

SIEMENS

SIMOCODE pro

SIRIUS Motor Management

Unrestricted

How do you answer these...

How do I improve productivity?

How do I reduce cost?

How do I execute projects faster?

When should I take up the motor for maintenance?

Which fault is more frequent?

How do I avoid unplanned shutdowns?

SIEMENS answers the toughest questions with
SIMOCODE pro for Intelligent MCC

What is an intelligent MCC?

An MCC in which individual motor feeders offer Enhanced Motor Protection, Monitors and Evaluate various operating parameters (e.g. current, operating hours etc) of the feeders and perform suitable action to pre-defined conditions independent of the Automation system

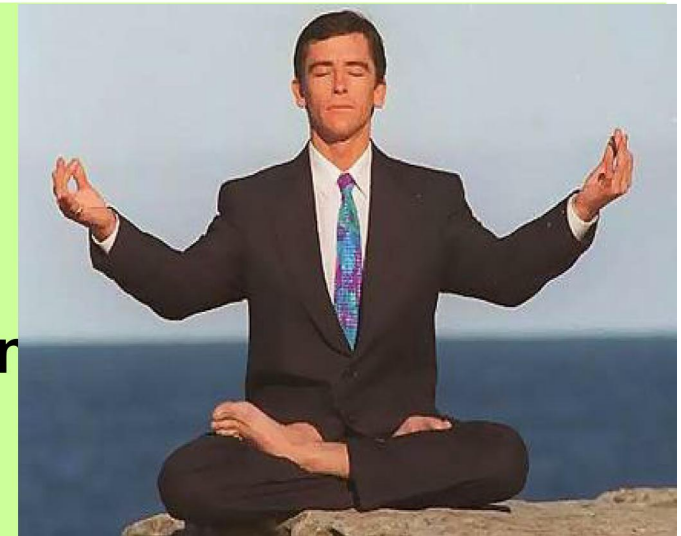
Further it records and communicates early warnings, diagnostics and statistics data for predictive maintenance and analysis purpose

Why do we need Intelligent MCCs?

Of course, for continuous flow of process
– Without interruption!!

Further, for

- Enhanced protection of motors
- Faster diagnostics
- Reduced plant shutdowns
- Transparency in operation
- Easier engineering & commissioning
- Faster project completion
- Cost Savings



All of which means – Complete ‘Peace of Mind’

SIEMENS

SIMOCODE pro

Introduction

History / Philosophy

System

Components

Functions

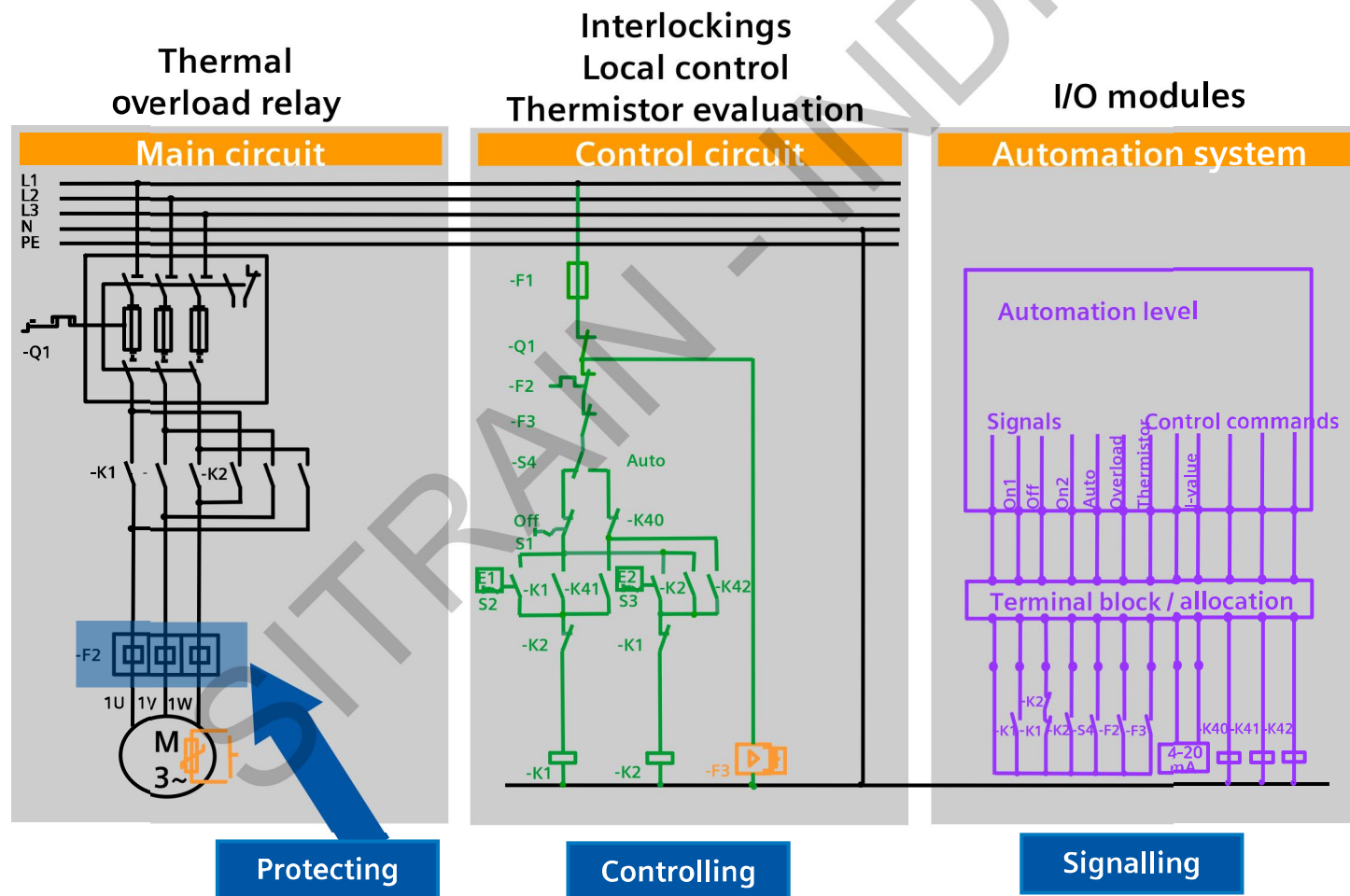
Configuration / Integration

Practice

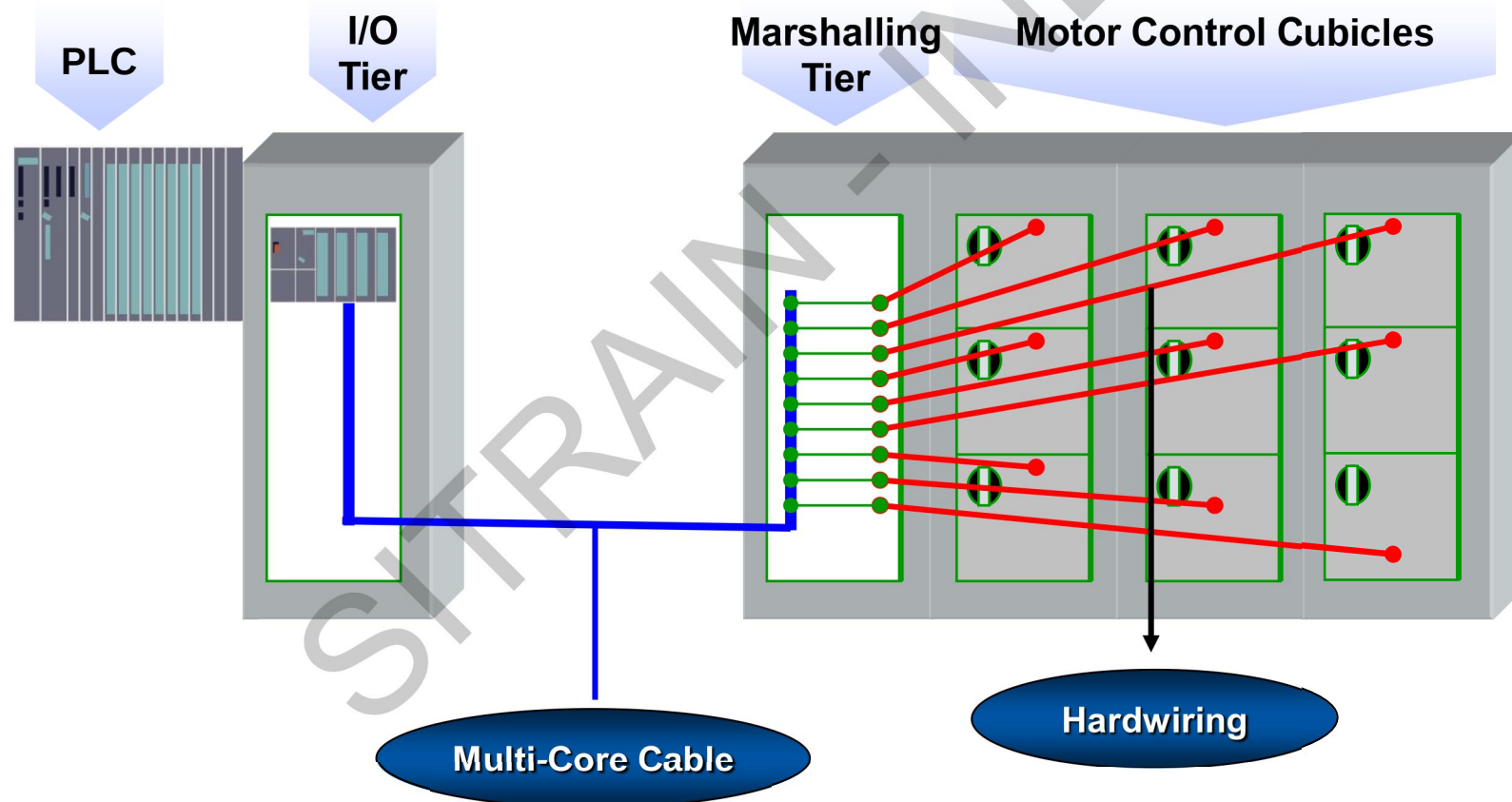
Cost Comparison

References

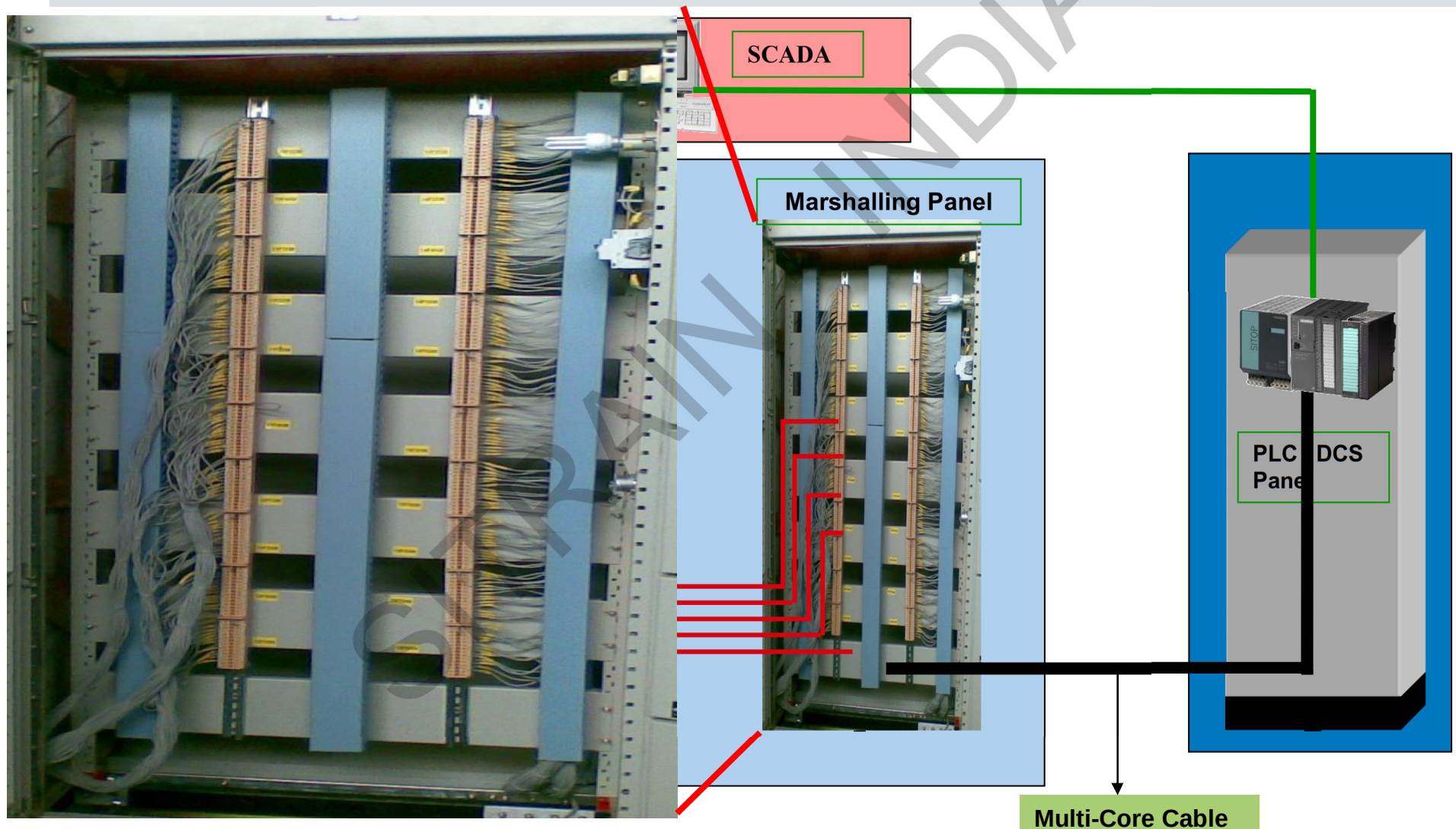
Conventional load feeder



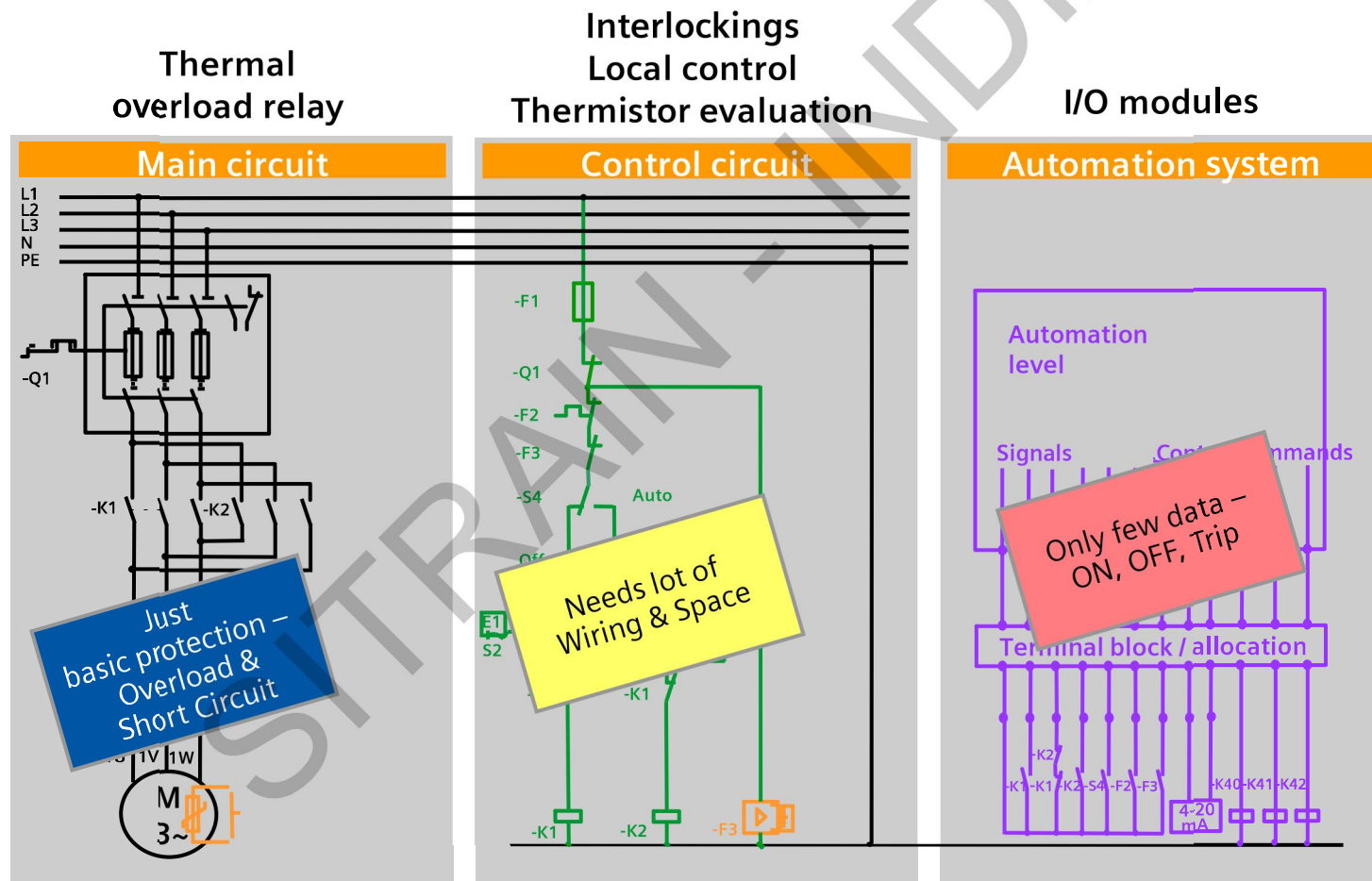
Motor feeder (conventional)



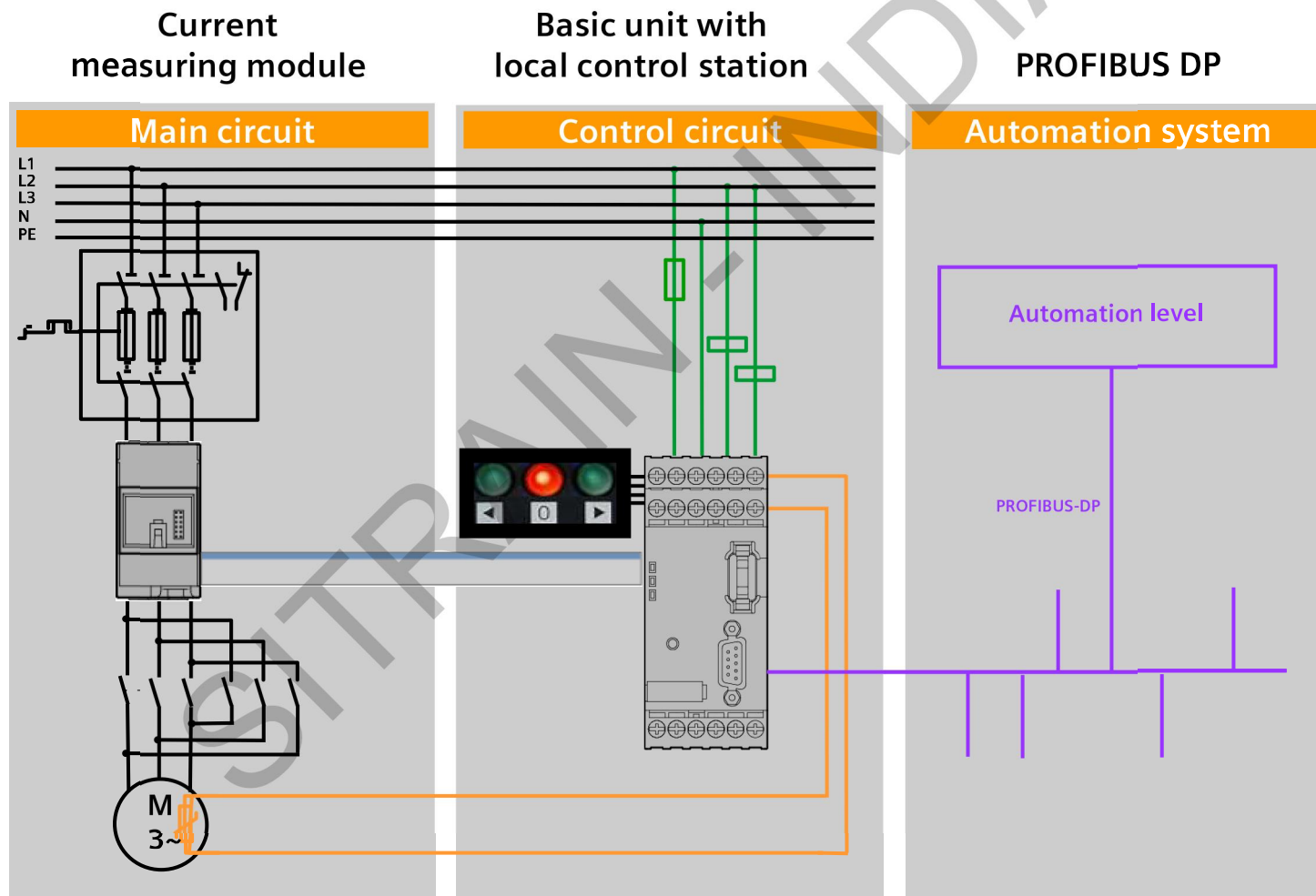
Conventional Motor feeder in a process plant



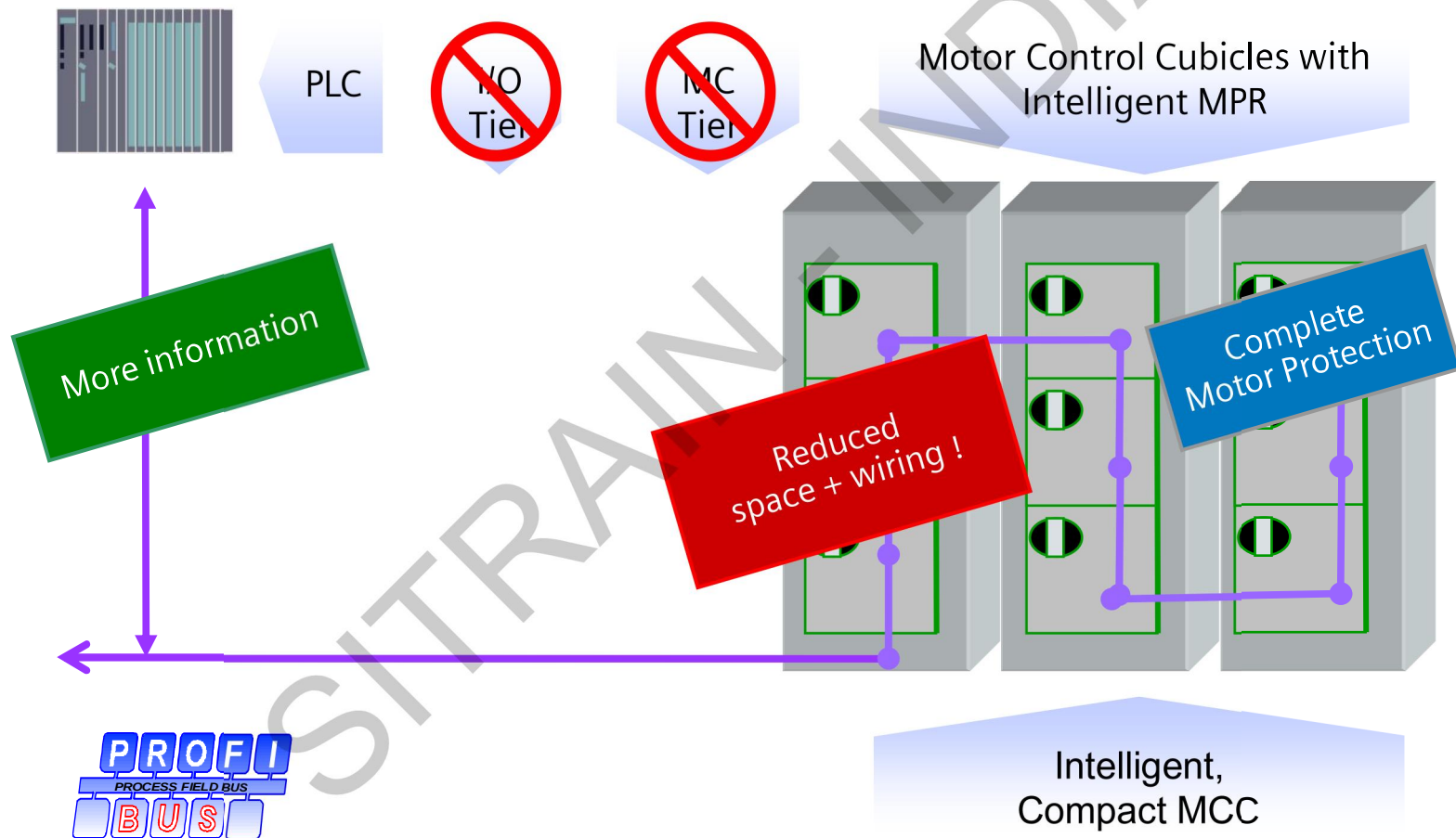
Conventional load feeder – Limitations



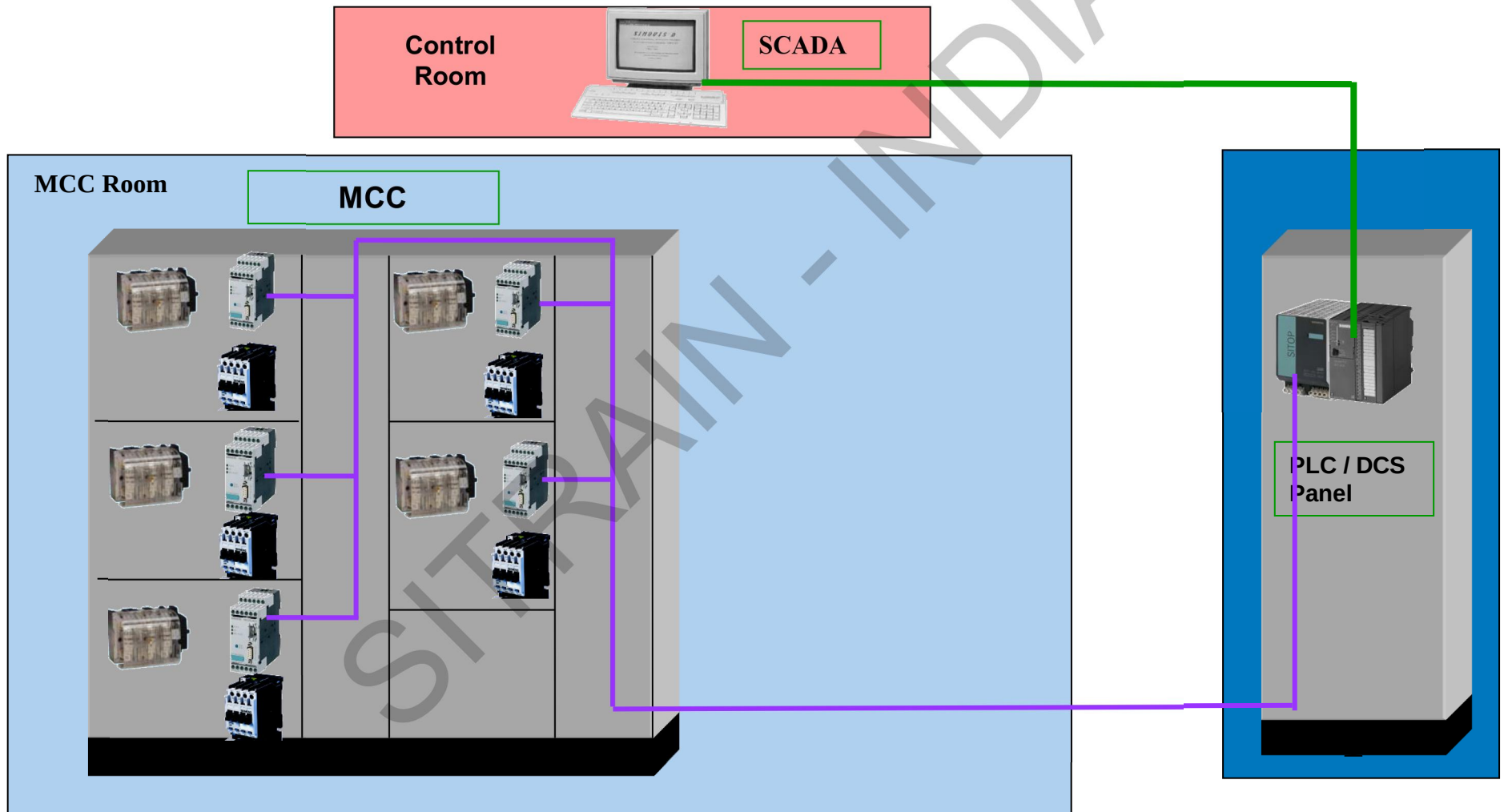
SIMOCODE pro in Load Feeders



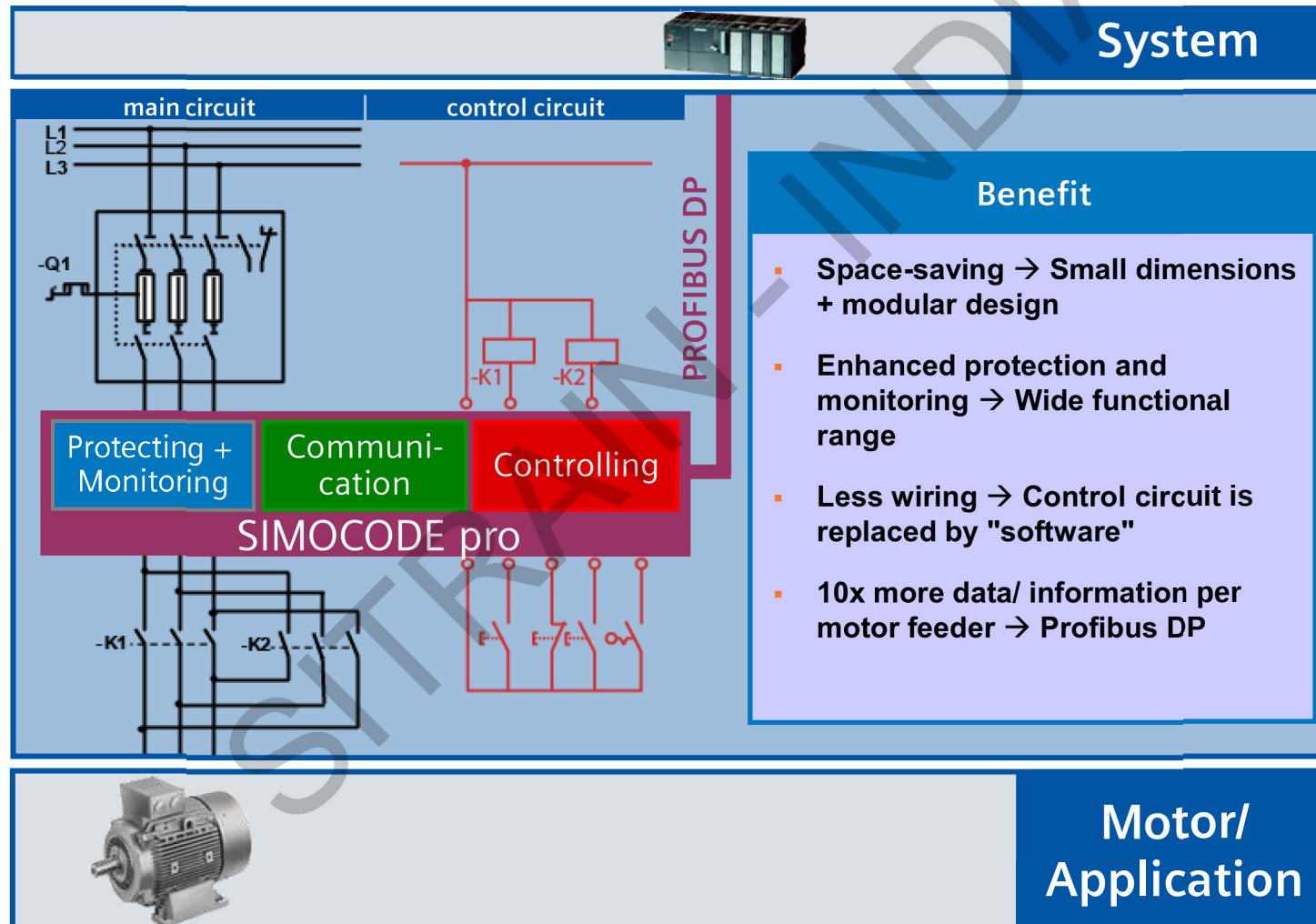
Motor feeder with SIMOCODE pro



Intelligent MCC with SIMOCODE pro



Motor feeder with SIMOCODE pro



SIEMENS



Introduction

History / Philosophy

System

Components

Functions

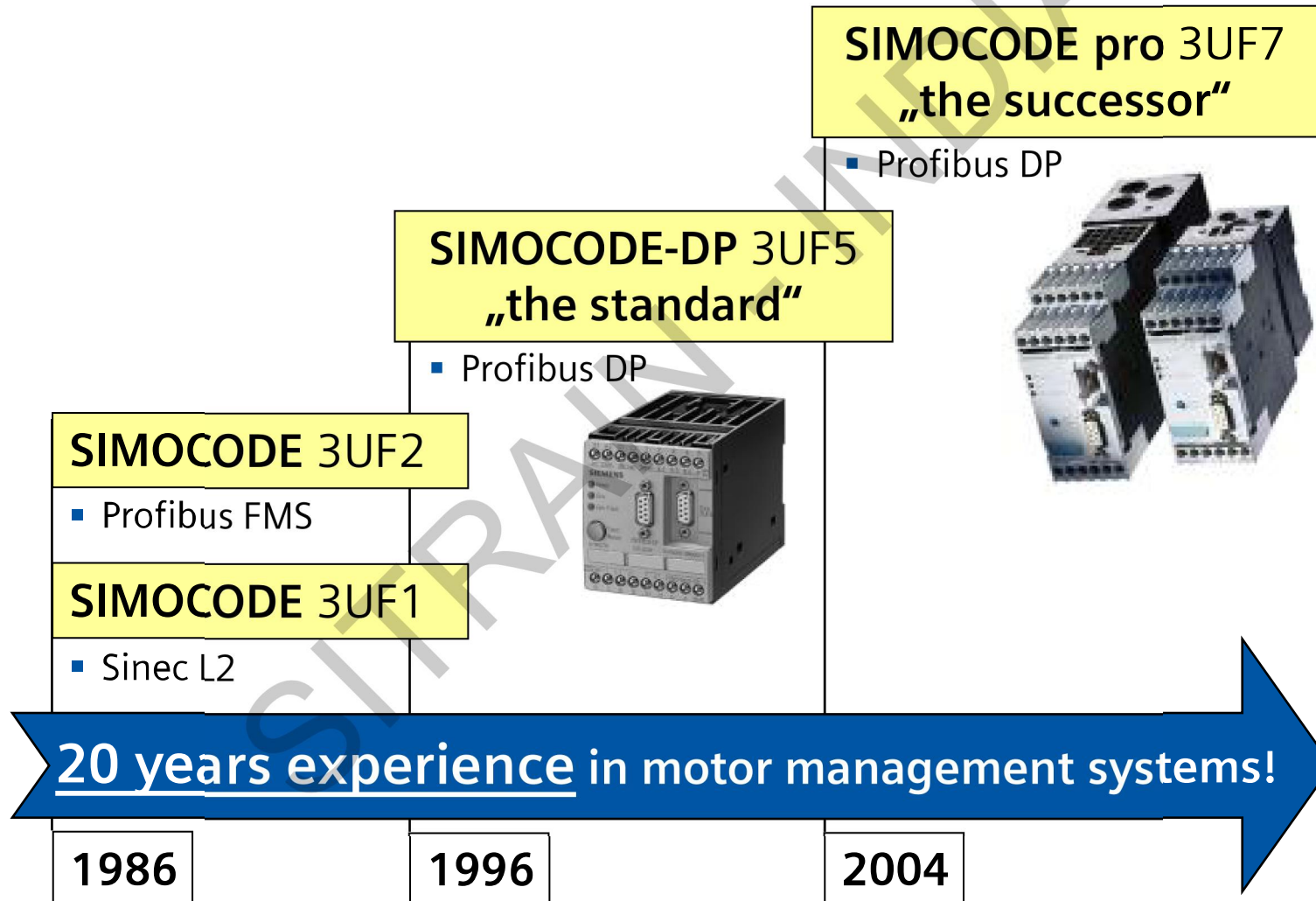
Configuration / Integration

Practice

Cost Comparison

References

We have the experience



SIEMENS



Introduction

History / Philosophy

System

Components

Functions

Configuration / Integration

Practice

Cost Comparison

References

The system SIMOCODE pro

Choice of system to match your need

The powerful Pro V



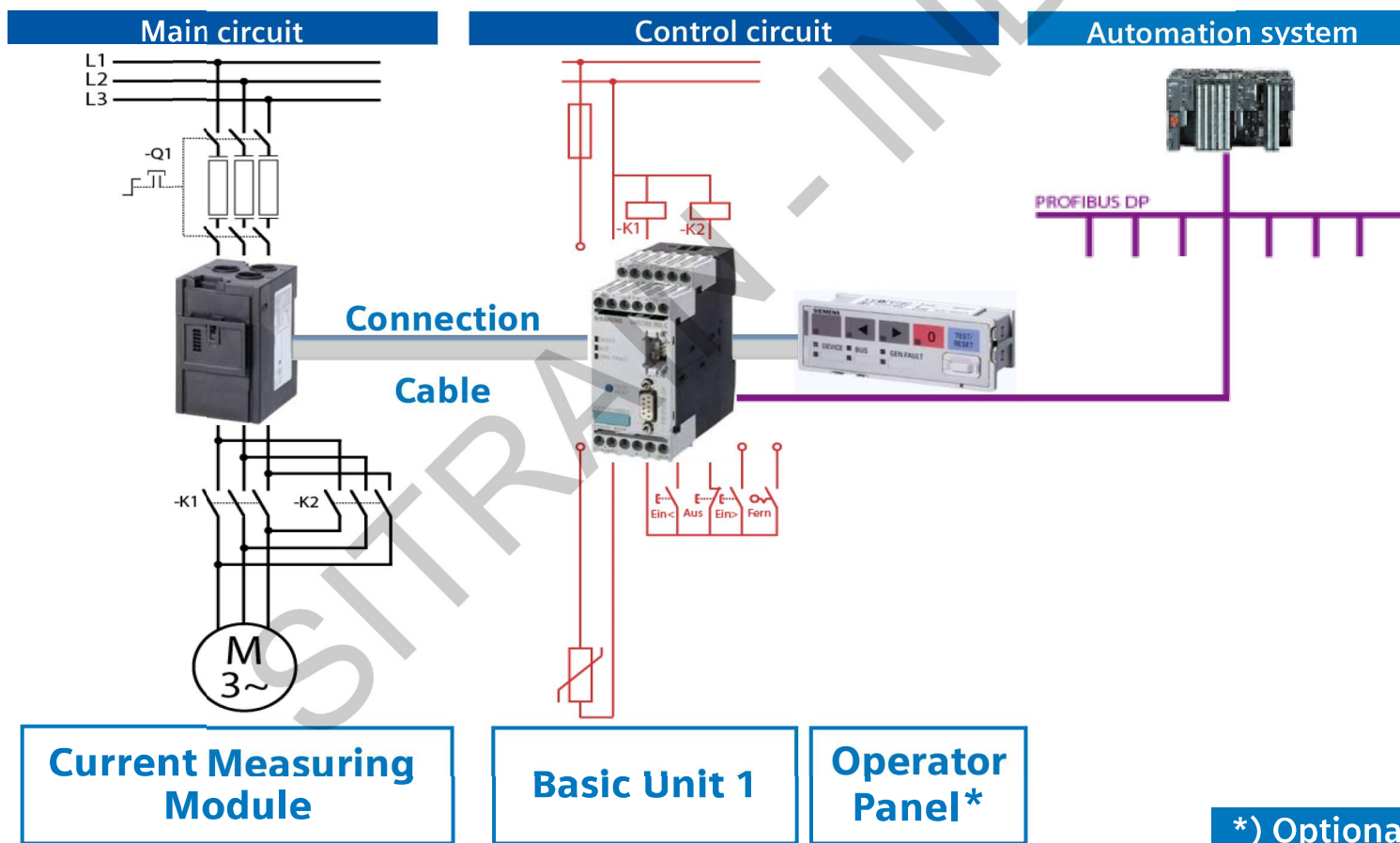
SIMOCODE Pro



The cost-effective Pro C

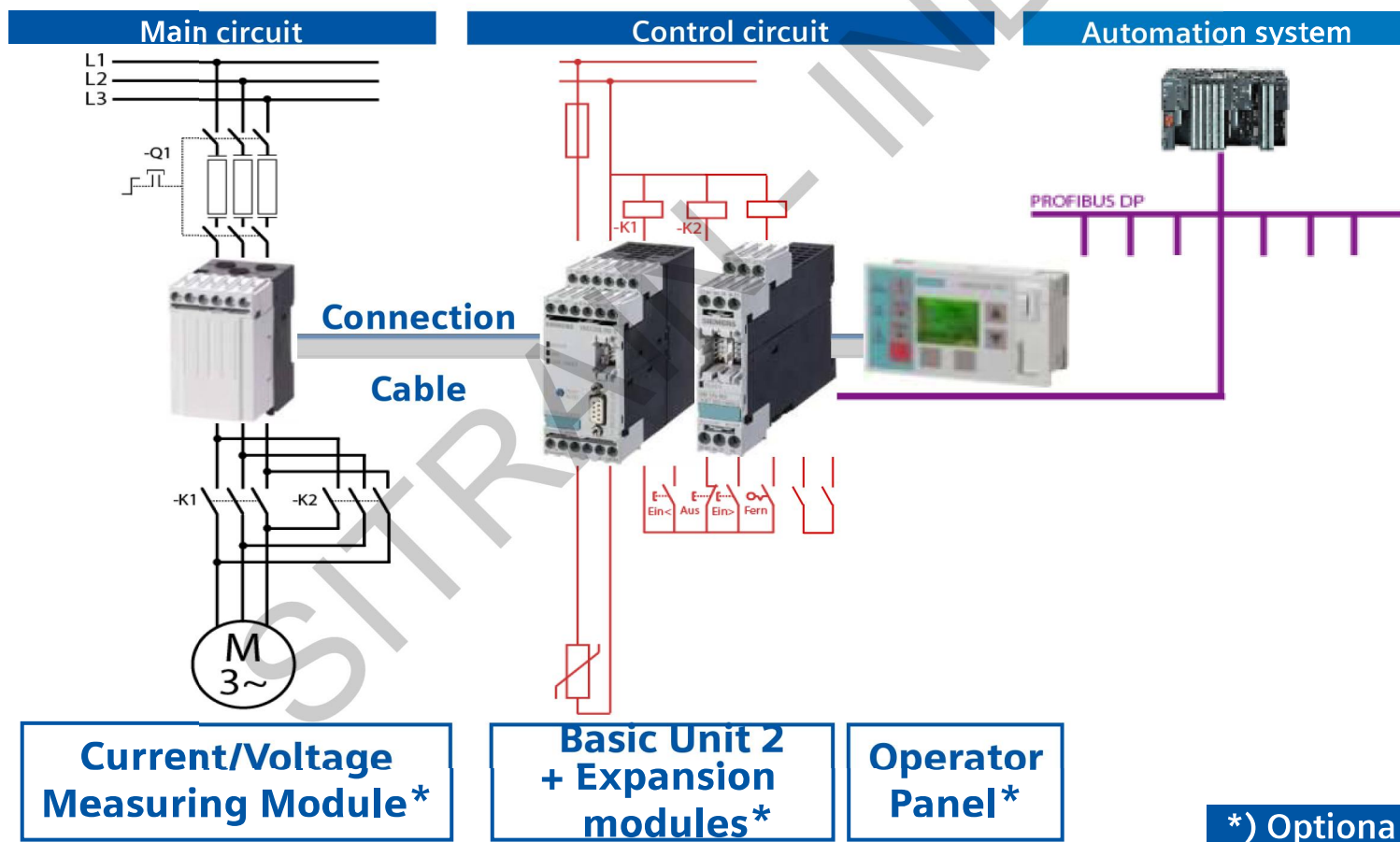
The design of SIMOCODE pro motor feeders

SIMOCODE pro C – Compact

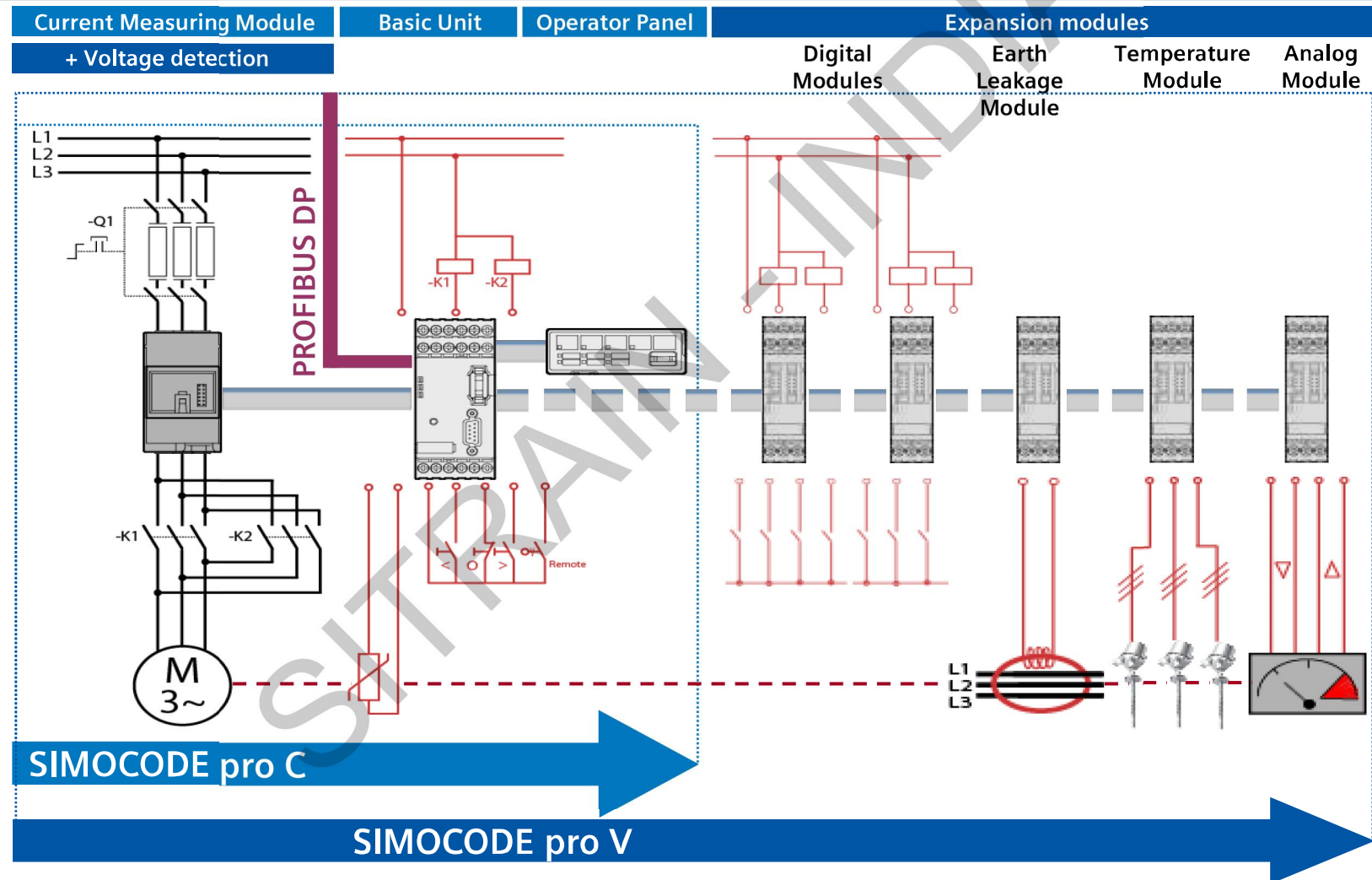


The design of SIMOCODE pro motor feeders

SIMOCODE pro V – Variable



SIMOCODE pro – system overview



SIEMENS



Introduction

History / Philosophy

System

Components

Functions

Configuration / Integration

Practice

Cost Comparison

References

The components

SIMOCODE pro C – Compact



Current Measuring Module
0.3 A – 630 A
Straight-through/
busbar connection
technology



Basic Unit pro C
4 DI / 3 DO
Thermistor
PROFIBUS DP
24 V DC /
110 – 240 V AC/DC



Connection Cable
In various lengths
(up to 2.5 m)

Operator Panel
5 buttons / 10 LEDs



The components

SIMOCODE pro V – Variable

Current Measuring Module



0.3 A – 630 A
Straight-through/
busbar connection
technology

Connection Cable

In various lengths
(up to 2.5 m)



Current/Voltage Measuring Module



0.3 A – 630 A /
690 V
Straight-through/
busbar connection
technology



Basic Unit pro V

4 DI / 3 DO
Thermistor
PROFIBUS DP
24 V DC /
110 – 240 V AC/DC



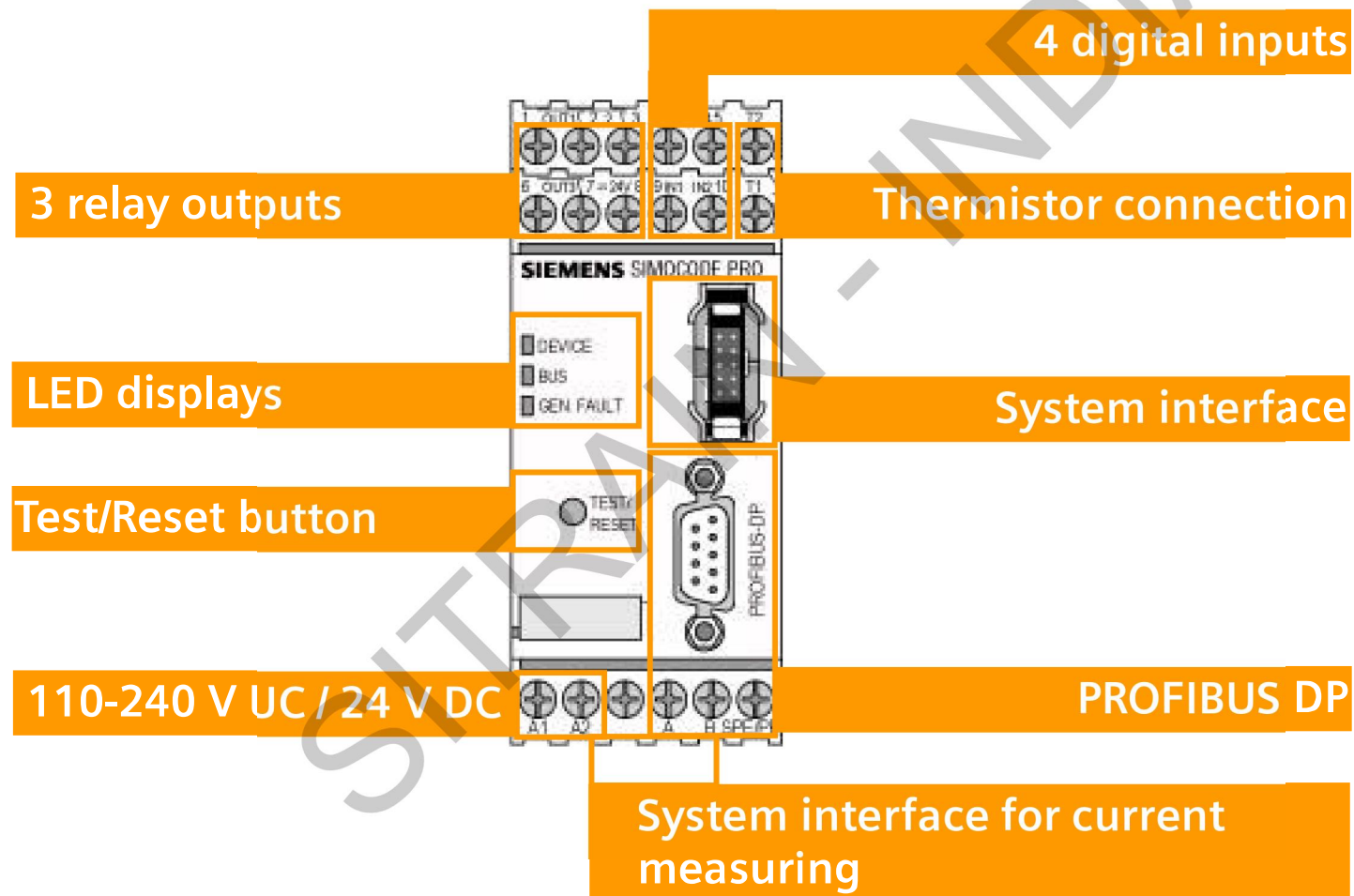
Operator Panel with display



Expansion modules

- Additional Digital I/Os
- 3 x 0/4 – 20 mA I/Os
- 3 x sensors Pt100/ Pt1000
- Earth leakage protection via external summation current transformer

SIMOCODE pro C/V basic unit



The current ranges

Current Measuring Modules for all motor currents

Widths:

45 mm

55 mm

120 mm

145 mm



0.3 – 3 A
2.4 – 25 A

10 – 100
A

20 – 200 A

63 – 630 A
*)

Straight-through transformer

Busbar connection

Only 4 Frame
sizes

*) With 3UF18 intermediate
transformers
up to 820 A

The voltage range

Current/ Voltage Measuring Modules

Widths:

45 mm

55 mm

120 mm

145 mm



0.3 – 3 A
2.4 – 25 A
/ 690 V

10 – 100 A
/ 690 V

20 – 200 A
/ 690 V

63 – 630 A*)
/ 690 V

Up to 690 V

Straight-through transformer

Busbar connection

*) With 3UF18 intermediate transformers
up to 820 A

Variably expandable additional functions

Expansion modules for SIMOCODE pro V

- Up to 5 expansion modules can be connected

✓ Digital Modules for:

Max.2

- Additional Digital I/Os (4 DI & 2 DO in each)
- Bistable relay outputs
- Externally supplied inputs (24 V DC or 110 – 240 V AC/DC)



✓ Earth Leakage Module for:

Max.1

- Expansion of the internal earth fault monitoring by a sophisticated external monitoring with summation current transformer



Variably expandable additional functions2-

Expansion modules for SIMOCODE pro V

- Up to 5 expansion modules can be connected to the Basic Unit 2:

✓ Temperature Module for: Max.1

- Temperature monitoring of up to 3 analog temperature sensors (e.g.: Pt100/ Pt1000)



✓ Analog Module for: Max.1

- Input/output and monitoring of analog signals (0/4 – 20 mA) for, e.g., filling level/flowrate monitoring or the actuation of a display unit



SIEMENS



Introduction

History / Philosophy

System

Components

Functions

Configuration / Integration

Practice

Cost Comparison

References

The functions

SIMOCODE pro integrates all necessary functions for your motor feeder in only one system:

- Multifunctional electronic motor protection
- Flexible software for motor control
- Detailed operating, service and diagnostics data
- Communication via PROFIBUS DP



**Comprehensive motor feeder protection
+ flexible control + communication!**

Protective functions

A wide functional range to increase reliability.

- Overload protection (Class 5 - 40)
- Thermistor motor protection
- Phase failure monitoring
- Unbalance protection
- Stall protection
- Earth-fault monitoring
- Monitoring of current limit values
- Monitoring of operating hours
- Monitoring of motor stop times
- Number-of-starts monitoring
- Etc.

Expanded monitoring functions:

- Temperature monitoring Pt100/ Pt1000
- Voltage monitoring
- Power monitoring
- Cos-phi monitoring
- Phase sequence detection
- Input, output and monitoring 0/4-20 mA signal

Measuring curves recording

More than 10
monitoring relays
integrated.



Control functions

All control functions integrated and ready for use.

- Direct starter
- Reversing starter
- Star-delta starter
- Star-delta starter with reversal of rotational direction
- Two speeds, motors with separate windings
(pole changeover switch), also with reversal of rotational direction
- Two speeds, motors with separate Dahlander windings, also with reversal of rotational direction
- Solenoid valve actuation
- Positioner actuation
- Soft starter actuation
- Soft starter actuation with reversal of rotational direction

Control functions

All control functions integrated and ready for use.

- Direct starter
- Reversing starter
- Star-delta starter
- Star-delta starter with reversal of rotational direction
- Two speeds, motors with separate windings (pole changeover switch), also with reversal of rotational direction
- Two speeds, motors with separate Dahlander windings, also with reversal of rotational direction
- Solenoid valve actuation
- Positioner actuation
- Soft starter actuation
- Soft starter actuation with reversal of rotational direction

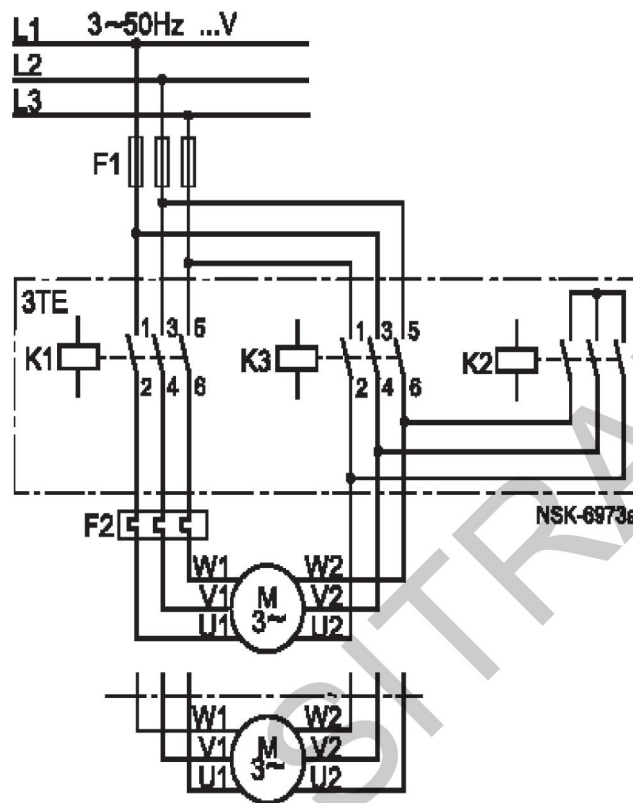
Replaces
extensive
wiring!

Individual customizable functions by means of ...

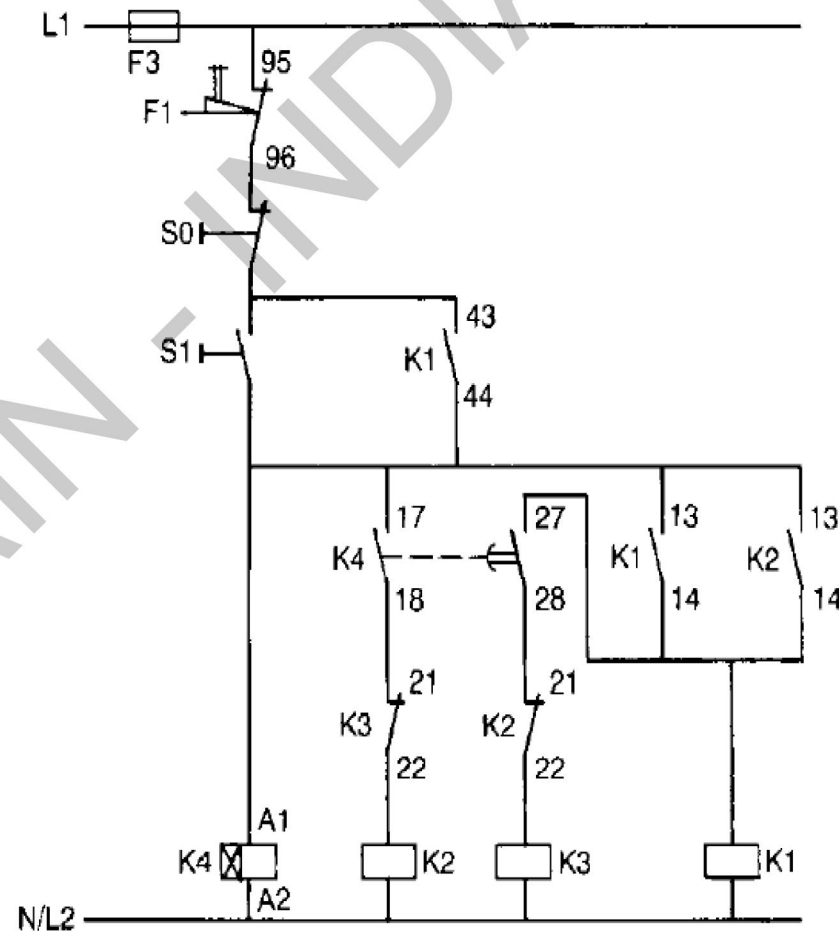
- Logic modules
e.g. truth tables, counters, timers, edge evaluation, limit monitoring ...
- Standard functions
e.g. power failure monitoring, emergency start, external faults ...

No additional
relays necessary.

Complex hard-wires (Y-D Starter)

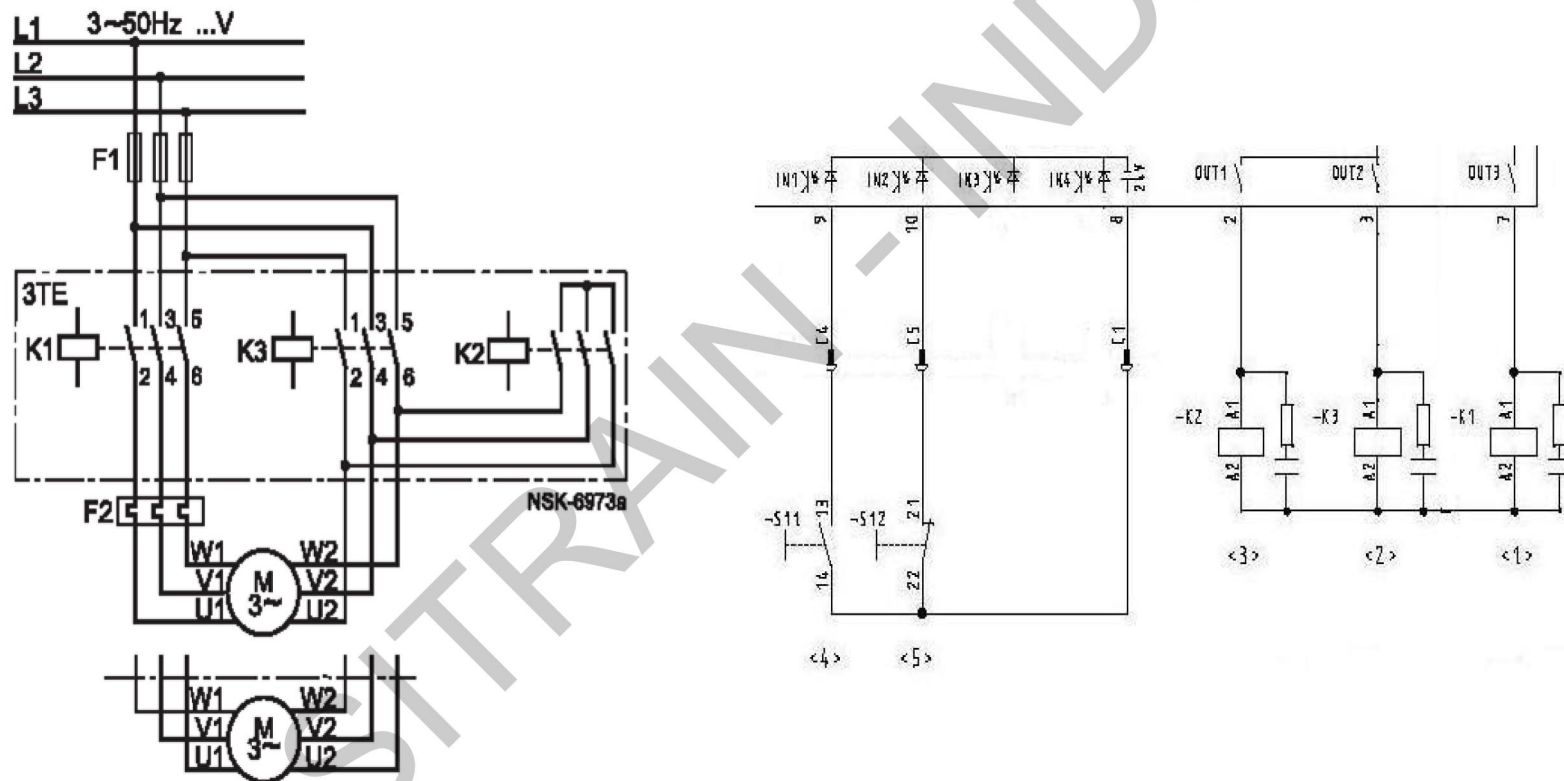


Main circuit



Control circuit for push button control

Flexible Software (Y-D Starter)



Main circuit

Data/ information

Even more detailed information on the motor feeder.

Operating data

- Motor switching state
(on, off, left, right, slow, fast)
- Current in phase 1, 2, 3 and max. current
- Voltage in phase 1, 2, 3
- Effective power
- Apparent power
- Power factor
- Phase unbalance
- Phase sequence
- Time to trip
- Motor model heating
- Remaining motor cooling time
- Temperature (e.g. motor temperature)
- Current analog signal value
- Etc.

Communication

- 12 Mbps , automatic baud rate detection
- Time synchronization via Profibus
- Cyclic and acyclic services

Service data

- Motor operating hours
- Motor stop times
- Number of motor starts
- Number of overload trips
- Device-internal storage of comments
- Device operating hours
- Etc.

Profibus replaces
extensive
cabling to the PLC!

Diagnostics data

- Numerous detailed early warning and fault messages, also for further processing within the device or the control system
- Device-internal fault logging with time stamp
- Time stamp marking of individually selectable status, warning and fault messages
- Value of the last tripping current
- Check back faults (e.g. no current flow in the main current circuit after ON control command)
- Etc.

Functions separated by device series



Control functions	pro C	pro V
■ Direct starters	●	●
■ Reversing starters	●	●
■ Star-delta starters		●
■ Star-delta starters with rotat. direction rev.		●
■ Two speeds, (pole changeover switch), also with rotat. direction rev.		●
■ Two speeds, (Dahlander), also with rotat. direction rev.		●
■ Solenoid valve actuation		●
■ Positioner actuation		●
■ Circuit-breaker actuation	●	●
■ Softstarter actuation		●
■ Softstarter actuation with rotat. direction rev.		●

Flexibly adjustable thanks to:

➤ Logic modules (truth tables, counters, timers, edge evaluation, limit monitors...)	●	● ●
➤ Standard functions (power supply failure monitoring, emergency start, external faults ...)	●	● ●

Functions separated by device series



Communication	pro C	pro V
■ Baud rates up to 12 Mbps	●	●
■ Automatic baud rate detection	●	●
■ Cyclical services (DPV0) and acyclical services (DPV1)	●	●
■ Operation behind Y-Link as DPV1-slave	●	●
■ Alarms according to DPV1	●	●
■ Time synchronization via Profibus		●
■ 3UF50-Compatibility Mode		●

SIEMENS



Introduction

History / Philosophy

System

Components

Functions

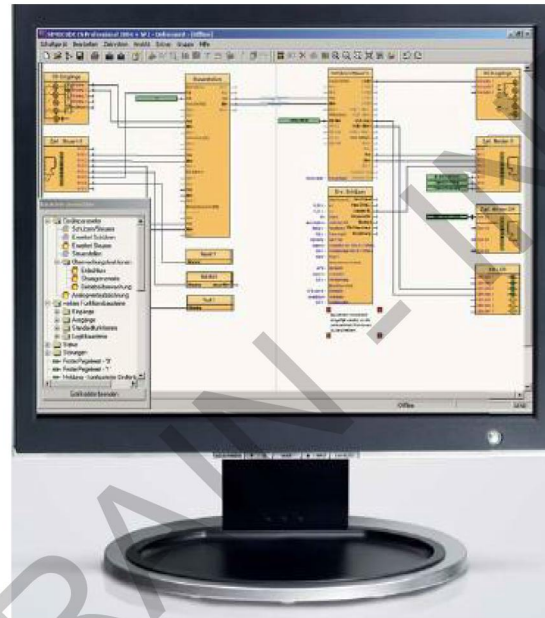
Configuration / Integration

Practice

Cost Comparison

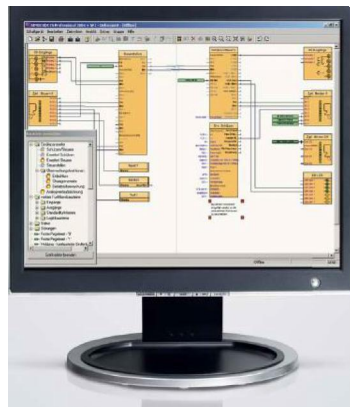
References

Configuration with SIMOCODE ES

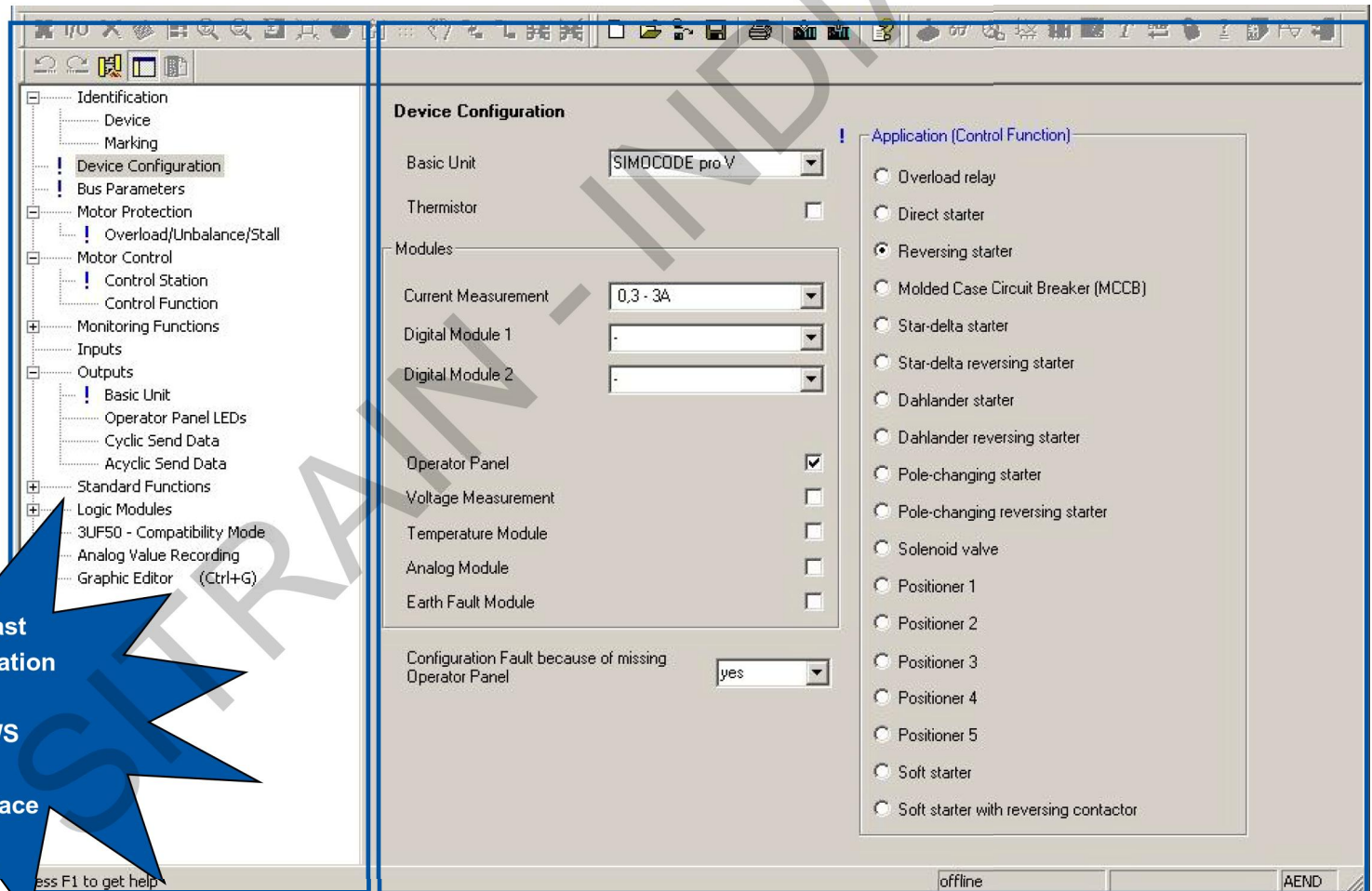


SIMOCODE ES
is an
Engineering Software
for
Configuration
Parameterization &
Diagnostics
of SIMOCODE

Configuration with SIMOCODE ES



Easy & Fast
Parameterization
with
WINDOWS
like
User Interface

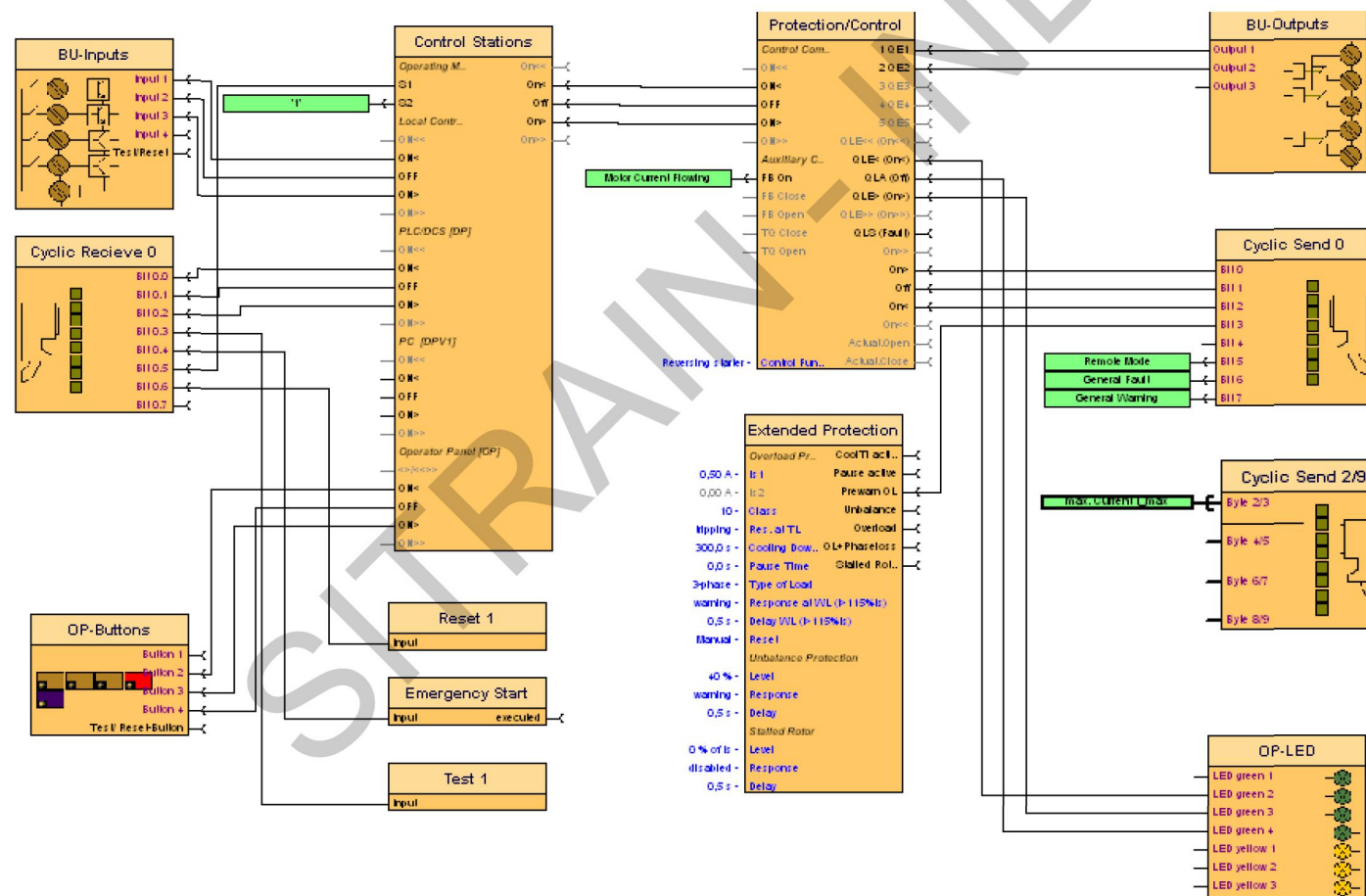


parameter tree

dialog window

Configuration with SIMOCODE ES

Easy Configuration with Graphic Editor

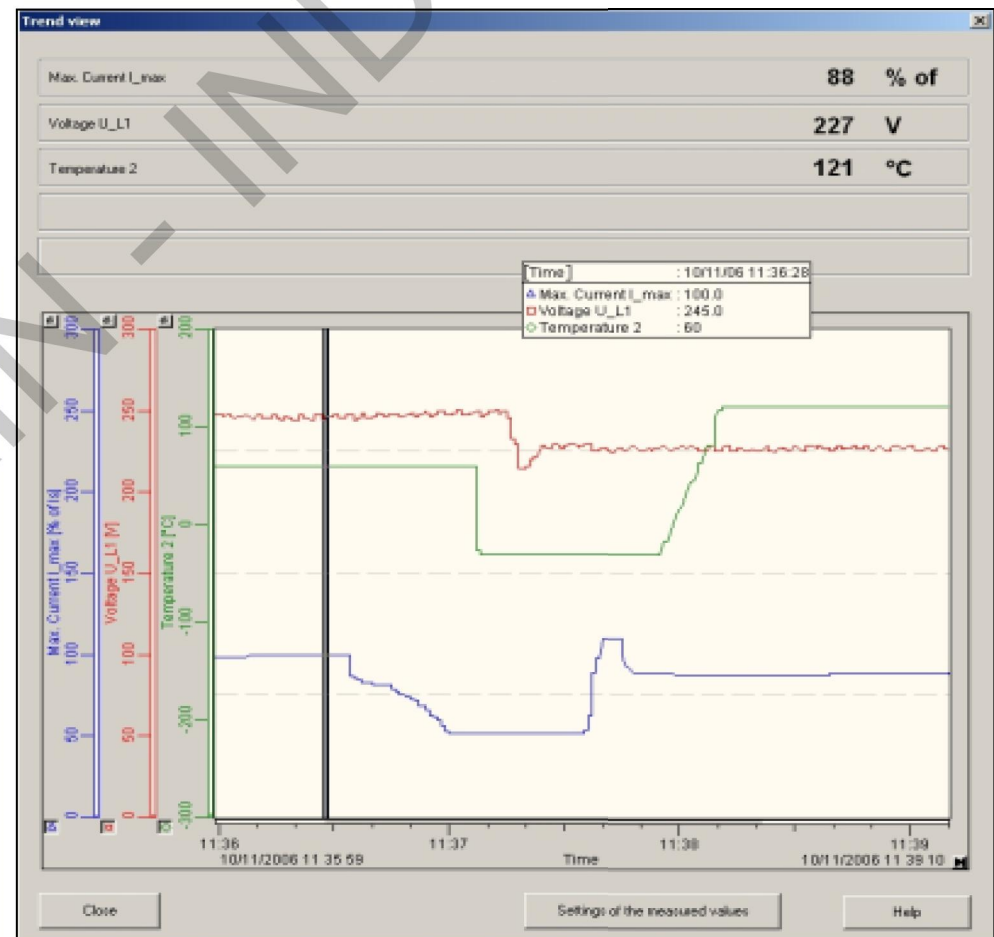
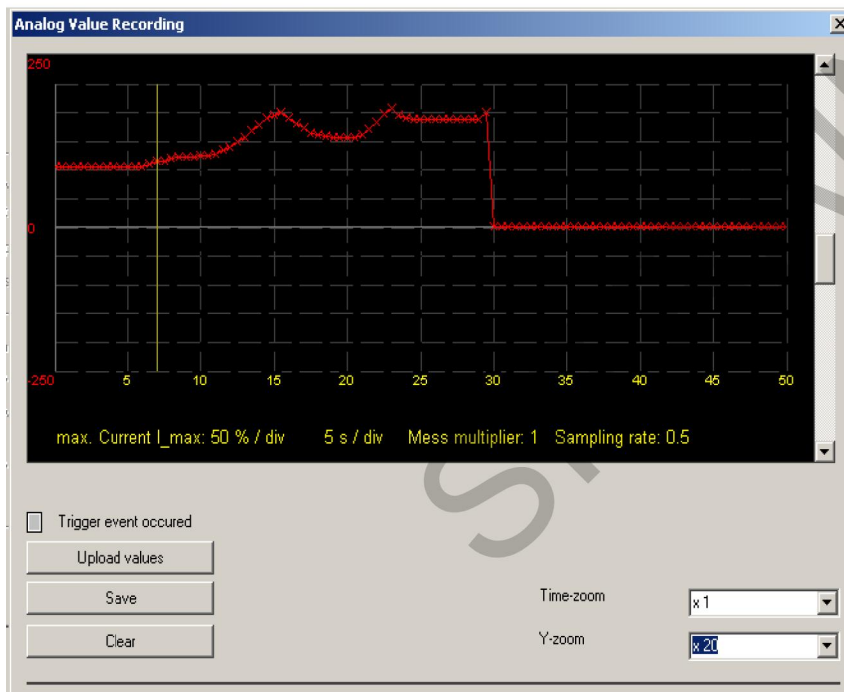


Configuration with SIMOCODE ES

Easy Diagnosis with Analog Value Recording & Online Trends

Analog value recording with SIMOCODE pro V

- Recording of any analog value, (e.g. motor current, voltage, power)
- 60 measured values are stored in the device
- Adjustable sampling rate 0.1... 50 s
- Trigger event configurable



Configuration with SIMOCODE ES

SIMOCODE ES - Versions

1. Basic

- Access via System interface on SIMOCODE
- Parameterization
- Operation, diagnostics & test

2. Standard

- All functions of BASIC, plus
- Integrated Graphics Editor
- Parameter export

3. Premium

- All functions of Standard, plus
- Configuration via PROFIBUS
- Integrated STEP 7 Object Manager

Integration of SIMOCODE pro

SIMOCODE is compatible with all the leading automation (PLC / DCS) Suppliers



Honeywell



Integration of SIMOCODE pro

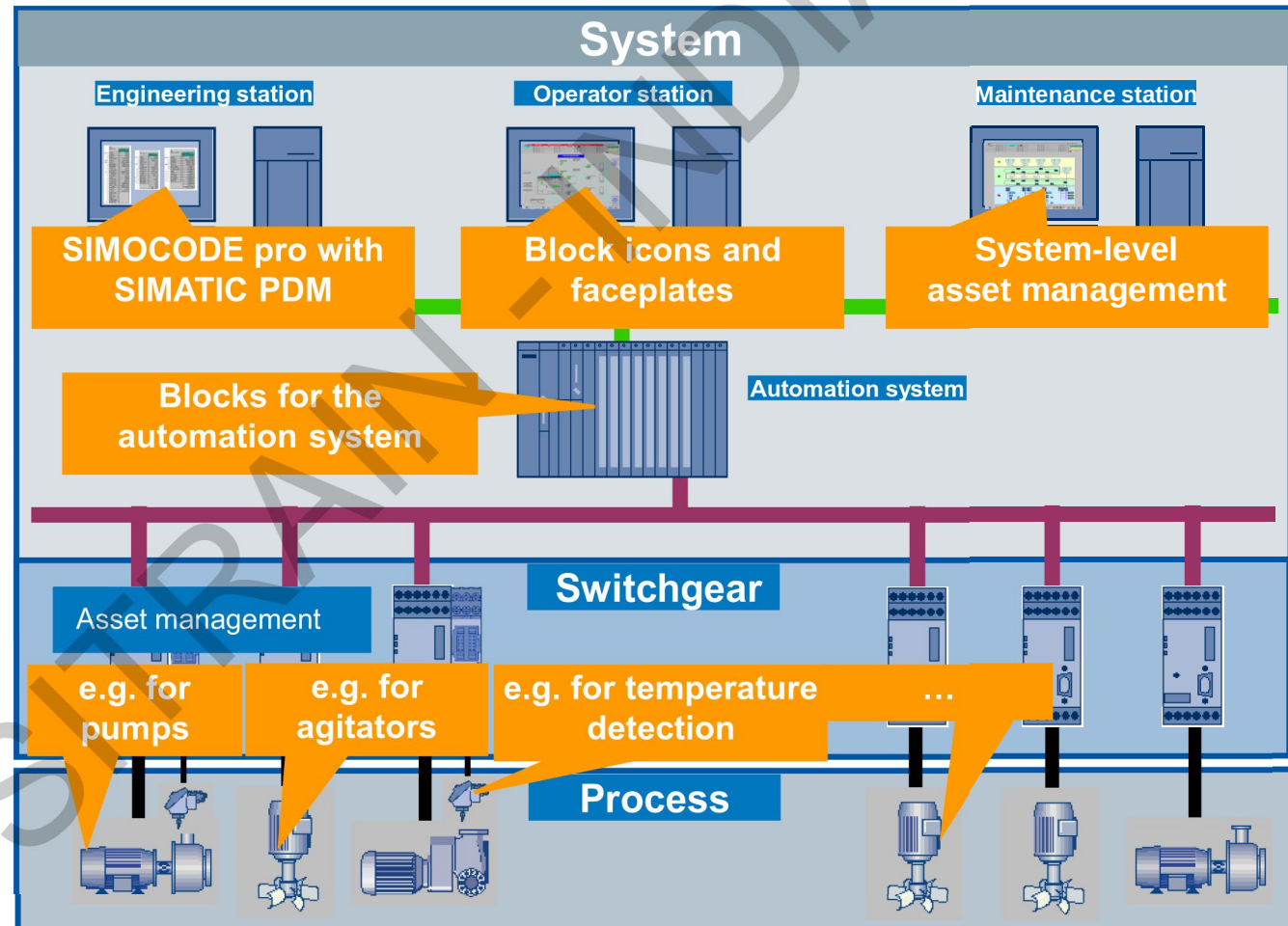
Integration
With
SIMATIC PCS7
– Its a Child's Play



Integration of SIMOCODE pro

Easy
integration into
SIMATIC PCS 7

With
Optional
Libraries,
Blocks &
Face Plates



Motor Blocks

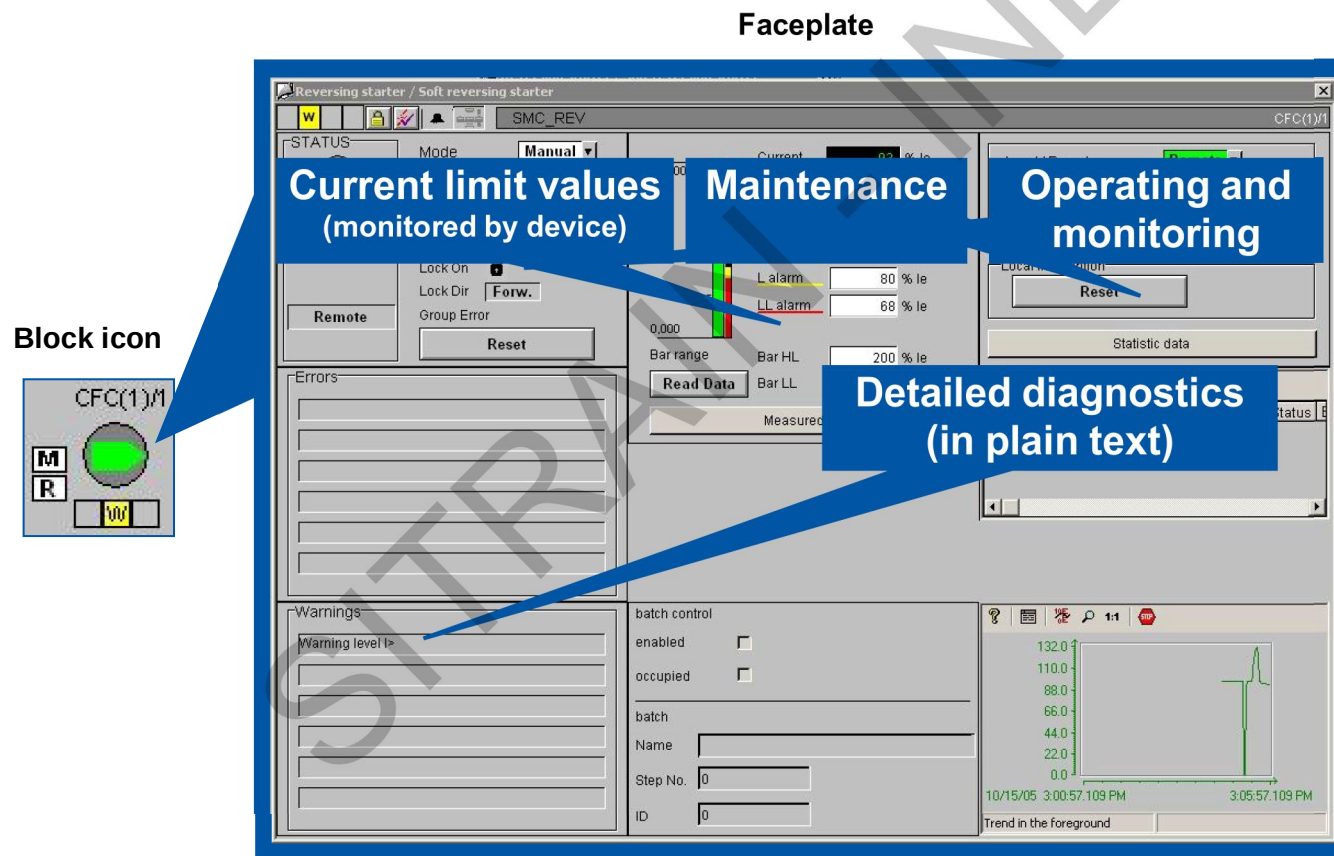
For all SIMOCODE pro control functions

2	SMC_POS	Position	0B35
3	SMC_REV	Reversin	1/4
MODE	MODE	QERR	
LADDR	LADDR	QBAD	
RACKF	RACKF	QSIM	
DIAG_INF	DIAG_INF	QGR_ERR	
IN 01	IN 01	QGR_WRN	
IN 23	IN 23	QEN_RDWR	
EN RDWR	EN RDWR	QERR_RD	
EN MEAS	EN MEAS	QERR_WR	
EN STAT	EN STAT	Q 01	
L RD DAT	L RD DAT	QCST	
M SUP C	M SUP C	QEM_STRT	
L SMCRS	L SMCRS	QLOC_INT	
L RESET	L RESET	QLTA	
SS POS	SS POS	QOPENED	
V LOCK	V LOCK	QCLOSED	
VL CLOS	VL CLOS	QOPENING	
VL OPEN	VL OPEN	QCLOSING	
VL HOLD	VL HOLD	QREMOTE	
AUTO_ON	AUTO_ON	QMAN_AUT	
AUTO_OC	AUTO_OC	QMSG_SUP	
L_OPEN	L_OPEN	QCUR	
L_CLOSE	L_CLOSE	QUALITY	
L FORW	L FORW		
L REV	L REV		
L OFF	L OFF		
LIOP_SEL	LIOP_SEL		
AUT_L	AUT_L		
REM_SEL	REM_SEL		
REM_L	REM_L		
LINK_MAN	LINK_MAN		
MONITOR	MONITOR		
REM SE	MONITOR		
REM L			
LINK MAN			
MONITOR			

- Motor blocks for all applications, e.g.
 - direct starters
 - reversing starters
 - motor valves
- Standardized integration of pumps, fans, agitators, sliders, etc.
- Minimum configuration expenditures thanks to the integration of
 - signal processing and
 - technological function in a single block
- In addition to overload protection:
 - motor current with adjustable limits

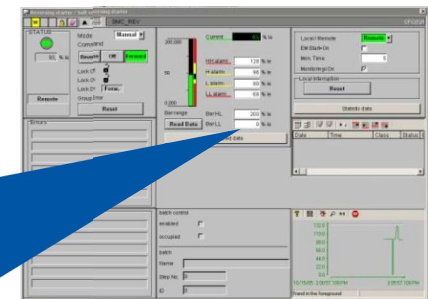
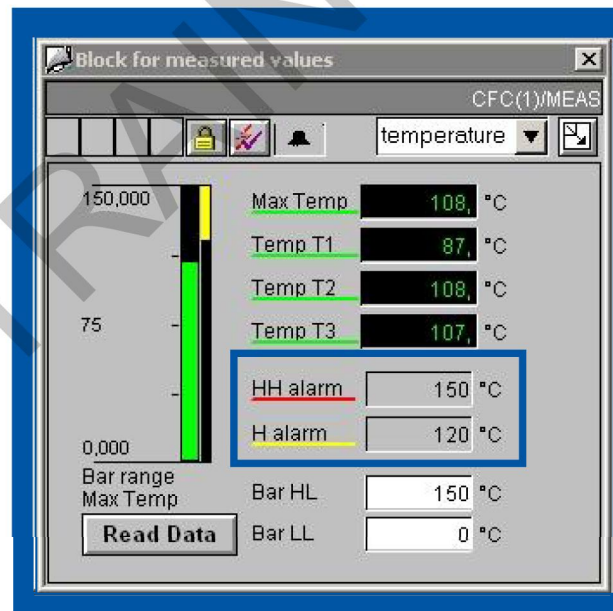
Face Plates for Motor Blocks

For all control functions (example: reversing starter)



Representation of additional measurands

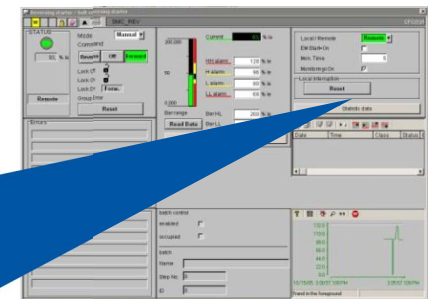
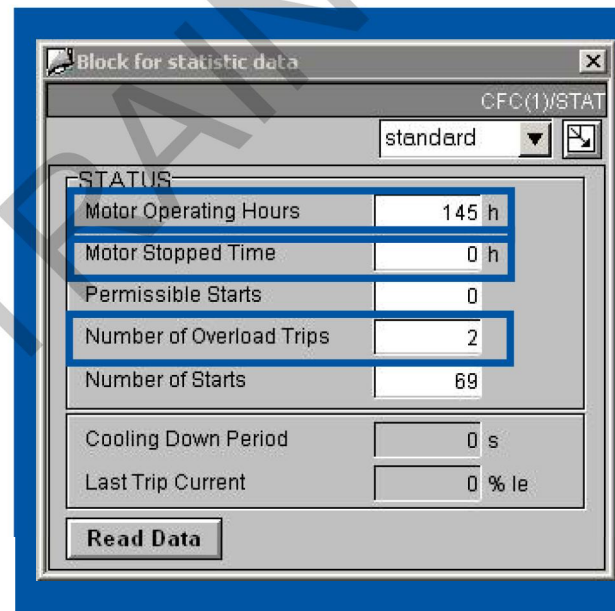
- Analog process parameters are detected by SIMOCODE pro, e.g.
 - power
 - voltage
 - temperature
- Limit values are configured and monitored in the device



Faceplate for statistics block

Representation of maintenance-relevant data

- Maintenance-relevant data are already detected and, if required, also monitored by SIMOCODE pro, e.g.
 - motor operating hours
 - motor stopped times
 - number of overload trips and starts



Integration / configuration - accessories

Small auxiliary equipment with large time-saving potentials.

Addressing Plug
for assignment of
PROFIBUS address
without PC/ PG



**Assignment of a PROFIBUS
address to one or several
basic units within seconds.**

**Commissioning of a motor
feeder within seconds.**



Memory Module
for parameterization
without PC/ PG

SIEMENS



Introduction

History / Philosophy

System

Components

Functions

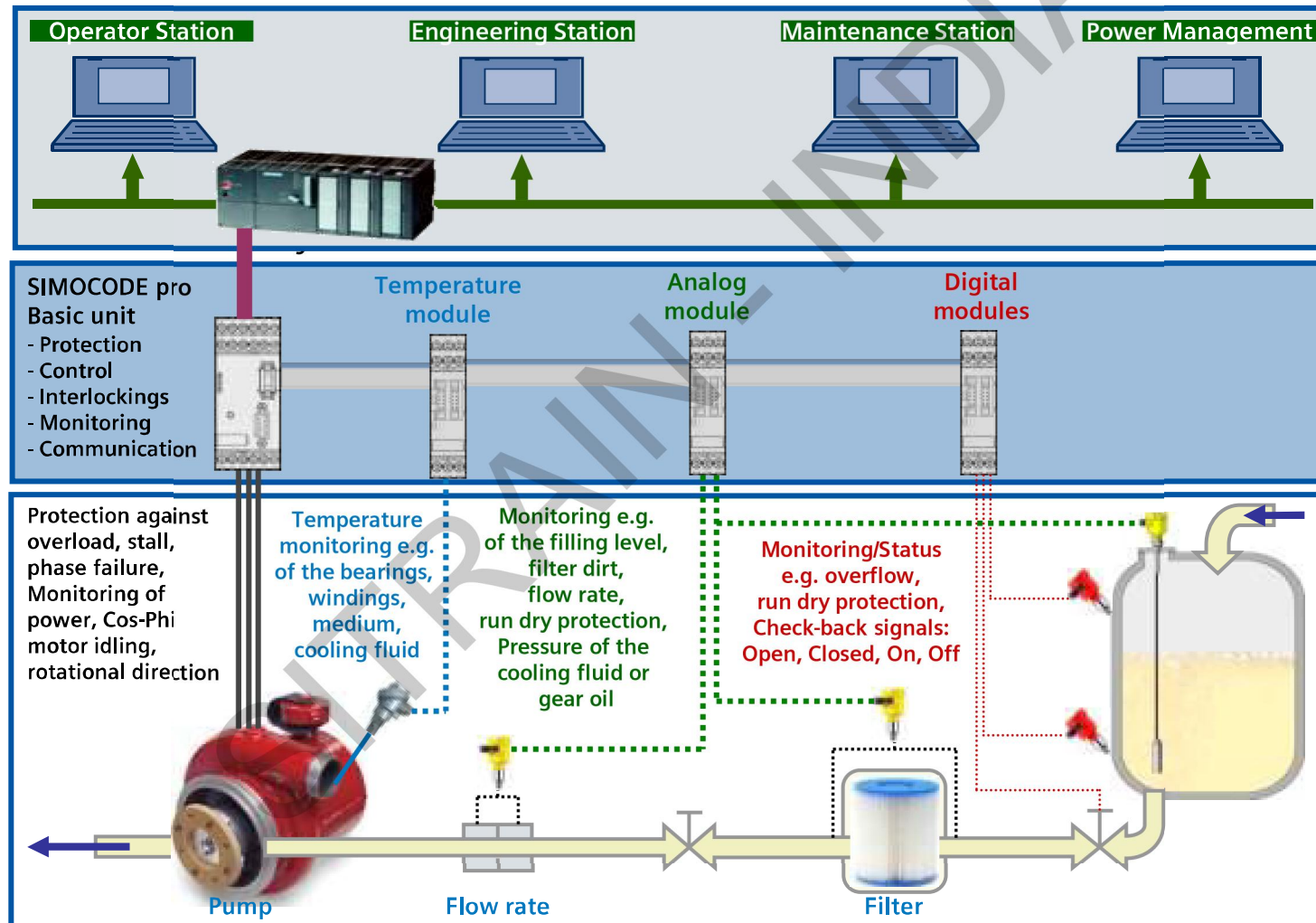
Configuration / Integration

Practice

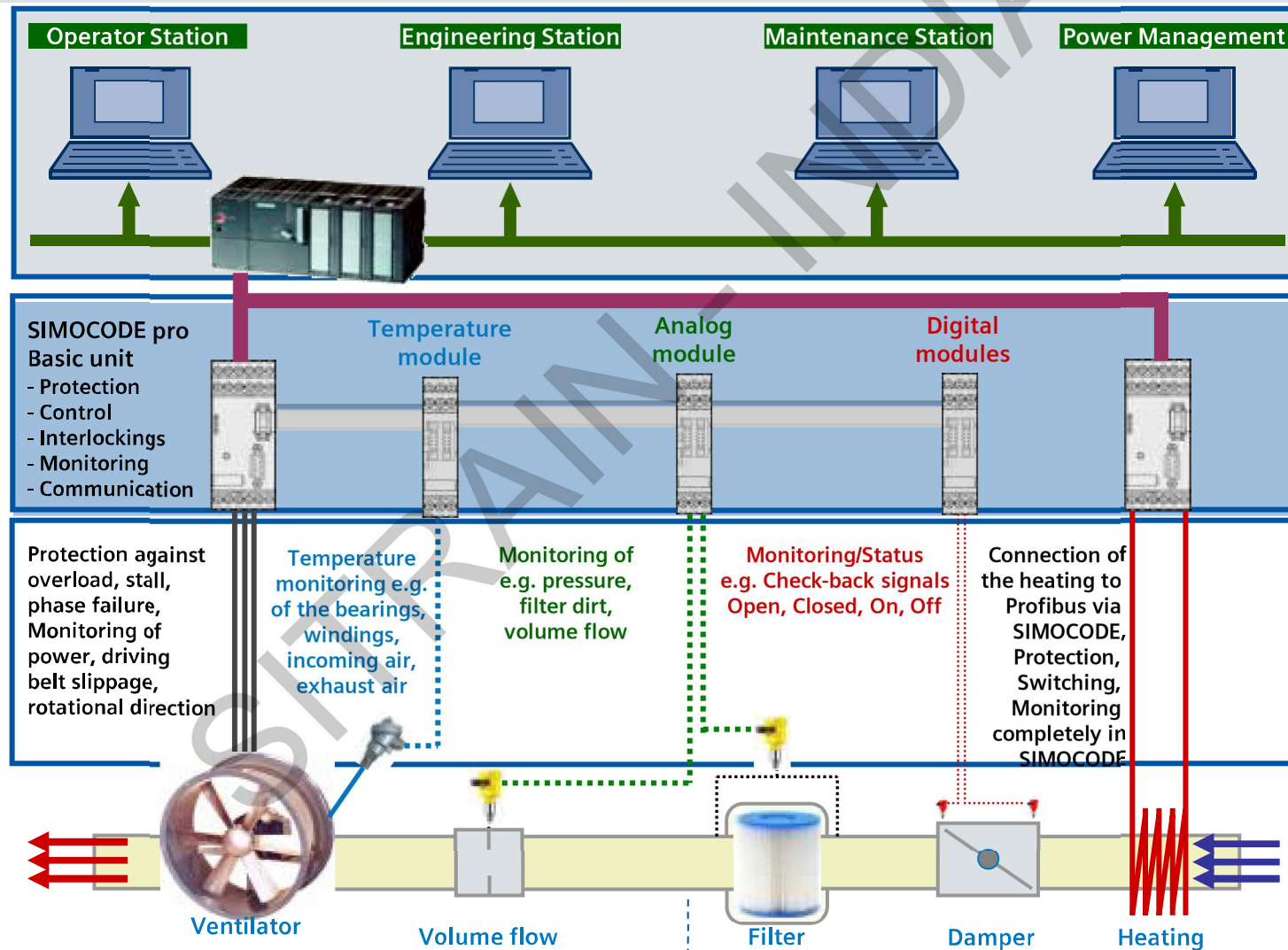
Cost Comparison

References

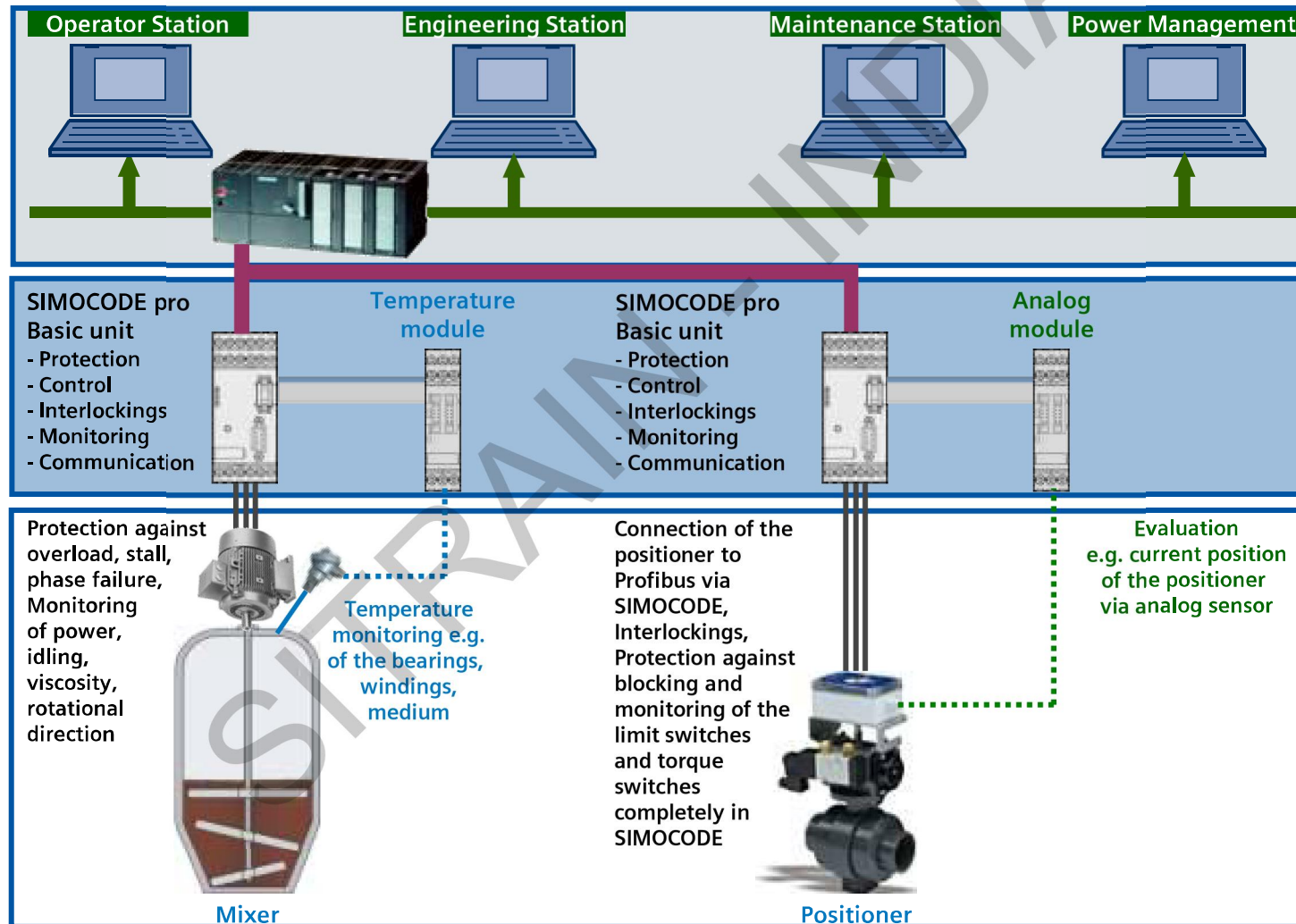
Application: Electrical pump (up to 550 kW)



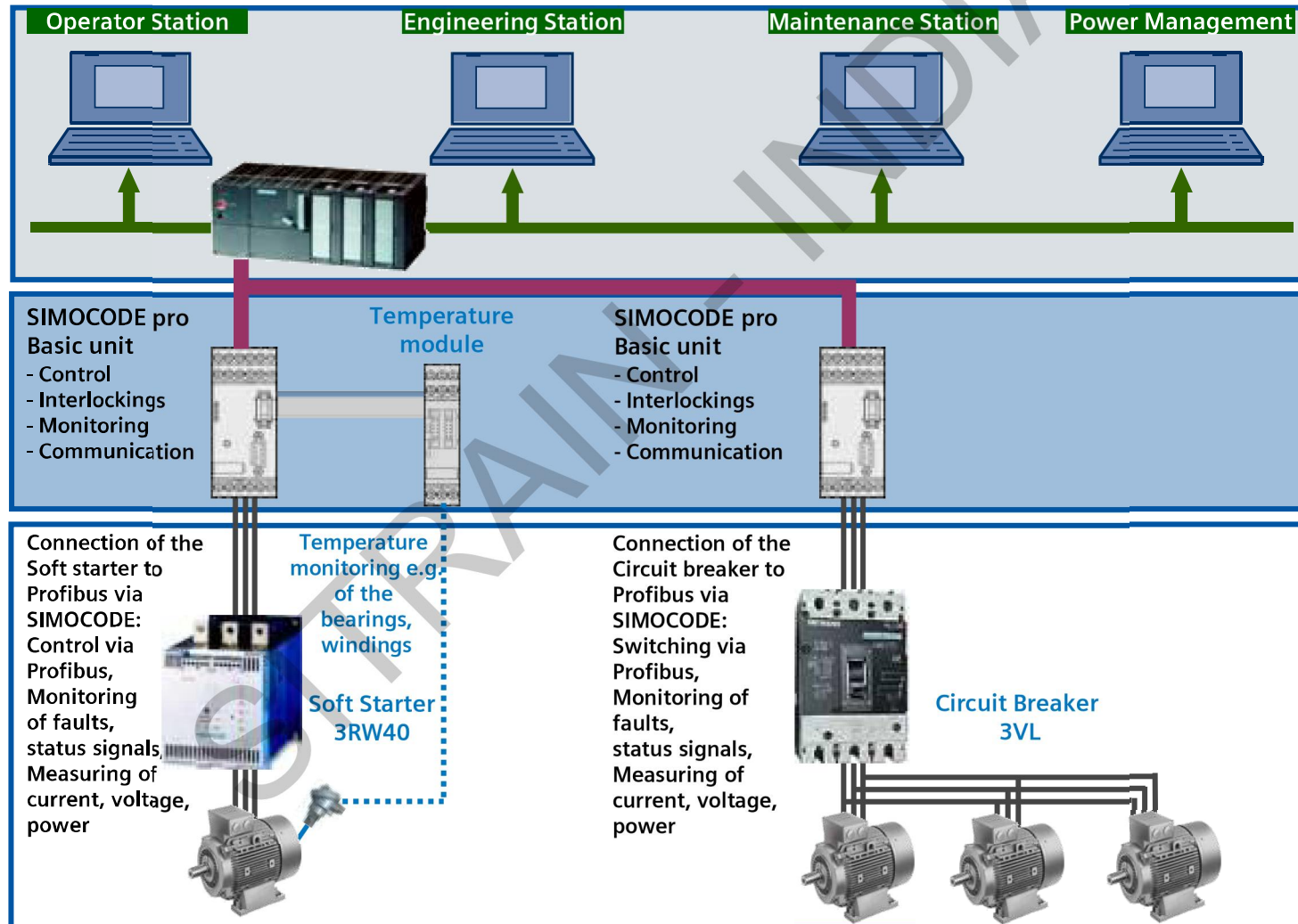
Application: Ventilator (up to 550 kW)



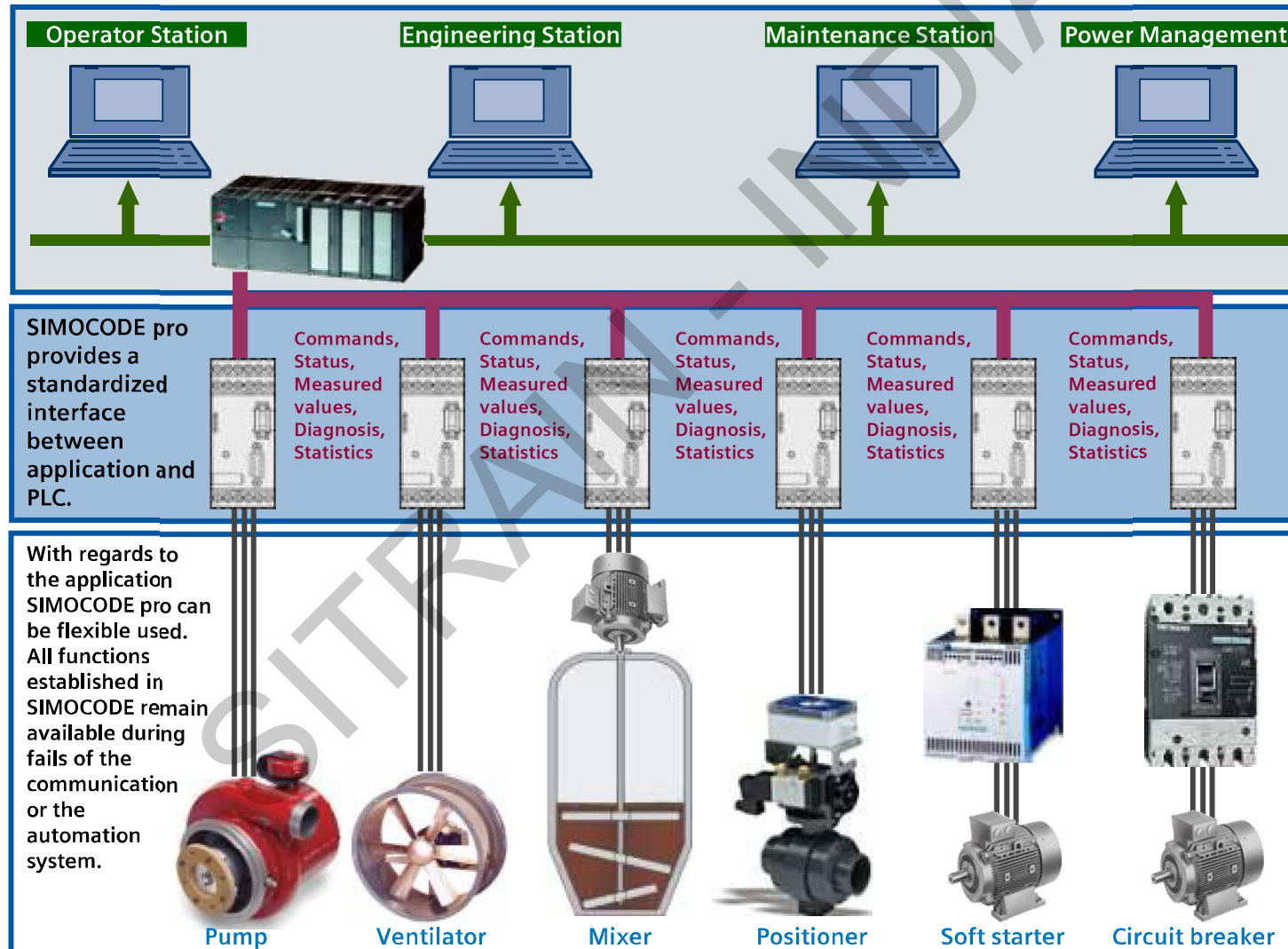
Application: Mixer (up to 550 kW) / Positioner



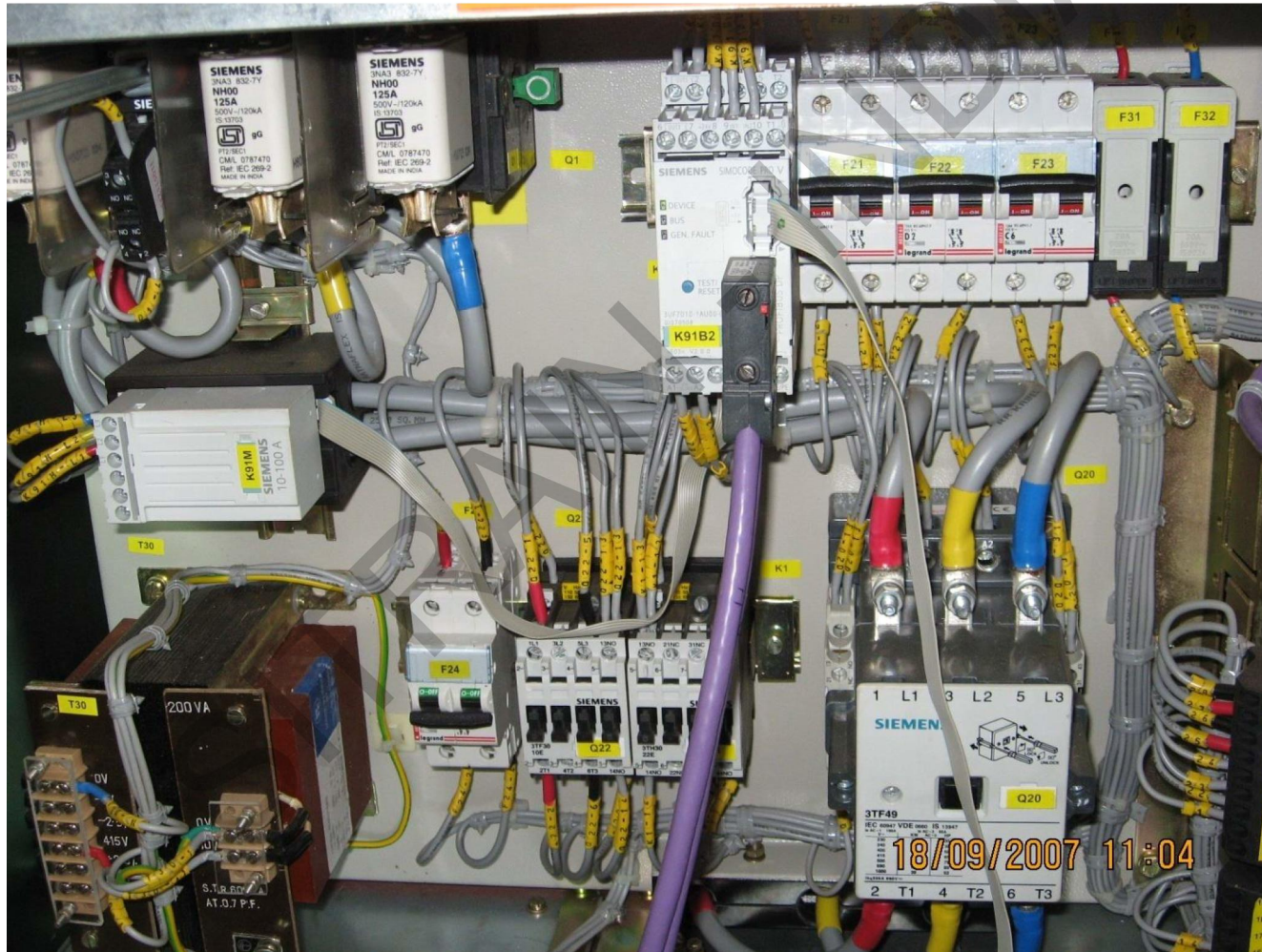
Application: Actuation of a soft starter/ circuit breaker



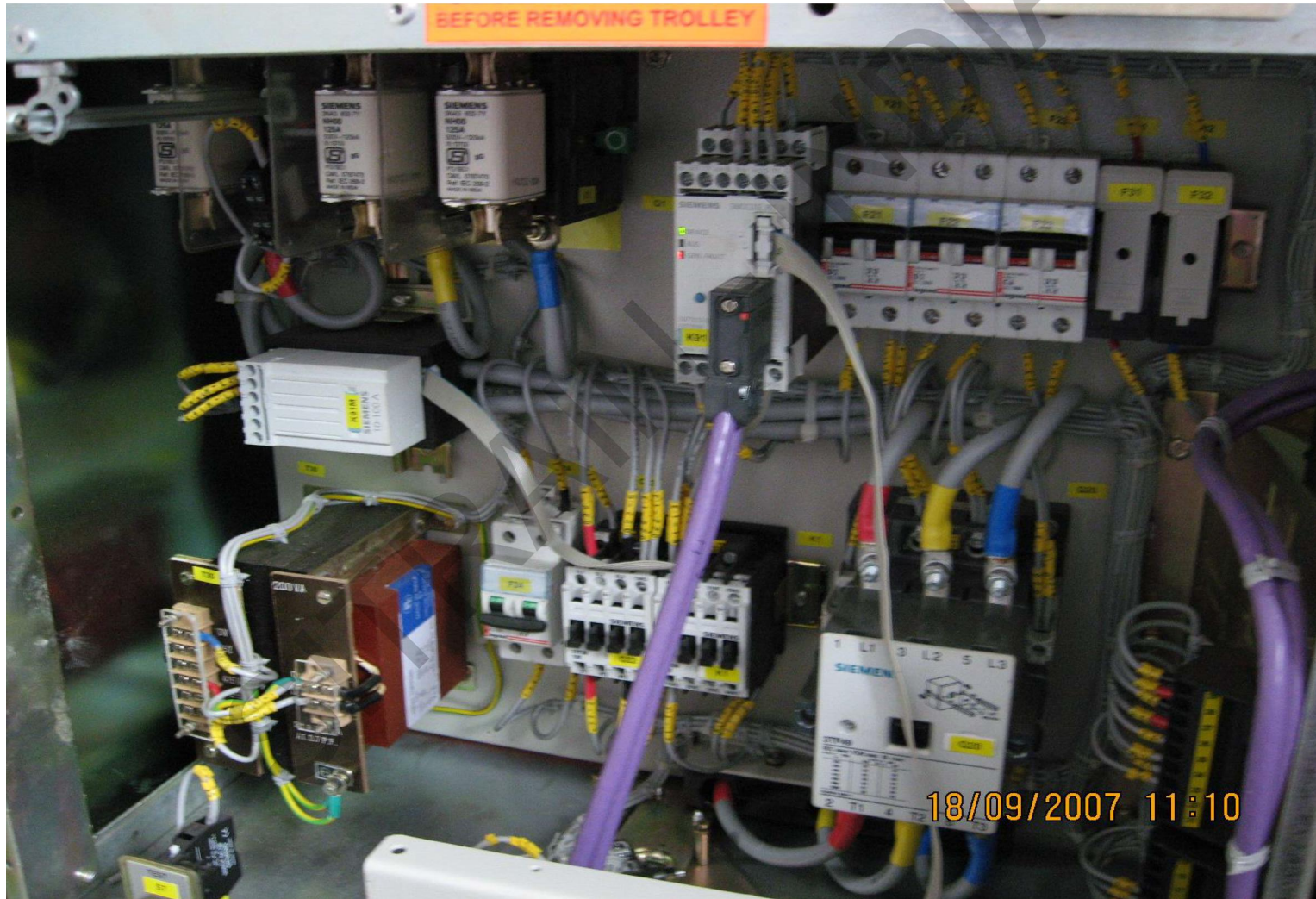
Standardized and easy integration in the automation system independent of the application.



SIMOCODE pro V– In a Panel



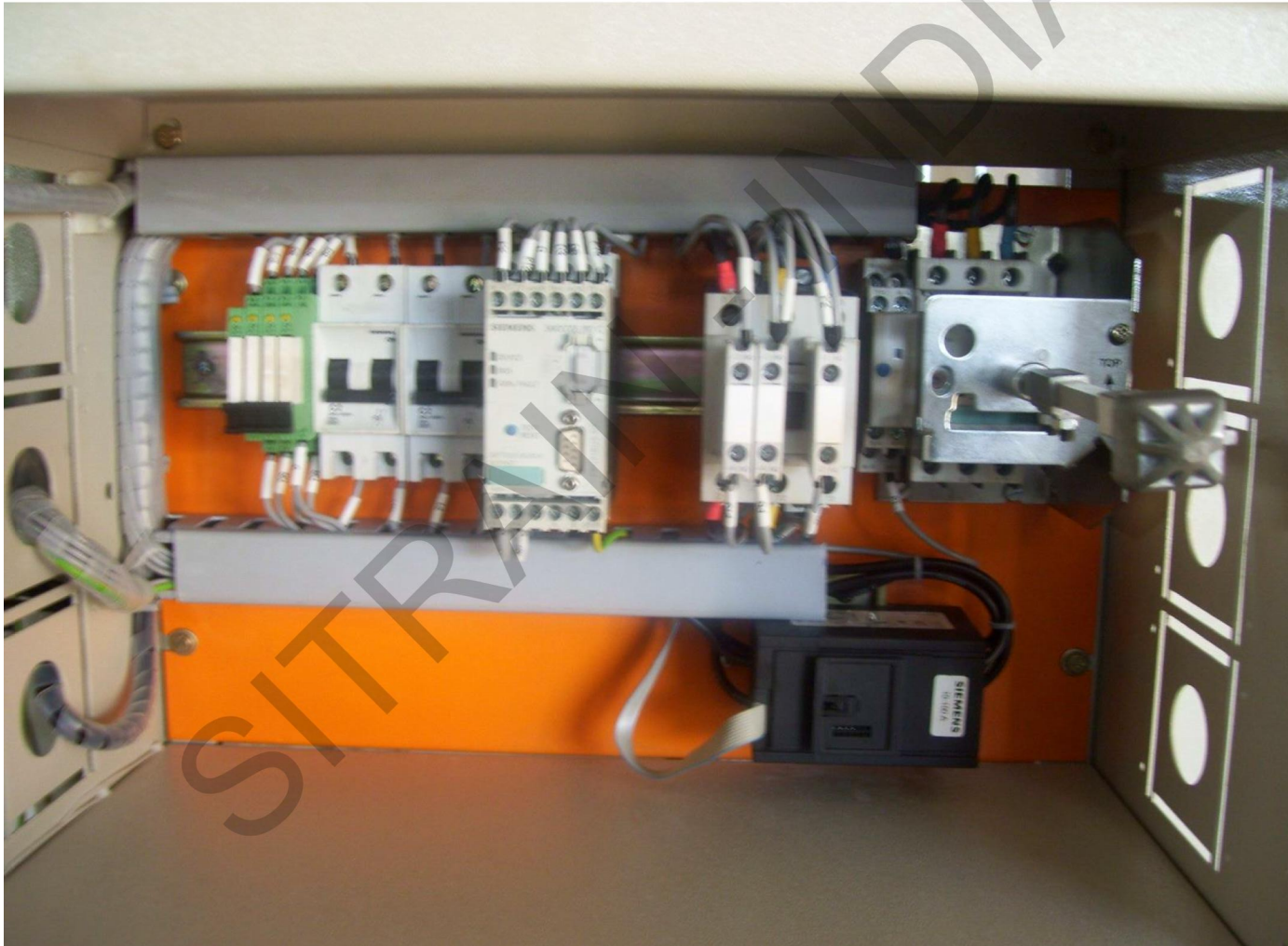
SIMOCODE pro V – In a Panel



SIMOCODE pro – In a Panel



SIMOCODE pro C – In a Panel



SIMOCODE pro C – In a Panel



SIMOCODE pro Profibus cable routing



SIMOCODE pro Profibus cable routing



SIEMENS

Thank you for your
interest and attention

