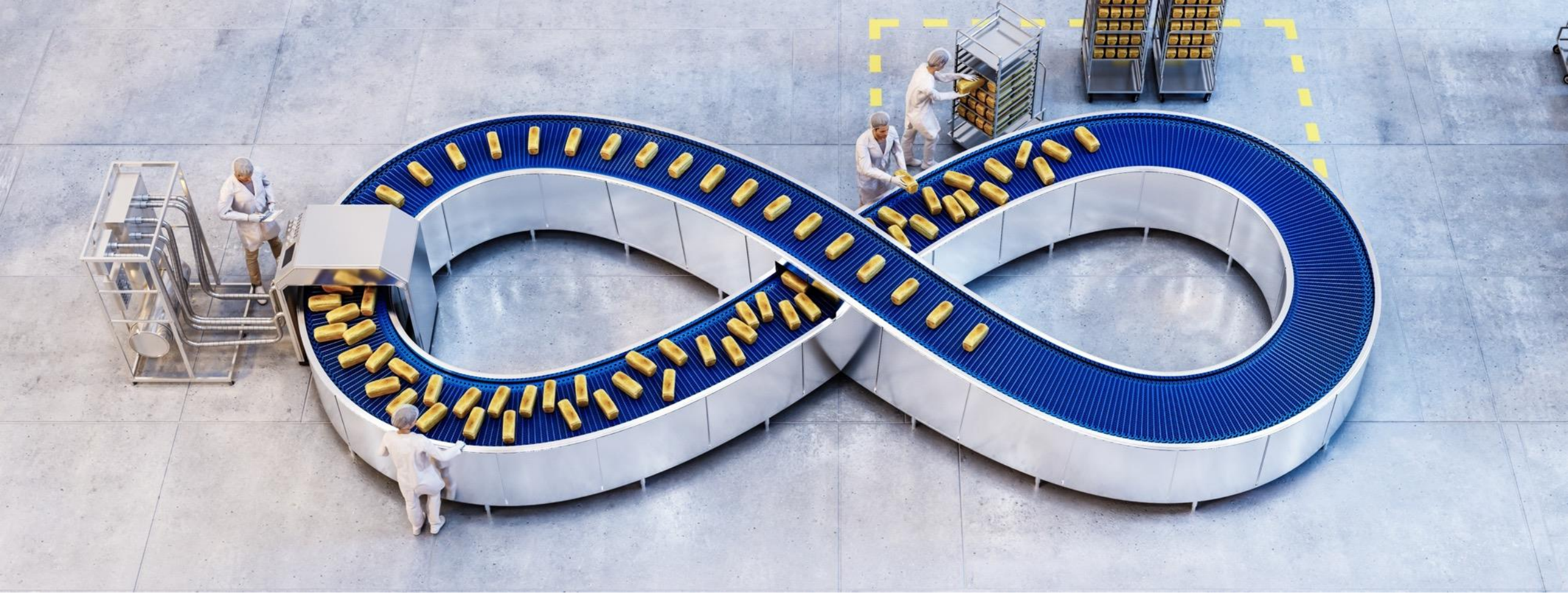


F&B CUSTOMER DAY 2019 | MAKASSAR, MARCH 28TH, 2019

VSD Driving energy efficiency in F&B

Drives efficient and reliable solution

Dendy Hendra, RMDR

BU Drives

Solutions for all your needs …

Product overview

Low voltage AC and DC drive

- Machinery drives 0.18 to 560 kW
- General purpose drives 0.75 to 500 kW
- Industrial drives
  - Low voltage AC 0.55 to 5600 kW
  - Low voltage DC 7.5 kW to 4.8 MW
- Industry-specific drives for water, HVAC, vehicle and crane applications
- Wind converters 0.6 to 8 MV

Medium voltage AC drives 0.25 to 100 MW

BU Drives

… in every industry

Markets served

HVAC

Food

Beverage

Water and wastewater

Marine

Pulp and paper

Metals

Mining

BU Drives

… in every industry

Markets served

Power generation

Cement

Chemicals

Oil upstream

Textile

Plastics

Material handling

Motion

Variable speed AC drive

Definition of AC drive and AC drive system

AC drive

Electrical supply device also known as variable speed drive of frequency converter.

AC drive is used control the speed, torque or position of an AC motor.

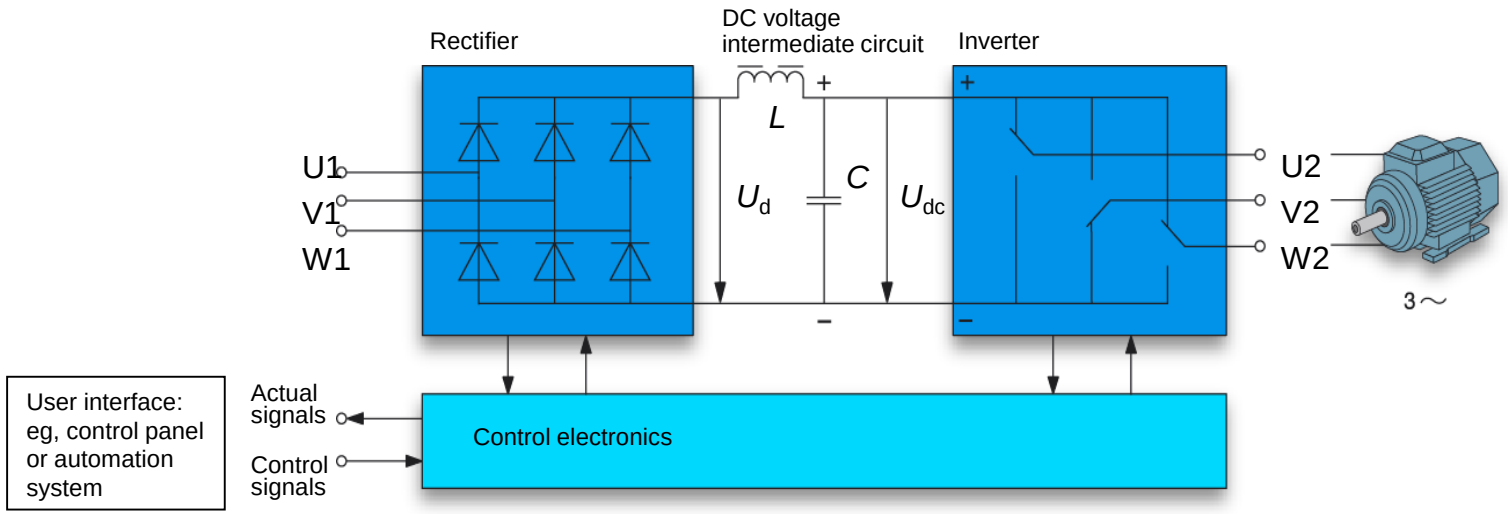
AC drive system

Combination of AC drive and motor plus transmission system, e.g. gearbox

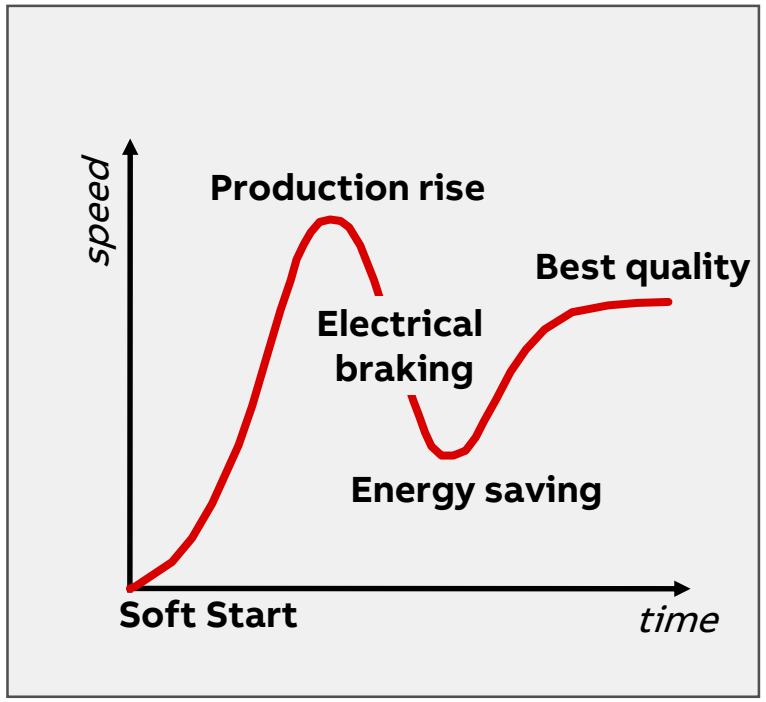
Main components of an AC drive

Overview

- An AC drive converts mains current and voltage with fixed frequency and amplitude into current and voltage with variable frequency and amplitude
- An AC drive consists of rectifier, DC voltage intermediate circuit, inverter and control electronics
- Control electronics control the operation of an AC drive



Variable speed control (VSD)



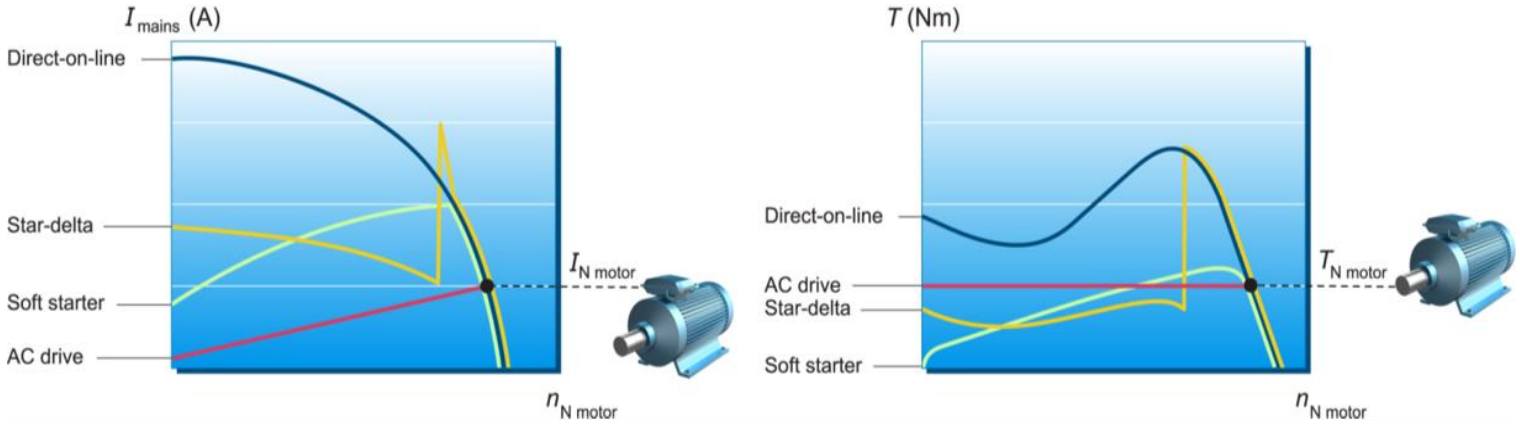
Benefits

- Saves energy
- Improves quality through better process controllability
  - reduces waste and saves raw materials
- Soft start and stop reduces process equipment wear
- Electrical braking of the motor
  - possibility to produce energy for other motors or feed the energy back to network.
- Reduces noise
- Natural resources saved while process efficiency improved

Case: Starting a motor with an AC drive

Example

- When starting a motor, an AC drive takes a lower starting current from the network than other starting methods
- During starting and stopping, motor speed can be accurately controlled with an AC drive
- With an AC drive, motor torque can also be accurately limited according to mechanical or other needs
- Starting torque can be higher than with a typical DOL motor



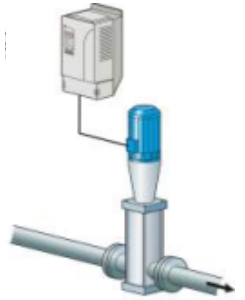
Control methods

Throttling

Bypassing

On/off control

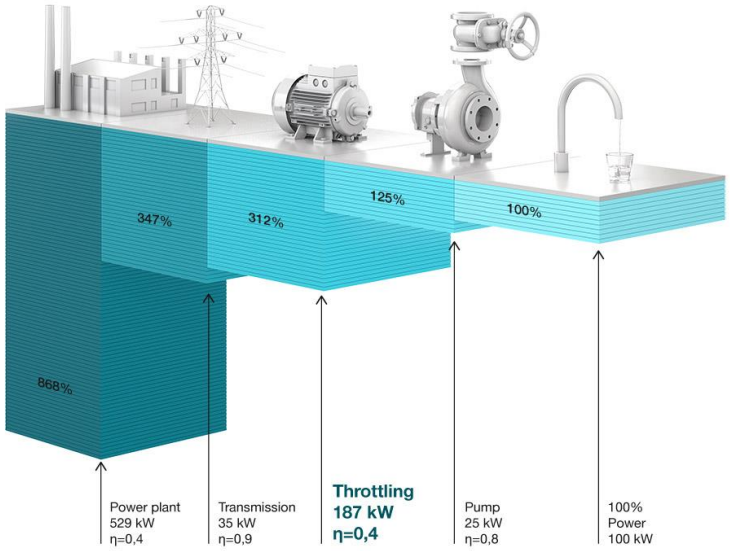
Variable speed



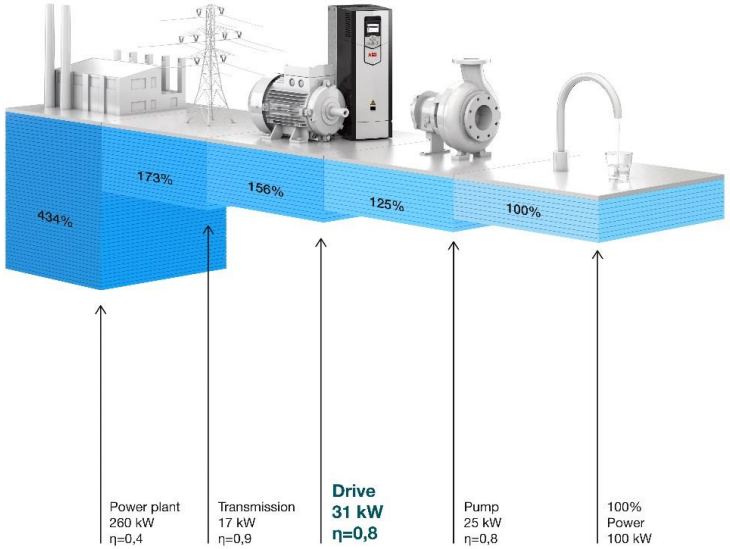
Energy efficiency in the chain

From power station to a pump application

Throttling



Drive controlled



Increased energy savings with variable speed drives

Energy efficiency

How variable speed drives can help you save energy

Energy efficiency with ABB drives

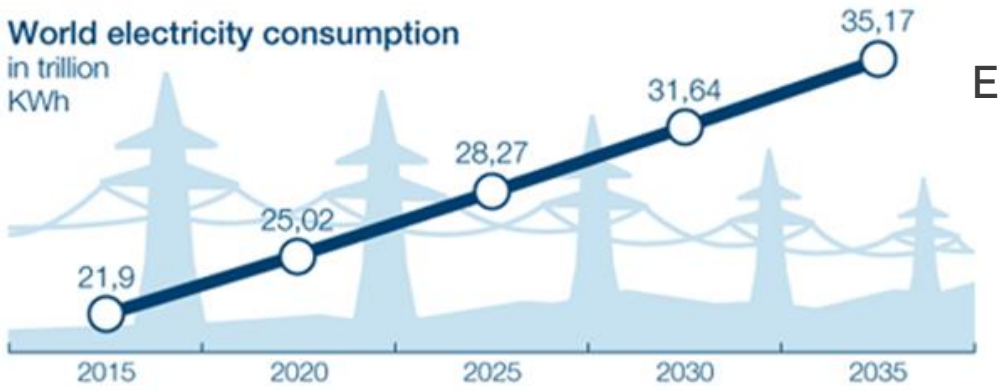
Helping customers do more using less

Facts

- About 40% of all electricity generated is consumed by industries, and two-thirds of that energy is used by electric motors.
- Variable speed drives (VSDs) regulate the speed of a motor and can reduce energy consumption by 30% to 50% in many applications.
- However, less than 10% of motors are equipped with variable speed drives.

The world’s demand for energy will not go away

ABB Drives help use energy more efficiently



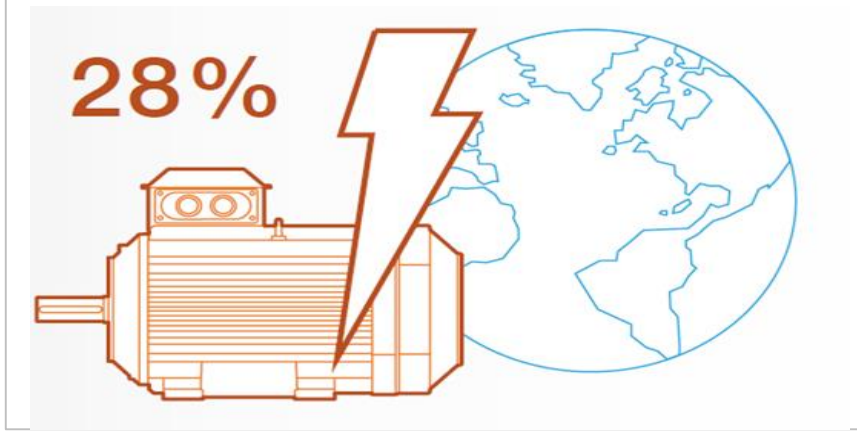
Electricity demand

+84%

by 2050

Less than

10% of the Motors are equipped with VSDs.



Motors consume about

28%

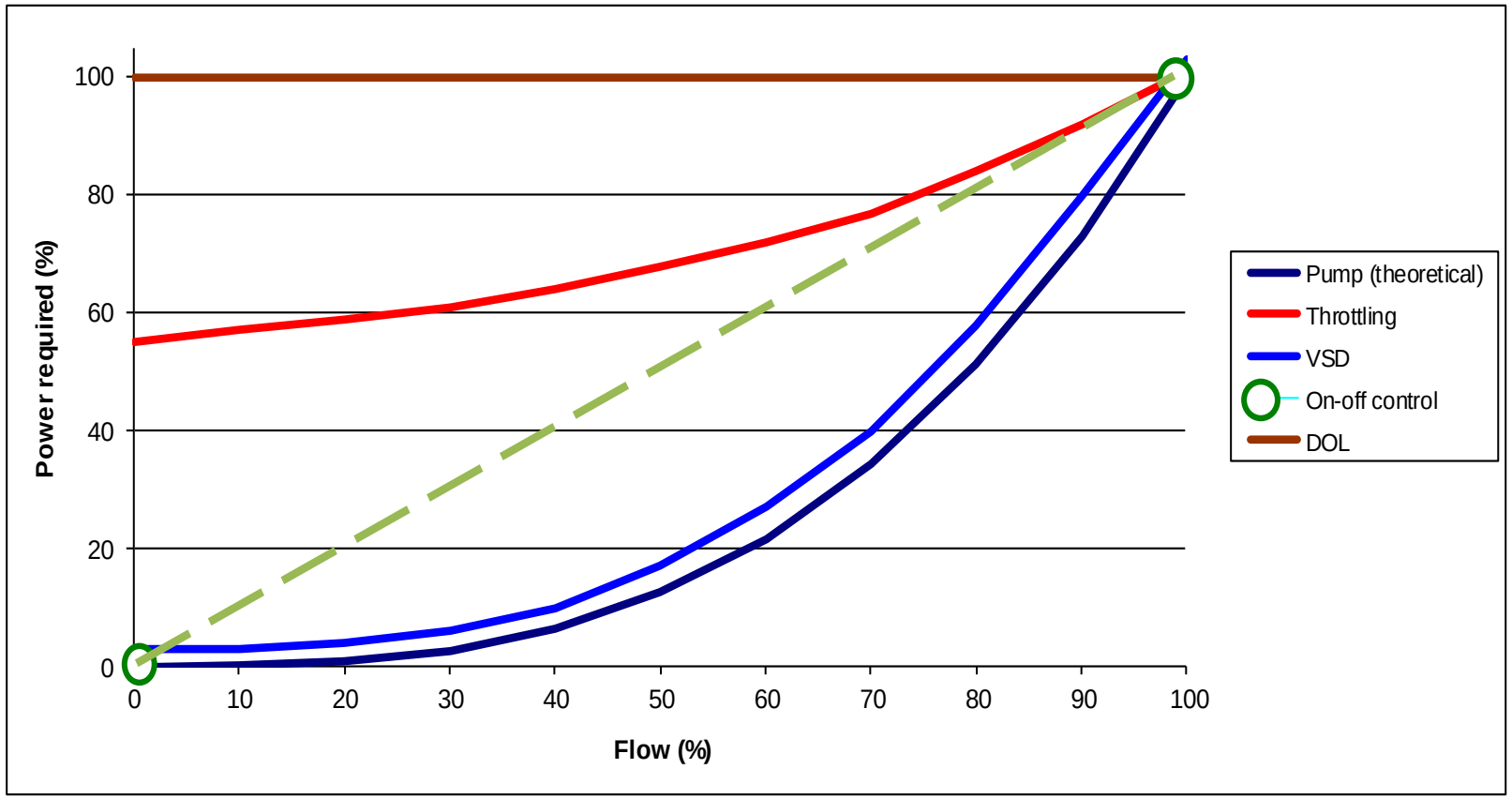
of the world’s electricity

Energy efficiency measures can reduce consumption by up to

60%

Energy efficiency with ABB drives

Power consumption with variant control methods



Customer energy appraisals

Working to find energy savings

Steps in an energy appraisal

- Identifying applications with energy saving potential
- Monitoring and data collection on site
- ABB analyze the results and identify areas for savings
- ABB prepares a report with potential savings
- ABB recommends drives and motors

For further information contact your local ABB Energy efficiency ambassador

Low voltage AC drives

All-compatible machinery drives

ACS380, 0.25 to 7.5 kW

- Optimized for cabinet mounting
- Enclosure class IP20
- Preconfigured connectivity for all major machine automation fieldbus protocols ensuring seamless integration
- Several interfaces for easy configuration, including theintegrated icon based control panel
- Fine-tuning with adaptive programming possibilities
- Functional safety, embedded STO (SIL 3)
- Built-in EMC filter
- Extended connectivity to I/O’s

All-compatible general purpose drives

ACS480, 0.75 to 22 kW

- Compact drive with all essential features integrated and preprogrammed, such as PID, pump and fan macros and timers, and other features
- 3-phase, 380 to 480 V
- Cabinet-optimized, IP20 as standard
- Assistant control panel as standard
- Integrated C2 EMC filter as standard
- Adjustable switching frequency control reducing motor noise
- Built-in Safe torque off to enhance safety
- Options
  - Basic panel, assistant panel and BT panel as option
  - Most common fieldbus adapters available as option
- Remote monitoring with NETA-21
  - Safe configuration for unpowered drives

All-compatible general purpose drives

ACS580, 0.75 to 500 kW

- From 208 to 480 V, IP21 and IP55
- Vector and scalar control for pumps, fans, centrifuges, conveyors and other variable- and constant-torque applications
- Many built-in features and intuitive control panel as standard simplify every-day use of the drive
- Provides a variety of energy efficiency information helping to optimize energy use
- Safe Torque Off (STO) functionality as standard
- Harmonic reduction with second generation swinging choke
- Member of ABB's all-compatible drives portfolio
- Options
  - Fieldbus adapters, panel mounting kits, output extension modules with +24 V input
  - Brake units and choppers

All-compatible industrial drives

ACS880 single drives 0.55 to 3200 kW

- Wall-mounted drives, ACS880-01
- Cabinet-built drives, ACS880-07, -17 and -37
- Voltage range from 208 to 690 V
- Built on ABB´s all-compatible drives architecture:
  - Intuitive control panel and PC tool
  - Enhanced direct torque control (DTC) for precise open and closed loop control
  - Built-in SIL 3 safety features
  - Communication with all major automation networks
  - Removable memory unit for easy drive commissioning and replacement
  - Energy optimizer and energy efficiency information
  - Application control programs and drive application programming with IEC 61131-3 programming

Low voltage AC drives

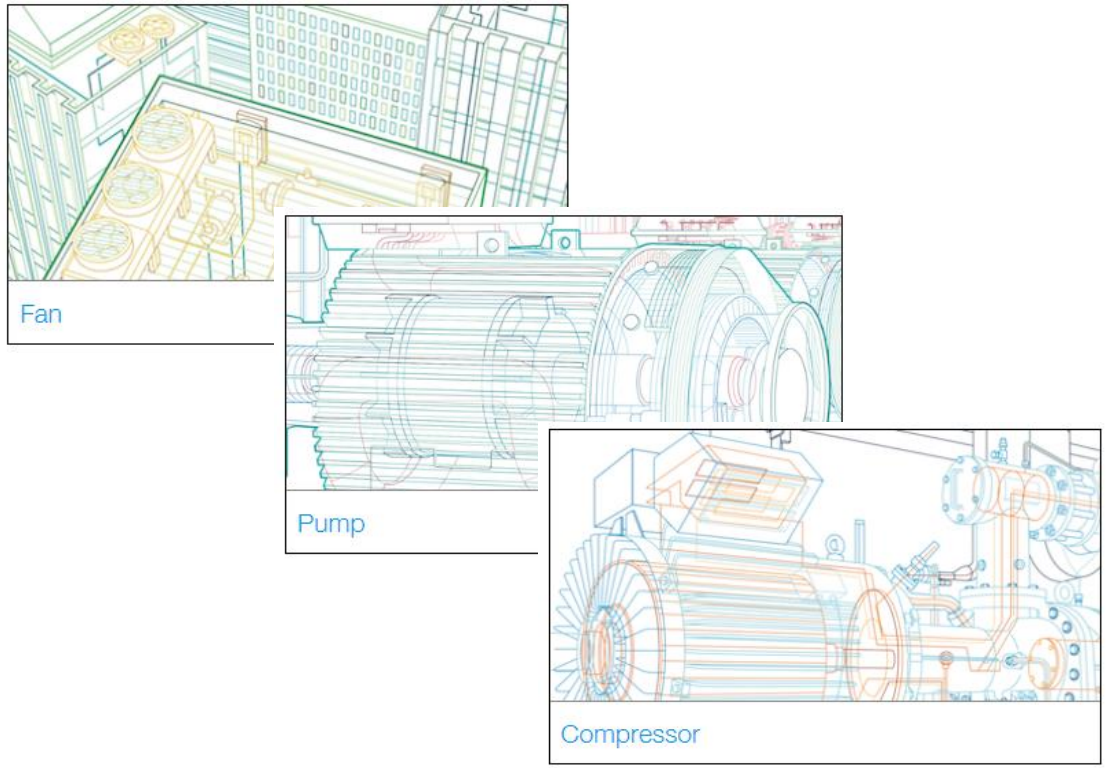
PC tools, remote monitoring options and fieldbus adapters

Drive PC tools

Tool for calculating energy savings

EnergySave

- User-friendly and interactive energy saving calculator for comparing AC drive control against traditional flow control methods in different applications such as pumps, fans and compressors
- Available online http://new.abb.com/drives/energy-efficiency/energysave-calculator
- Available on Apple Store and Google play → allows offline use
- EnergySave is currently available in English, German, Finnish, Russian, Swedish, Spanish, Portuguese, French and Chinese.



So let’s talk


ABB