

Combustion Air Fan Control

Energy efficient fan control for industrial burners



OPTIDRIVE™

Reliable & easy to use variable speed drives for combustion engineering

Modern Combustion Control

With **OPTIDRIVE™** variable speed drives



Optimum combustion
through O₂/CO regulation

Saving electrical energy

Improved burner
running costs

Installation of **OPTIDRIVE™** Variable Speed Drives to control combustion air fans can significantly reduce energy consumption

Improve Burner Performance, Reduce Overall Energy Costs

Burners are widely used across many applications and industries to provide a controllable heat source. Traditional burners incorporate control systems utilising mechanical methods to control the amount of air and fuel supplied, and thus controlling heat output. These systems may be difficult to correctly commission and, through gradual wear over time, can result in an incorrect air / fuel ratio being used thus wasting energy and increasing operating costs.

OPTIDRIVE™ variable speed drives provide a cost effective, energy efficient method to directly control the air supply fan speed, negating the requirement for mechanical dampers and ensuring that the correct amount of air is supplied under all conditions. Controlling fan speed directly provides the most energy efficient method, and allows the fuel ratio to also be adjusted in relation to air pressure, minimising mechanical linkages and ensuring that the correct air / fuel ratio is maintained throughout the burners operating life.

Using **OPTIDRIVE™** also greatly improves burner safety, ensuring the burner operates within safe limits at all times. As a result, burner ownership costs are greatly reduced, and fuel is used efficiently throughout the burner operating lifetime.



Energy efficient combustion air fan and pump control

industrial
boilers & ovens
anodising
crate washing
parts washing
car production
bottle washing
petro-chemical
pharmaceutical
rotational moulding
chemical processes
cleaning-in-place (CIP)

Technology that pays for itself

Reduced noise emissions

Improved efficiency for
new & retrofit burner applications

Save Energy, Fuel & Money

- Reduce electricity consumption through fan speed control
- Reduce fuel consumption through optimised air / fuel ratio

Reduce Maintenance Costs

- Simplified mechanical arrangement reduces wear
- Prolonged motor life through reduced operating speed & load

Improved Safety

- Maintain Correct air / fuel ratio during changing operation
- Reduced risk of CO creation
- Improved control ensures the correct temperature setpoint is maintained more accurately

OPTIDRIVE™ Variable Speed Drives

- ✓ World leading motor control
- ✓ Easy to use
- ✓ Simple to commission
- ✓ Easily integrated with combustion systems
- ✓ Rugged, robust design

PROFI
BUS

CANopen

Modbus

EtherNet/IP

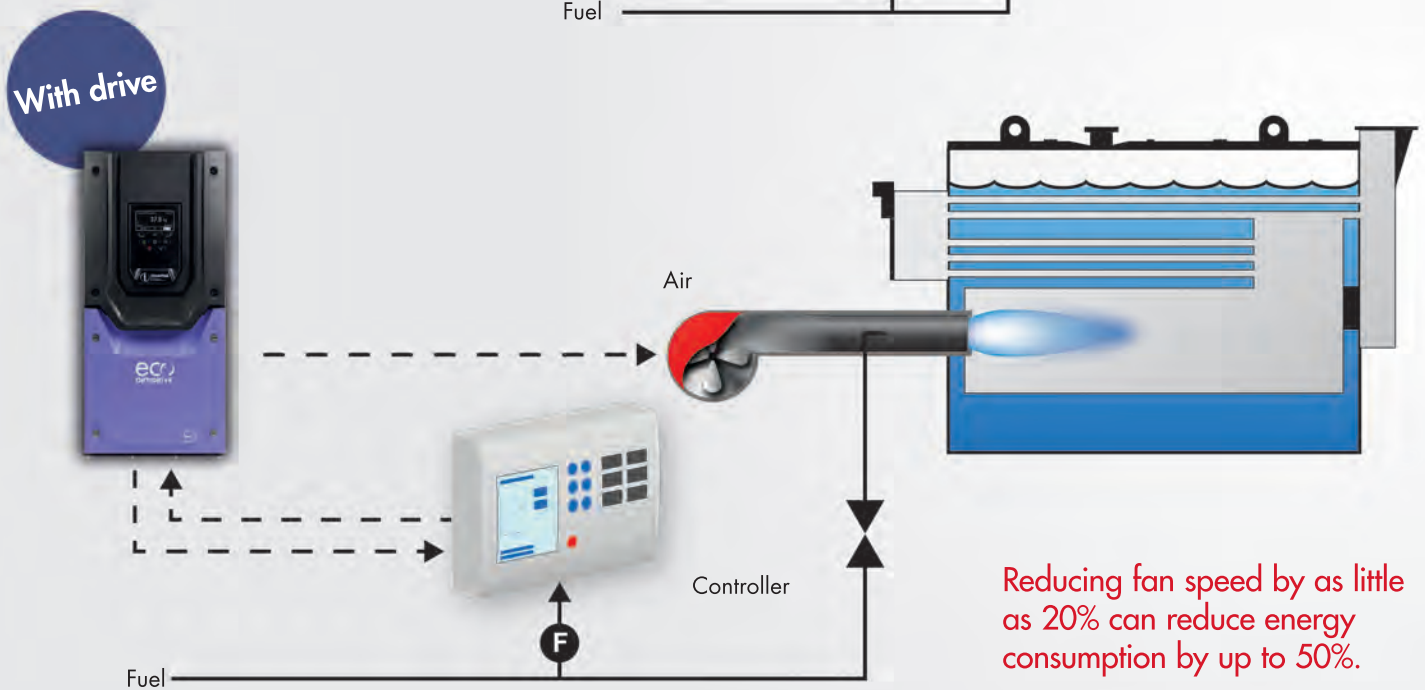
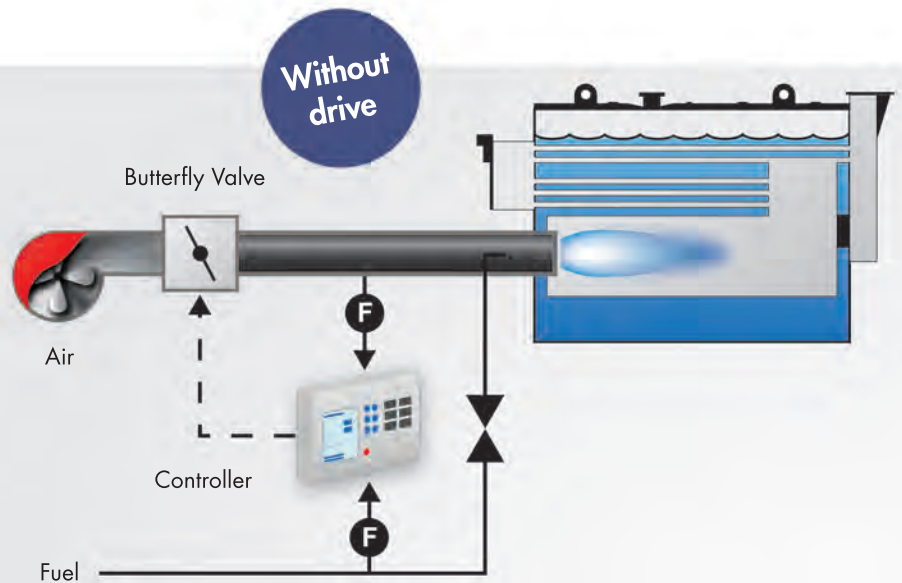
IP55 / NEMA 12 IP66 / NEMA 4X



Save Energy, Fuel & Money

Variable speed fan and pump control for efficient combustion management

Electronics technology in burner control systems delivers performance improvements, creates significant cost savings and reduces pollutants. Replacing butterfly valves, or other flow control methods with an Optidrive provides the most energy efficient method to precisely control combustion airflow, allowing the optimum air / fuel ratio to be consistently achieved.



Reduced Maintenance Cost

Traditional mechanical linkage between air and fuel supplied are inflexible and prone to sticking, and are subject to wear during operation. This may allow the adjustment to become incorrect over time, and requires correct maintenance to ensure the air fuel ratio is maintained. Using an **OPTIDRIVE™** to directly control the supply

air fan speed eliminates the mechanical methods require, dramatically reducing the maintenance required to maintain optimal operation of the burner.

Reduce Noise Emissions

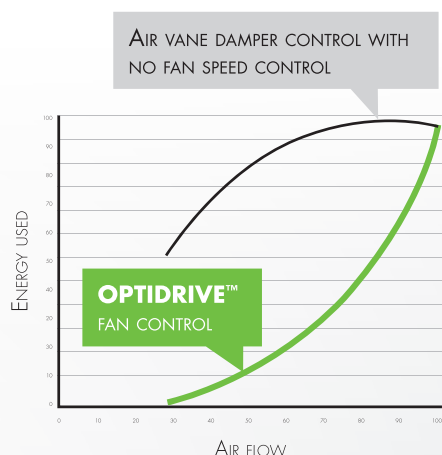
Reducing the speed of the air supply fan also helps to cut the noise level produced from the burner, leading to a better working environment.



Energy efficient combustion air fan and pump control

An efficient burner provides the proper air-to-fuel mixture throughout the full range of firing rates, without constant adjustment

Save energy



The graph shows the energy consumption versus airflow volume for typical control methods. Traditional methods, such as outlet dampers reduce airflow volume, however under some operating conditions, energy consumption is actually increased. Using an Optidrive variable speed drive to directly control airflow volume by reducing fan speed allows significant energy savings to be made in operating conditions where the maximum airflow volume is not required.

Integrated Feedback Systems

A temperature feedback signal can be fed directly to the Optidrive (e.g. 0 - 10 Volt, 4 - 20mA, 0 - 20mA), allowing the **OPTIDRIVE™** to automatically maintain the correct airflow. When reduced airflow is required, the **OPTIDRIVE™** will automatically reduce the fan speed, leading to direct energy savings. The resulting air pressure can then be used to directly control the fuel flow, maintaining correct air / fuel ratios under all conditions.

Electrical Power Savings

OPTIDRIVE™ variable speed drives are widely used to control the speed of fans in many different applications, as they represent the most energy efficient solution to controlling airflow levels. Traditional mechanical methods such as dampers are highly inefficient, and significant savings directly in electrical energy consumption are possible simply by replacing these

methods with an **OPTIDRIVE™** variable speed drive.

The graph above shows the typical performance of a damper compared to an **OPTIDRIVE™**, in terms of the energy required to provide the demanded airflow. With a traditional damper system, as airflow is reduced, energy consumption

reduces by only a small amount, however the **OPTIDRIVE™** provides significant energy savings even with only relatively small reduction in speed. This is possible thanks to the fan law, which shows that the energy required by a fan is directly proportional to the cube of the fan speed.

Optimise Combustion

Insufficient air supplied to the burner leads to incomplete combustion. This wastes fuel, and creates harmful pollutants. Most burners will generally operate with excess air, however when excess air levels are increased, additional energy is used to heat the air, increasing operating costs. Using an **OPTIDRIVE™** to control the fan speed, air flow can be accurately controlled, allowing fuel usage to be optimised further, and ensuring that air /

fuel ratios are maintained regardless of the required operating temperature level of the burner. This leads to energy savings, and fuel usage savings.

Electronic technology in burner control systems delivers performance improvements, creates cost savings and reduces the risk of harmful pollutants. By utilising feedback sensors to monitor operation, and incorporating an

OPTIDRIVE™ variable speed drive to directly control fan speed, precise control is possible during all operating conditions, saving energy, reducing wear and minimising fuel consumption.

An efficient burner provides the correct air to fuel ratio throughout the full range of burner operation, without constant manual adjustment

Improving Combustion Systems

Precise air modulation for efficient combustion



Industrial Boilers

Industrial Ovens

Increasing fuel prices, & stringent targets for CO₂ emissions are prompting action to improve combustion efficiency

Key Features

- Simple control interface for easy inclusion into burner control systems
- PI / PID control
- Preset Speeds
- Ease of use

Pharmaceutical

Car Production

Bottle Washing

Industries & Applications

Burner OEM
Boiler OEM
Pharmaceutical
Car production
Chemical process
Petro-chemical
Grain Drying
Textile Machinery
Painting Booths
Rotational Moulding
Cleaning-in-Place (CIP)
Crate Washing
Parts Washing
Anodising



OPTIDRIVE™

Variable Speed Drives

Energy efficient combustion air fan and pump control

World Leading Motor Control



IP55 / NEMA 12



IP66 / NEMA 4X



✓ Saving Energy / Reducing CO₂

With large scale increases in global energy costs and the introduction of taxes and legislation relating to the industrial production of CO₂ gases the need to reduce energy consumption and save money has never been greater.

OPTIDRIVE™ variable speed drives can be used with environmental sensors to reduce speed in burner applications without compromising the required output of the system.

✓ Easy Installation

Compact and modern design utilising the latest available technology has accumulated in robust drives with small dimensions and innovative mounting and cabling features.

✓ Simple Commissioning

14 parameter basic setup. Default settings suitable for most applications. Contactor style connection for simple wiring.

✓ Compact Enclosures

Small mechanical envelopes to help minimise your space requirements.

✓ Industrial Ambient Ratings

Up to 50°C operation.

✓ Easy Integration

Flexible communication options.



Modbus

CANopen

For full product details, visit
www.invertekdrives.com



OPTIDRIVE™
Variable Speed Drives



- ✓ World leading motor control
- ✓ Easy to use
- ✓ Simple to commission
- ✓ Easily integrated with combustion systems
- ✓ Rugged, robust design

Inverter Drives

- ✓ Sales, service & application support in over 80 countries
- ✓ World-class production, innovation & training facilities at UK headquarters
- ✓ Global assembly cells controlled by cloud-based manufacturing database
- ✓ ISO 14001 environmental & ISO 9001 quality management systems



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