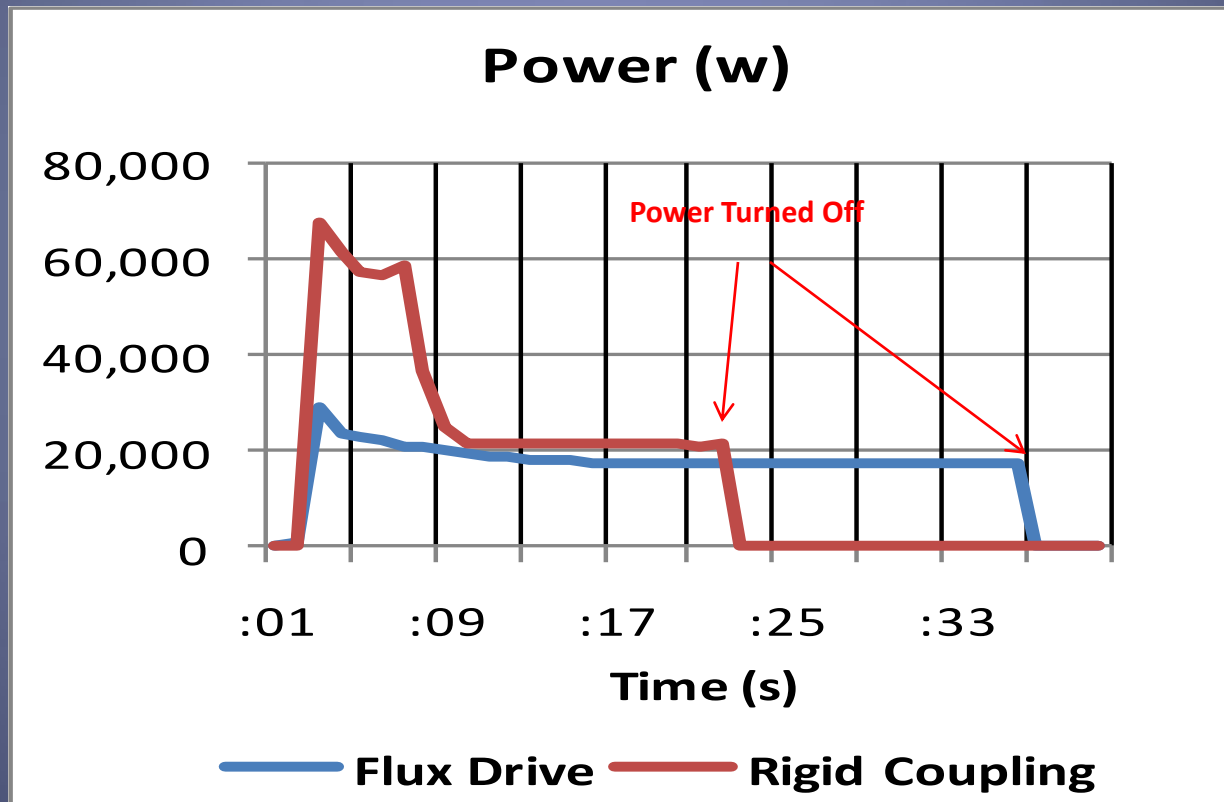


Benefits of the Flux Drive Coupling

A 'Game-Changing' Soft-Start Capability

- Eliminates high peak power demands during starting
- Extends motor life by reducing starting torque
- Allows a motor to be sized for the load
- Reduces vibration due to transferring torque across the 'soft-torque' air gap
- Coupling failures from high torque 'spikes' are now eliminated

Soft-Start Power vs. Time



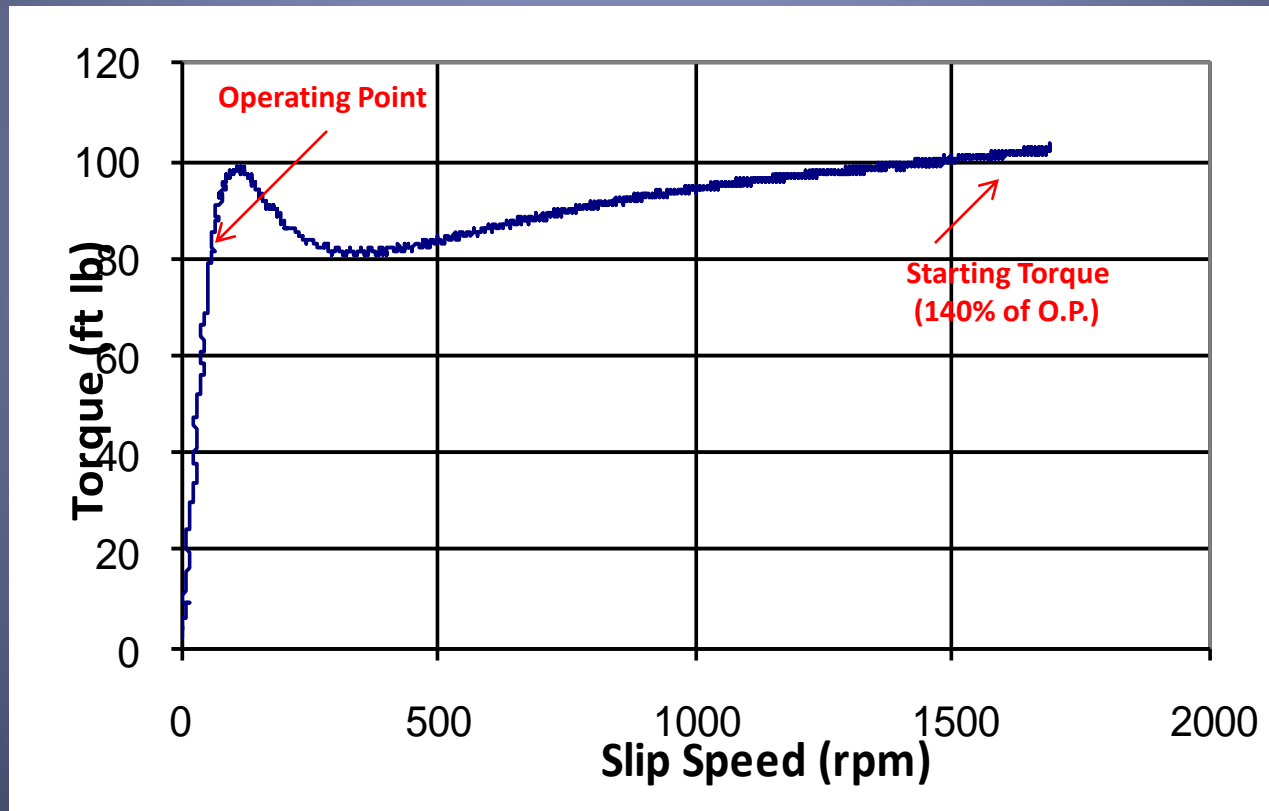
Performance

High Efficiency in Compact Size

- 98.5% efficient at full power
- Maximum torque transfer of the 'soft-start' coupling is limited to 140% of design torque
- Develops much higher torques than permanent magnet -to- magnet couplings (i.e., scaling to 1000 hp ++)

Actual speed / torque characteristics of a Flux Drive[®] ASD or Coupling

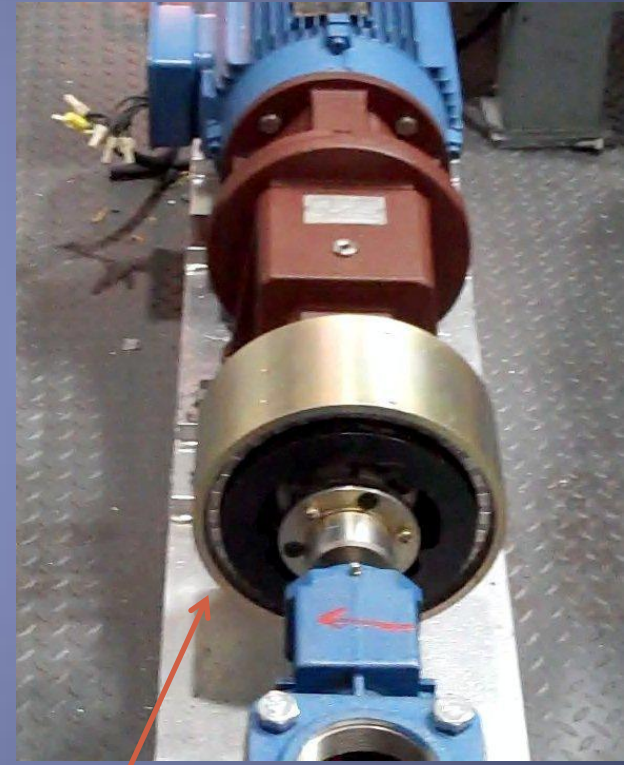
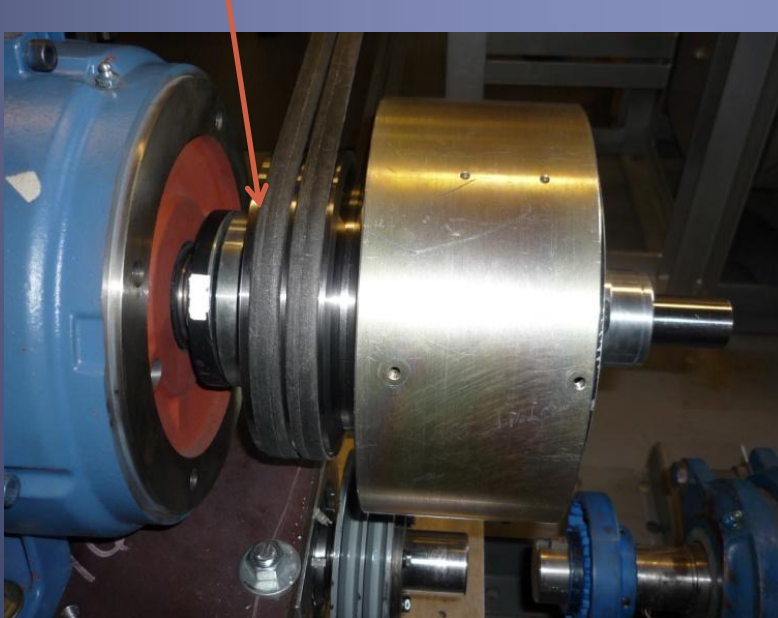
The starting and peak torque curve can be modified by
changes in the rotor design



Flux Drive Soft-Start Coupling Products

Belt Driven Coupling

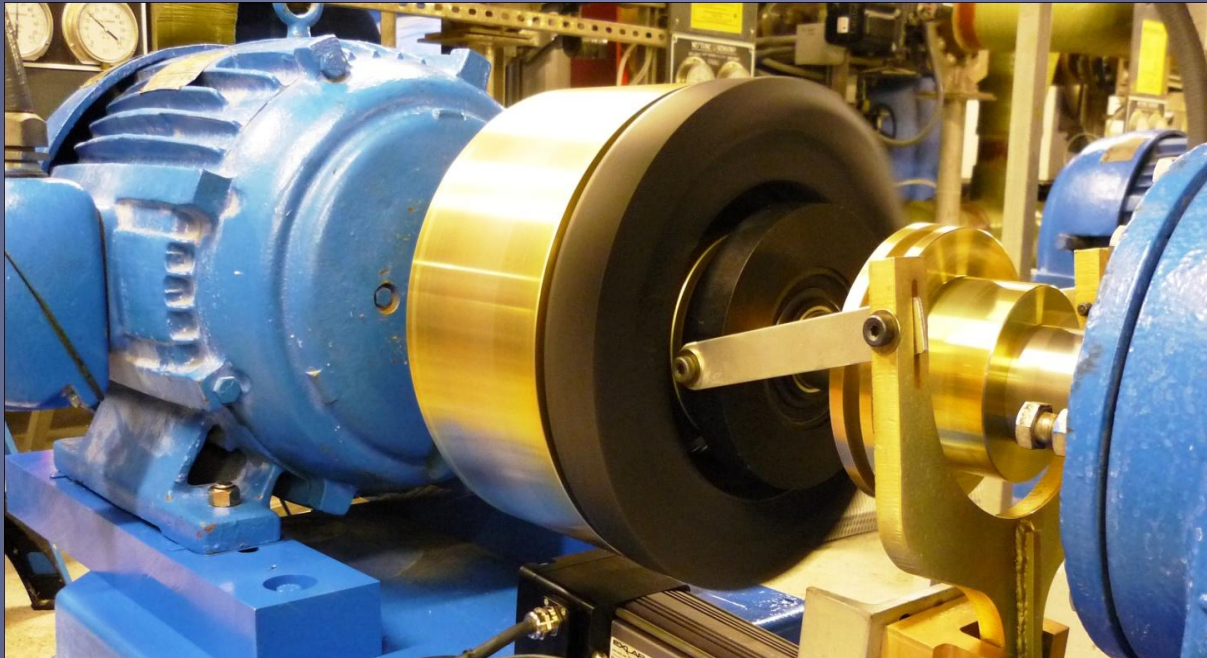
Belt / Sheave adaptor
on back of Magnet Can



In-line Coupling

Installs between motor and load

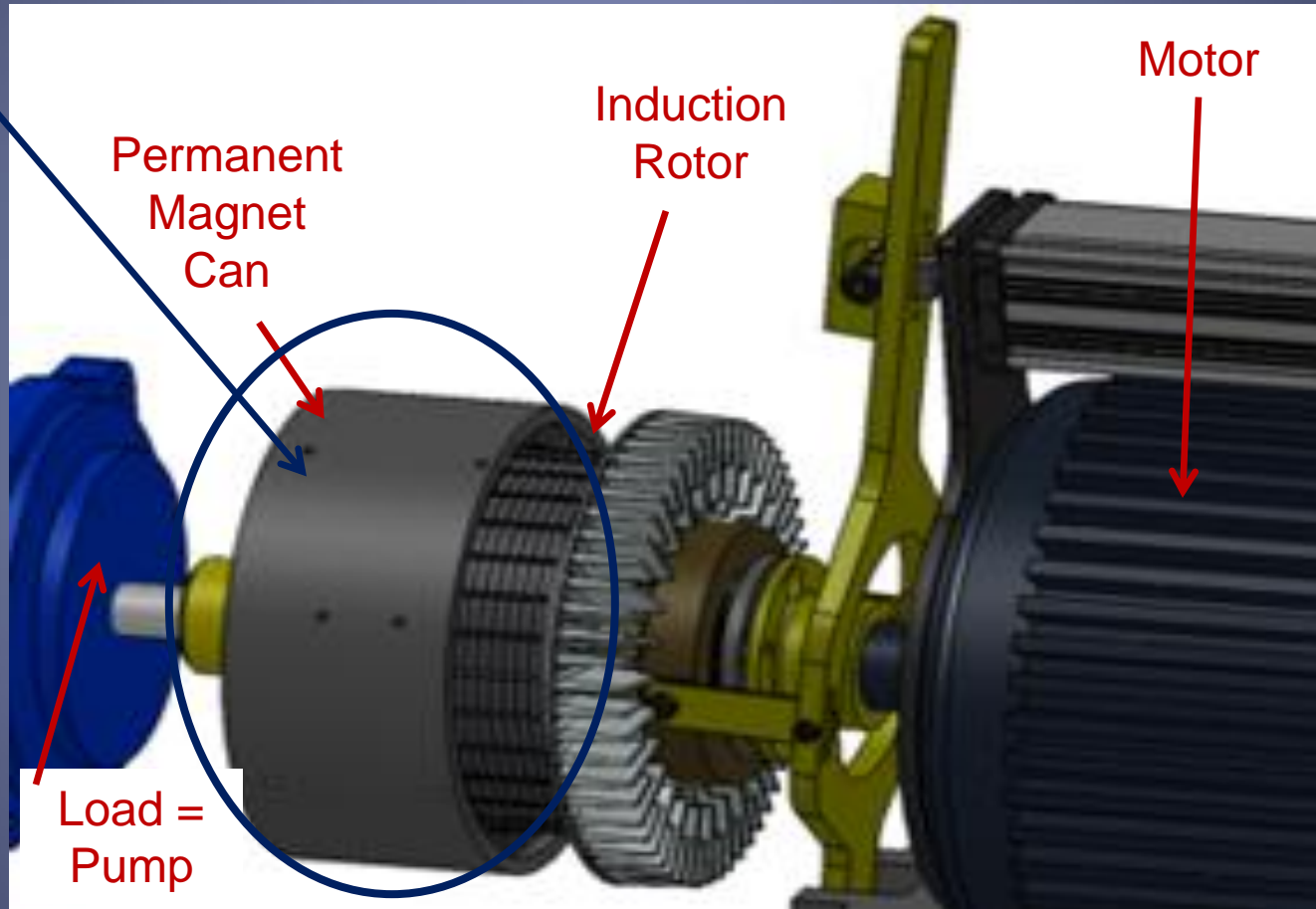
Flux Drive Adjustable Speed Drive



Flux Drive ASD (adjustable speed drive) is a mechanical power–transmission device that provides speed control and substantial energy savings for centrifugal load applications such as pumps and blowers.

How we Do It

Patented Permanent Magnet, Induction Rotor Technology



- Rotor moving into Can – load goes to full speed
- Rotor moving out of Can – load reduces in speed

Flux Drive ASD features

A 'Game-Changing' Adjustable Speed Solution

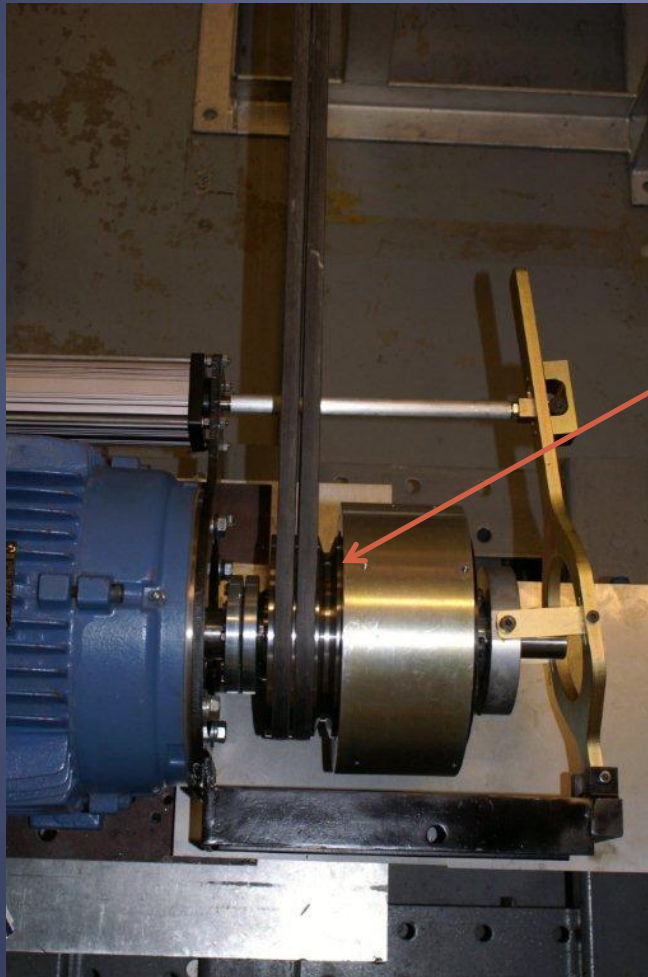
- Provides adjustable speed control that saves energy by following affinity curves
- Allows for slow and controlled starting, either manual or automatic
- Can operate in highly sensitive and harsh environments
- Does not create harmful electrical harmonics
- Compatible with medium voltage motors
- Has all the benefits noted with the Flux Drive 'soft-start' coupling

Flux Drive

Adjustable Speed Drives

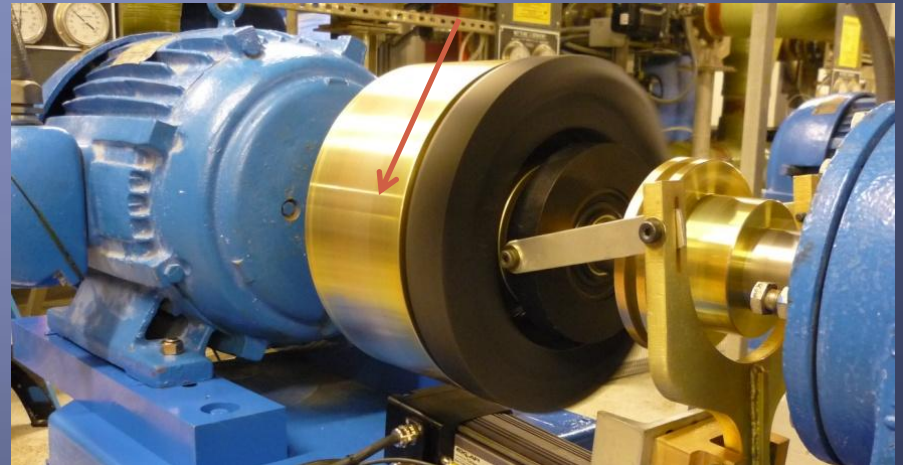
Belt Driven (ASD)

Sheave adaptor on back of Magnet Can




In-line (ASD)

Installs between motor and load



Product Comparison

Product Feature		Eddy Current Drives	VFD's	Fluid Couplings and Drives
Smaller size per unit of torque output	Yes	No	—	Yes
Easy to install, Easy to maintain	Yes	No	No	No
Fewer moving parts / No Leaks	Yes	No	—	No
Runs in rain, dirty or hot environments	Yes	Yes	No	Yes
Damaging Harmonics / Vibration - Cavitation	No	No	Yes	No



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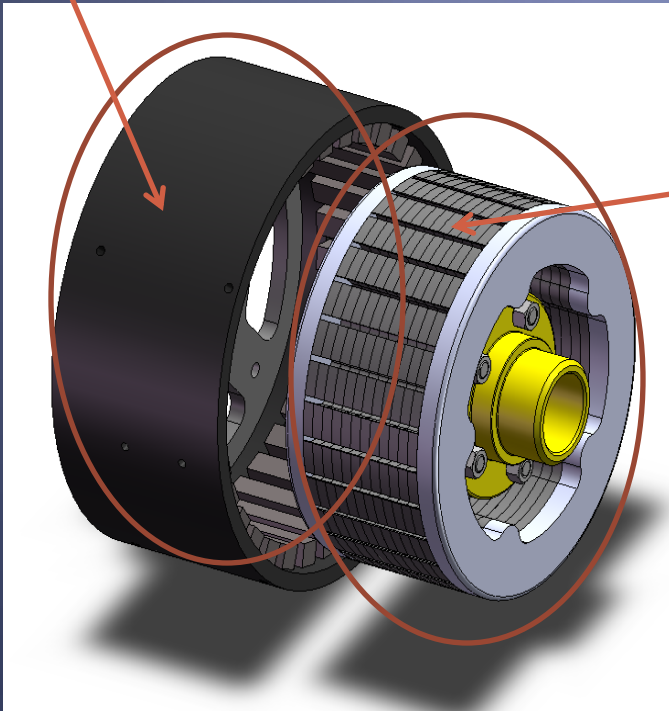
Sumner, WA 98390

Tel: 253.826.9002

Fax: 253.826.9004

How we Do It - ASD

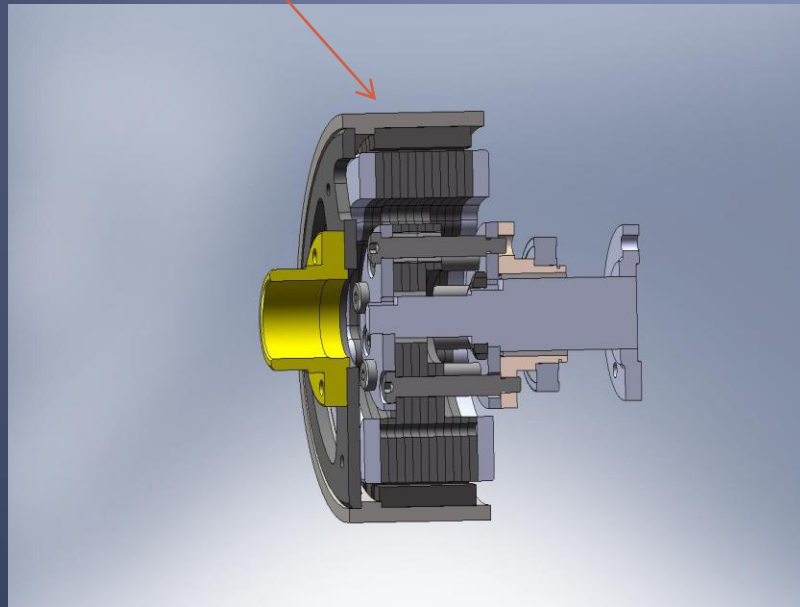
Create a closed magnetic circuit that mirrors the role of the electro-magnetic circuit of the AC motor



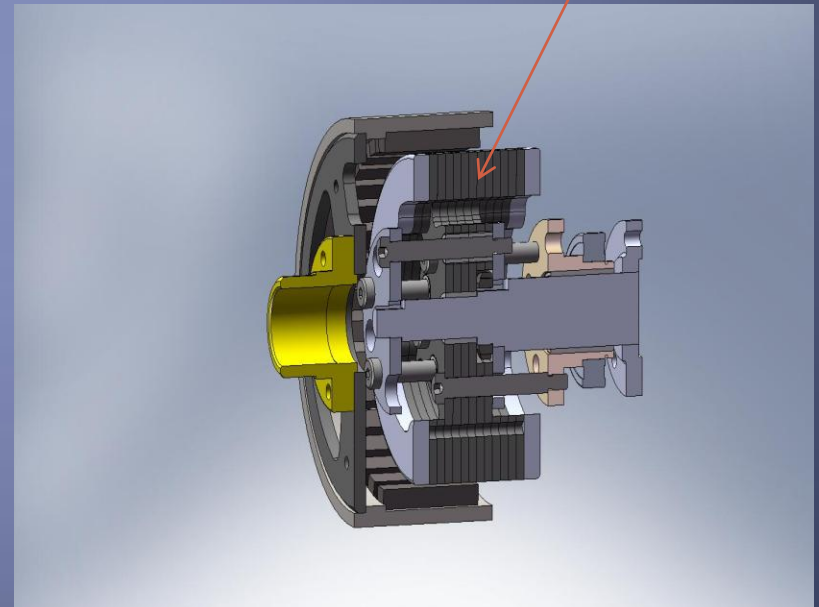
Introduce an induction rotor that can be slid in and out of the closed magnetic circuit to control the output speed of the motor

Adjustable Speed Drive Cut Away

Can with Permanent Magnets



Movable Induction Rotor (in – out of can)



Other Benefits of the Flux Drive Coupling

- Reduces vibration due to transferring torque across the 'soft-torque' air gap
- Reduced vibration extends pump mechanical seal life and the bearing life of all rotating components.
- Simplified alignment procedure using gap spacers that does not require laser alignment system (up to 0.020" offset misalignment in the air gap is allowable)
- Vibration is often reduced by more than a factor of 2
- Coupling failures from high torque 'spikes' are now eliminated
- The torsional vibration is also reduced due to the 'soft-torque' benefit
- Motor runs cooler due to running at design / constant RPM

Performance

- Operates with 1.5% slip at full power / HP
- Design operating temperature of the air cooled rotor is less than 50 degrees F rise above ambient at full power / HP
- Maximum torque of the 'soft-start' coupling is limited to 140% of design torque (motor current) during the start-up transient and full power operation
- The Flux Drive design **does not** use 'eddy currents' like other permanent magnet couplings and is therefore more efficient (i.e., 98.5 % efficient @ 1.5% slip)
- Develops much higher torques than permanent magnet – to- magnet couplings (i.e., scaling to 1000 hp ++)

CONCLUSION

Flux Drive Products:

- Reduce power required to operate machinery at variable speeds compared to throttling valves and eddy current couplings
- Eliminates introducing harmonic frequencies that cause distortion in the electrical systems
- Eliminates the need to install complex electronic filtering systems to reduce %THD to acceptable levels
- Reduces the ambient noise associated with VFDs and other competitive products
- Reduces the life cycle costs of replacing and repairing expensive electronic components of other electronic drives
- Reduces peripheral costs (e.g., separate harmonic filter rooms and air conditioning) involved with introducing a single (or multiple) VFDs to a system requiring speed control
- Provides cost effective operations in harsh environments (saltwater, heat, etc.)
- Allows medium voltage motor applications to have an ASD that does not increase in price dramatically due to the higher voltage requirement of electronic drive products (VFDs)