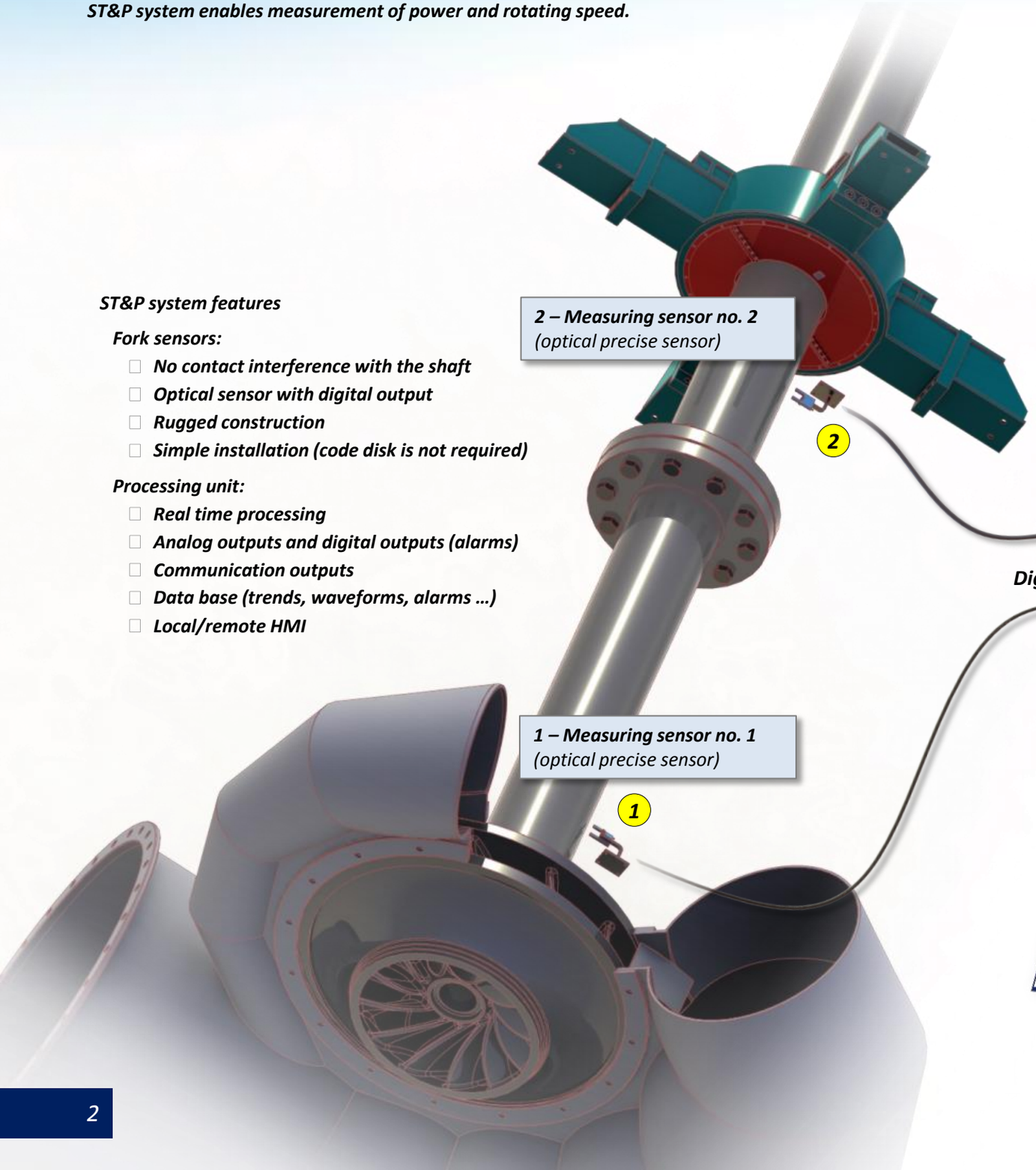
KONČAR
Electrical Engineering
INSTITUTE

Shaft Torque and Power Monitoring System

KONČAR ST&P

ST&P *Shaft Torque and Power Monitoring System*

Torque, speed and power are the defining mechanical parameters associated with functional performance of rotating machines (machine efficiency determination). ST&P system enables insight into this important machine parameters by on line measurement of shaft twist angel. System uses two precise optical fork sensors for twist angle measurement. Besides on-line torque measurement, ST&P system enables measurement of power and rotating speed.



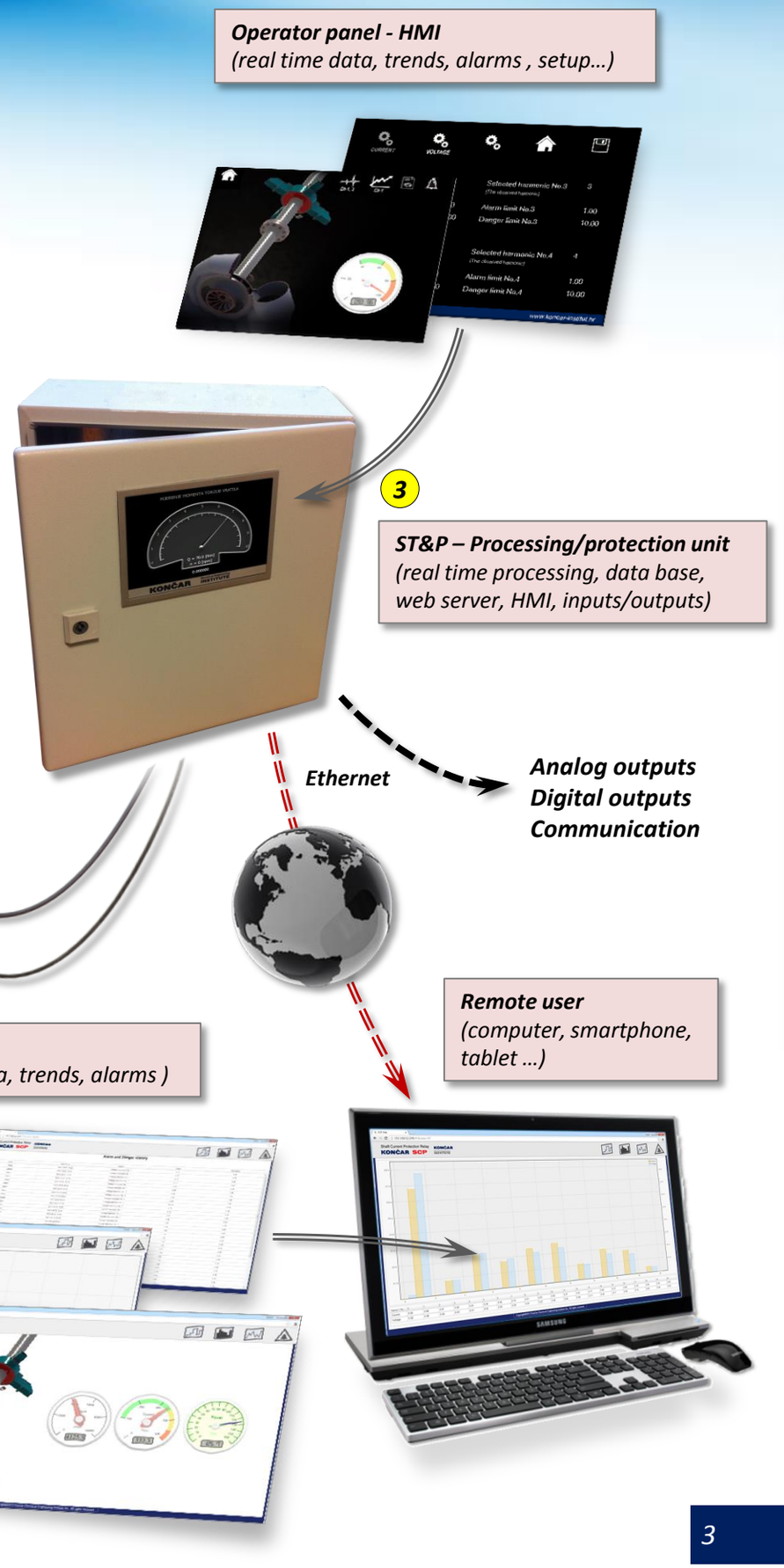
ST&P system features

Fork sensors:

- ***No contact interference with the shaft***
- ***Optical sensor with digital output***
- ***Rugged construction***
- ***Simple installation (code disk is not required)***

Processing unit:

- ***Real time processing***
- ***Analog outputs and digital outputs (alarms)***
- ***Communication outputs***
- ***Data base (trends, waveforms, alarms …)***
- ***Local/remote HMI***



1. ST&P system specification

Architecture:

- *Data acquisition unit with the real time controller and local visualization*

Inputs:

- *Two digital inputs (PNP or NPN)*
- *Resolution time stamp: 1ns*

Analog outputs (on request)

- *Current outputs 4 - 20 mA, voltage outputs 0 - 10 V*
- *Number of outputs : 2 to 4*

Digital/relay outputs:

- *Number of outputs: 2 to 8*
- *Continuous current: 6 A*
- *Maximum switching power: 1500 VA*
- *Maximum switching voltage: 250 VAC/DC*
- *Maximum switching frequency: 0,1 Hz*
- *Rated isolation voltage: 300 V overload (category III) by EN 50178*
- *Surge withstand: 4 kV (1,25/50 µs), by IEC 5017*

Communication:

- *Ethernet 10/100*
- *Supported protocols: Modbus TCP slave, FTP server, IEC 60870-104, HTTP server (other on request)*

Power supply:

- *DC: 80 V to 370 V*
- *AC: 85 to 264 V , frequency 47 to 63 Hz*
- *Maximum allowed power supply interruption: 100 ms for 230 VAC/ 20 ms for 115 VAC*
- *Test voltage: 3 kV (2 kV against ground)*

Temperature range:

- *Operational temperature range: -20°C to +70°C*
  -0°C to +55°C (for EMCM variant with touch screen)
- *Storage temperature range: -40° to +85°C*

Dimensions:

- *19" installation – WHD: 482,5x177,5x250 (typical dimensions)*
- *Cabinet IP 54 (IP 66 on request) – WHD: 300x300x200*

Data visualization:

- *Web browser for remote access and local client application through touch screen*

Data logging:

- *Database for long-term data, alarm and events storage*

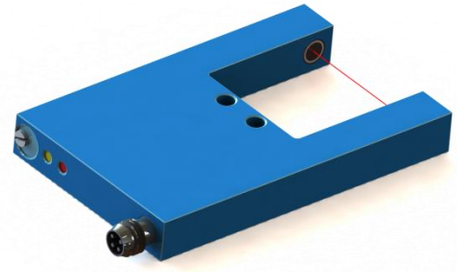
Standards compliance:

- *EMC immunity/emission (EN 61000-6-2/EN 61000-6-4)*
- *Vibration/shock resistance (EN 60068-2-6/EN 60068-2-27/29)*

2. Measuring sensors

Fork optical sensor :

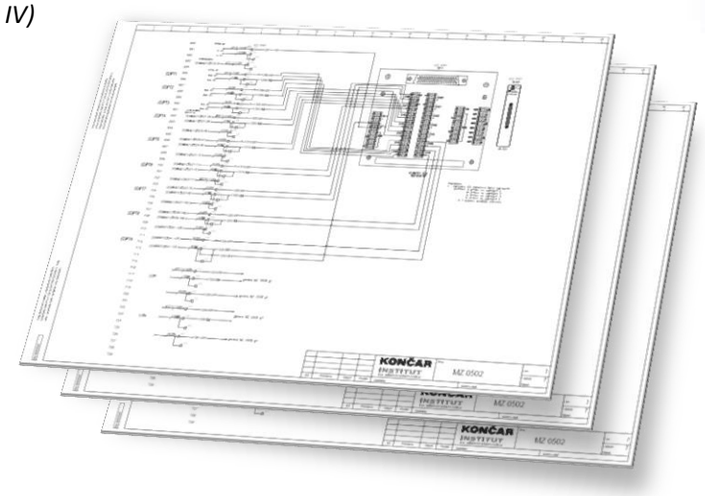
- *Integrated electronics*
- *High sensitivity*
- *Switching frequency 500 kHz*
- *Infrared light beam*
- *Switching state indicator : yellow/green led*
- *Scratch resistant optics*
- *Aluminum housing*
- *Current consumption: 80 mA*
- *Enclosure rate: IP 67*
- *Operating temperature range: -20°C to +70°C*
- *Dirt accumulation indicator: red led*
- *Size: 80x50x10*
- *Analog output: YES (voltage)*
- *Digital output: YES (NPN/PNP)*



3. Documentation

Complete documentation required for system installation, maintenance and usage of the ST&P system. Usual scope of the documentation:

- *Mechanical documentation (book I)*
- *Electrical documentation (book II)*
- *User instructions (book III)*
- *Certificates, test reports… (book IV)*



4. Services

Complete services required for system installation, commissioning and usage of the ST&P system. We offer the fallowing services:

- *Consulting services on how to select an optimal monitoring system for new and existing machines*
- *Installation and commissioning*
- *Staff training*
- *Expert interpretation of the acquired monitoring results*

5. Software

Users can get insight into measuring data through local touch display (local HMI) and through web server (web application). Local visualization enables insight into real-time data, trends and setup. All screens can be modified according to the Customer's requests which includes native language.

Local HMI

Remote web application (HMI)

The ST&P system is equipped with a multiuser web server which enables remote access and overview of all system data through standard web browser. This web server provides access to the ST&P system from any desktop or a laptop computer (with Windows or iOS operating system), tablet (with iOS, Android OS…) or smartphone (with iOS, Android OS…). System access is provided without the need for installation of any additional software, using a standard web browser (Google Chrome, Internet Explorer, Mozilla Firefox, Safari …). Web server enables insight into real-time data, trends, waveforms and alarms for measurement values increase as well as for fault detection.

6. Ordering guide

1. Outputs (O)

ST&P O - ☐

Analog output

0 None 0
*n Analog outputs * ..... n*
** n (no. of analog outputs. Customer can chose one output for each measurement)*

2. ST&P housing (H)

ST&P H - ☐

Housing

0 Electrical cabinet 0
1 19" rack installation 1

3. Services (SRV)

ST&P SRV - ☐ - ☐ - ☐ - ☐

Installation

0 No 0
1 Yes 1

Commissioning

0 No 0
1 Yes 1

User training

0 No 0
1 Yes 1

Warranty

0 Standard 0
n Extended ..... n*
** (n – number of additional years)*

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SYSTEM CERTIFIED
BS OHSAS 18001:2007 No.00242/0
ISO 14001:2004 No.00261/0
ISO 9001:2008 No.01095/0

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