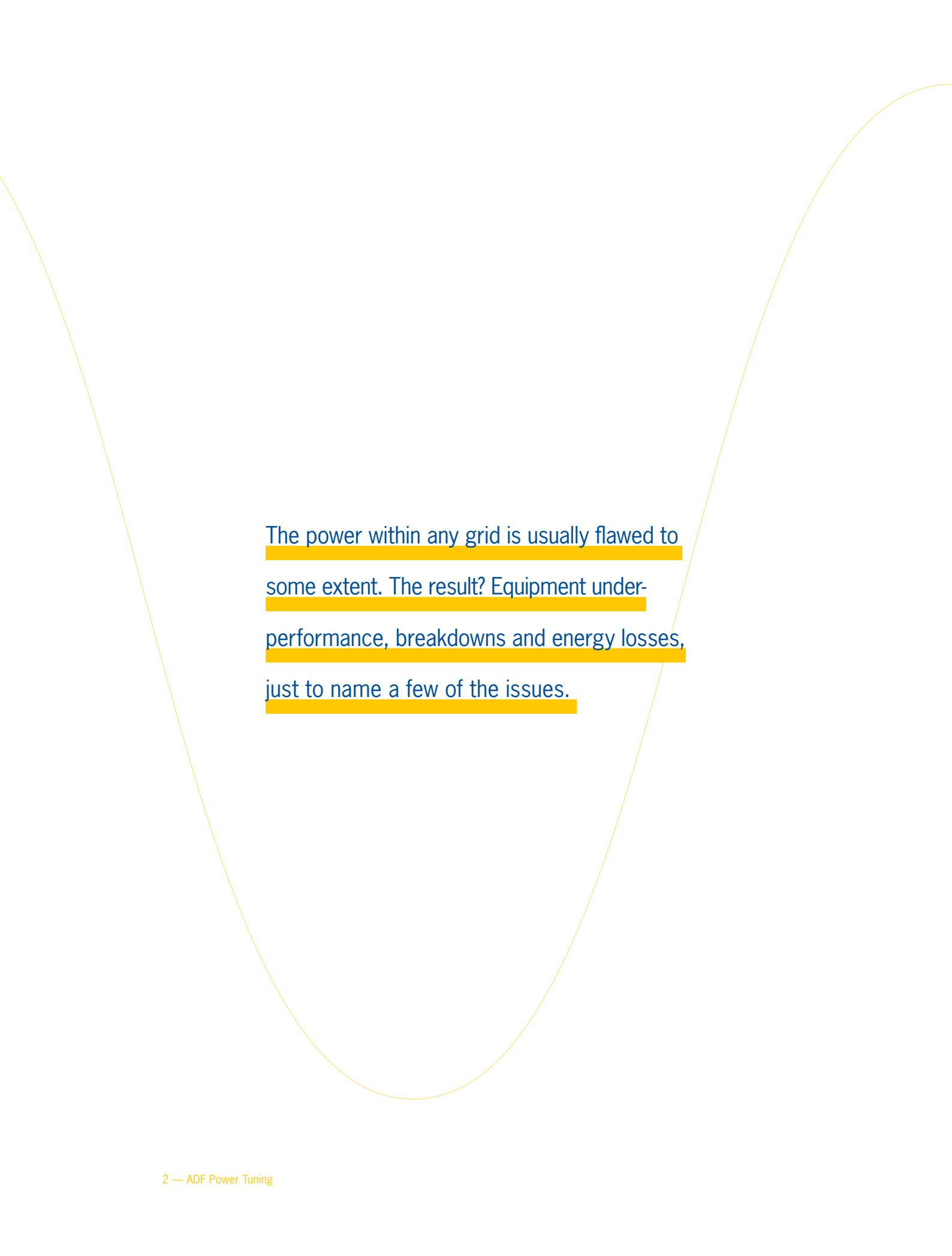




# ADF Power Tuning

**THE SHAPE OF  
POWER TO COME**



The power within any grid is usually flawed to  
some extent. The result? Equipment under-  
performance, breakdowns and energy losses,  
just to name a few of the issues.

Most **INDUSTRIES** **HAVE** **THOUSANDS** of

**ELECTRICAL DRIVES**

in **CRITICAL** !!!

**EQUIPMENT.**

Their **speed**

INCREASES

DECREASES

CONTINUOUSLY.

This creates

**&**  
**DISTURBANCES**



TRANSIENTS



HARMONICS



REACTIVE POWER



NETWORK UNBALANCE



OSCILLATIONS



VOLTAGE VARIATIONS



FLICKER

Causing a variety of

**PROBLEMS**

OVERHEATING  
TRANSFORMERS

SHORTER  
EQUIPMENT LIFE

NUISANCE TRIPPING  
IN CIRCUIT BREAKERS

PRODUCTION  
FAILURE/DOWNTIME

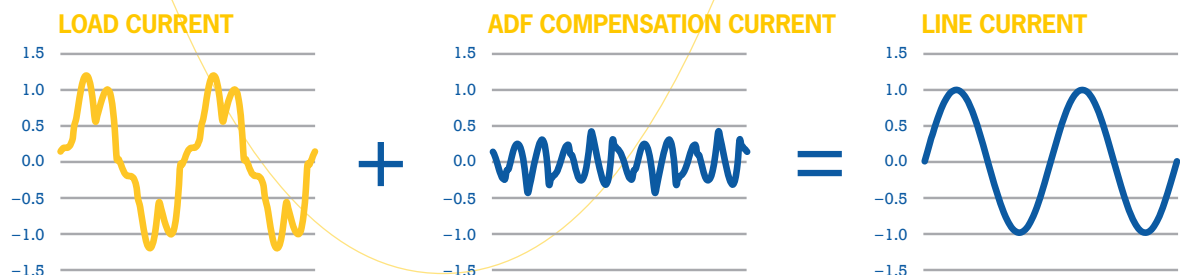
NON-COMPLIANCE

EXCEEDING  
NORM LIMITS

# ADF Power Tuning – technology that makes energy more efficient

Engineered in Sweden, ADF Power Tuning provides  
a unique way of saving energy in a vast range of  
applications such as industrial production machines  
and generator systems.

It works by sensing electrical behavior, then removing energy losses by correcting the electrical behavior. This is achieved by using state-of-the-art signal processing and advanced control structures to manage the power flow to and from the machine with a power processor (power converter). By continuously monitoring the network and injecting exactly the right amount of compensation current—at exactly the right time—the most efficient and accurate solution to any power quality problem can be achieved.



# OUR TECHNOLOGY HELPS YOU SAVE:

## 1 SPACE

Since one module supports multiple drives, you can save space and ensure flexibility for the future.

## 2 MONEY

Increase energy efficiency while reducing the expense of replacing worn equipment.

## 3 TIME

Avoid unnecessary downtime for maintenance or replacement of equipment affected by power quality issues.

## 4 HASSLE

ADF-type technology is already being included in regulatory demands and equipment warranties—a trend that will only continue to grow.



### SECURING REGULATORY COMPLIANCE

When it comes to regulatory compliance, you need a solution you can depend on. But more than that, why not consider a solution that leaves room for growth? With ADF Power Tuning, you can remain care-free in the knowledge that this low harmonic solution will ensure you meet necessary standards. See some examples here on the left.

### MAINTAIN YOUR EQUIPMENT WARRANTIES

With increasingly sensitive equipment, come increasing power disturbances. Avoid this concern over loss of warranties with a stable and reliable power quality solution.

### EXTEND YOUR EQUIPMENT LIFETIME

A reliable power quality solution ensures that unstable power is compensated. With ADF Power Tuning, you lower the risk for wear, expensive shutdowns, and replacement.

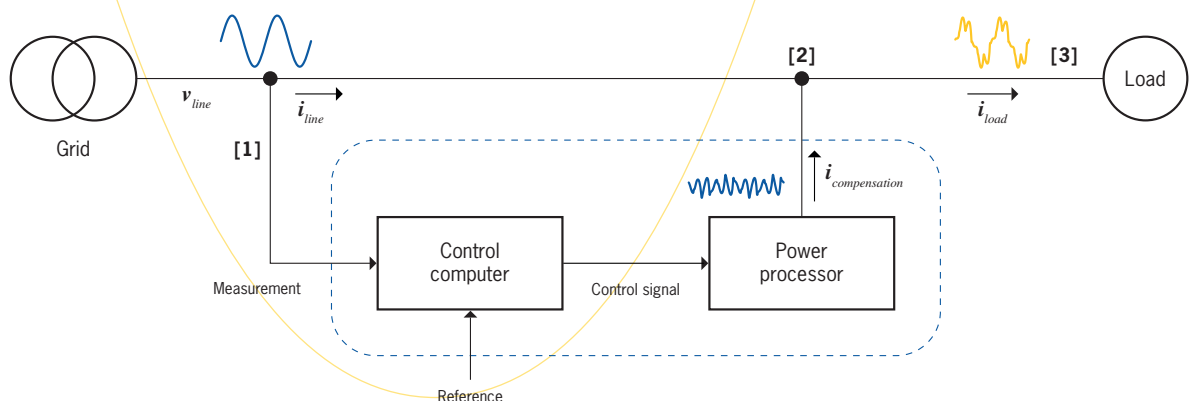
# What to expect with ADF Power Tuning

An ADF unit is basically a very advanced  
computer-controlled current generator  
with the ability to instantly produce any shape  
or form of compensation current.

A simplified diagram of the operating principle is shown in the figure below. Each ADF unit is connected in parallel, in shunt, with the load that requires compensation. The power flows of electrical currents between the load and the network are measured and analyzed [1] to determine if disturbances such as reactive displacement and/or harmonics are present.

If found, the ADF unit injects phase currents [2] that are the exact opposite of, for example, the harmonics and/or reactive displacement. This is done in order to cancel out the load behavior [3].

The result is an ideal load with a minimum of power losses and disturbances. The energy profile then appears ideal to the transformer.



## ADF Power Tuning vs. Competitors

Compared to other power quality technologies, ADF Power Tuning provides a solution that is hard to beat. It is an efficient system that leads to low losses, but more than that, it provides a reliable tool box that can seamlessly address a variety of disturbances, from total harmonic distortion to flicker.

And while most power quality products can help you meet regulations in some sense, we do that with a lighter, more compact solution. The modular structure of ADF Power Tuning also allows for flexibility for the future and adaptability for your specific project.

	ADF	MULTIPULSE	AFE	PASSIVE FILTER
Losses	≡	≡	≡	≡
Total harmonic distortion	≡	≡	≡	≡
Physical size	≡	≡	≡	≡
Meets regulation*	●	◐	●	○
Specified harmonic selection	●	○	○	○
Resonance elimination	●	○	○	○
Flicker compensation	●	○	○	○
Configurable	●	○	◐	○

\* IEEE519, G5/4, EN61000, etc

*Our active harmonic filters provide powerful, cost-efficient optimization of the power flow in a wide array of applications. By removing behaviors that lead to energy losses and disruptions, ADF products instantly lower operational cost by saving energy, improving equipment efficiency, and minimizing the demand on the energy grid.*

# ADF P100

ADF P100 active filters give you the compensation capabilities you need in a compact cabinet.

It's small and cost-effective, but the ADF P100 features the cutting-edge performance you can expect with ADF Power Tuning.

## [70–130 A]

The ADF P100 is ultra-efficient and easy to use. The wall-mounted cabinet is a cost-effective package that allows the use of ADF technology in applications where saving space and weight are optimal. Several ADF P100 units can be used in parallel, and the ADF P100 can also be used in sensorless operation for harmonics compensation. The ADF P100 is available in three-wire versions (70–130 A) and in a four-wire version—the ADF P100N (100 A, 300 A Neutral).

### SOME TYPICAL APPLICATIONS INCLUDE

- Maritime vessels
- Offshore oil rigs
- Drive systems
- Pump applications
- Offices and commercial buildings
- Medical equipment
- Industrial loads
- UPS systems
- Fans





# ADF P200

The ADF P200 is one of the world's fastest active filters. It can eliminate harmonic problems up to the 100th harmonic and eliminates resonances even in very resonant grids. Available as a single, floor-standing cubicle, it is also excellent at mitigating interharmonics, resonances, and high frequency disturbances.



## [100 A]

The ADF P200 is a specialized active filter compatible with all three-phase low-voltage applications. It is ideal for eliminating resonances both in current control and sensorless operation, as well as for mitigating interharmonics.

### SOME TYPICAL APPLICATIONS INCLUDE

- Offices and commercial buildings
- Small- and medium-sized manufacturing companies
- Fluorescent lamps
- Medical equipment
- Industrial loads
- UPS systems
- Fans
- Drive systems

# ADF P300

The ADF P300 is the ideal active filter for small and medium size commercial and industrial loads.

It is a powerhouse solution and the best choice for most applications because it is such a general purpose active filter.

## [90–450 A]

With the ADF P300, the state-of-the-art performance of our active filter technology comes encased in a compact cabinet, although larger than the ADF P100. Each ADF P300 system is delivered with 90–450 A optimization power and the modular design makes it easy and convenient to add future upgrades. The modularity also ensures superior scalability—up to 15 units can be used in parallel.

The ADF P300 is compatible with all three-phase low voltage applications. Beyond harmonics and reactive compensation, the ADF P300 can also be used for flicker control, harmonics with sensorless operation, and load balancing. The ADF P300 can also be tailored to unique applications requiring special optimization.

### SOME TYPICAL APPLICATIONS INCLUDE

- Offices and commercial buildings
- Small and medium sized manufacturing companies
- Fluorescent lamps
- Medical equipment
- Industrial loads
- UPS systems
- Fans
- Drive systems
- Maritime vessels
- Offshore oil rigs



# STATCOM systems in electricity networks



The ADF P700 STATCOM is a high power, utility grade, medium voltage STATCOM for heavy industrial loads. It is ideal for dynamic reactive compensation, flicker mitigation, and harmonic suppression in applications such as electric arc furnaces (EAFs), cranes, hoists and wind farms. In industries with such a high power demand, there is a concurrent need for a powerful power quality solution. That's when you need the STATCOM.

All ADF products can be configured using the built-in WUI (Web User Interface). No software needs to be installed on your computer to perform commissioning.



KEY FEATURE	ADF P100	ADF P200	ADF P300	ADF STATCOM
Compact, wall mounted	●			
Harmonics, reactive power	●	●	●	●
Resonance elimination, Interharmonics		●		
Flicker	●		●	●
Load balancing	●		●	●
Medium voltage applications			●	●
Available with liquid cooling			●	●
Four-wire version	●			
Voltage range	208–690 V	208–480 V	208–690 V	Up to 36 kV
APPLICATIONS BELOW				
Industrial	●	●	●	●
Commercial	●	●	●	
Utility		●	●	●
Marine, offshore	●		●	



## ADF Power Tuning

ADF Power Tuning was developed by Comsys AB in Lund, Sweden. Working with their global network of partners, the ADF Partner Network provides active filter solutions for a wide range of applications, enabling businesses to increase productivity, and simultaneously save money while reducing their carbon footprint.

Due to the flexibility and adaptability of this low harmonic solution, ADF products are ideal for a wide variety of industries.

[www.adfpowertuning.com](http://www.adfpowertuning.com)