# TEXYS GROUP INTRODUCTION

June 2021

# CHAPTER 1

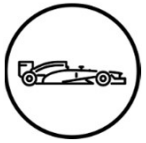
## Who are we?

# TEXYS History and Core Business

TEXYS was founded by **Etienne Deméocq**, the former Head of Electronics for the Ligier Formula 1 team and then Prost Grand Prix.

**For 20 years**, TEXYS has designed, developed, manufactured and distributed sensors under the TEXENSE® brand, **specializing in on-board physical measurements** such as pressure, force, temperature, speed, current and inertia. Texys are renown for mastering multiple technologies including infra-red, optical fibre, strain gauging, wireless systems and communication.

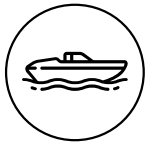
## TEXENSE® products are used extensively in many industries, including:



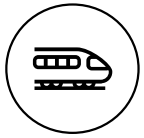
Motorsport, NASCAR ™, Indycar ™, IMSA, Formula 1 ™, Moto GP ™, Formula E, Endurance, Rally

Aeronautics and Aerospace

Automotive industry (Manufacturers, OEMs, Tier 1 Suppliers)



Marine and Shipbuilding



Railway industry

# TEXYS Group history

**1999** — Etienne Deméocq founds TEXYS

**2007** — Launch of Texys America LLC

**2008** — Texys moves into brand new facilities

**2017** — Launch of Texys Sensoren GmbH

**2018** — The HQ floorspace of its building is doubled

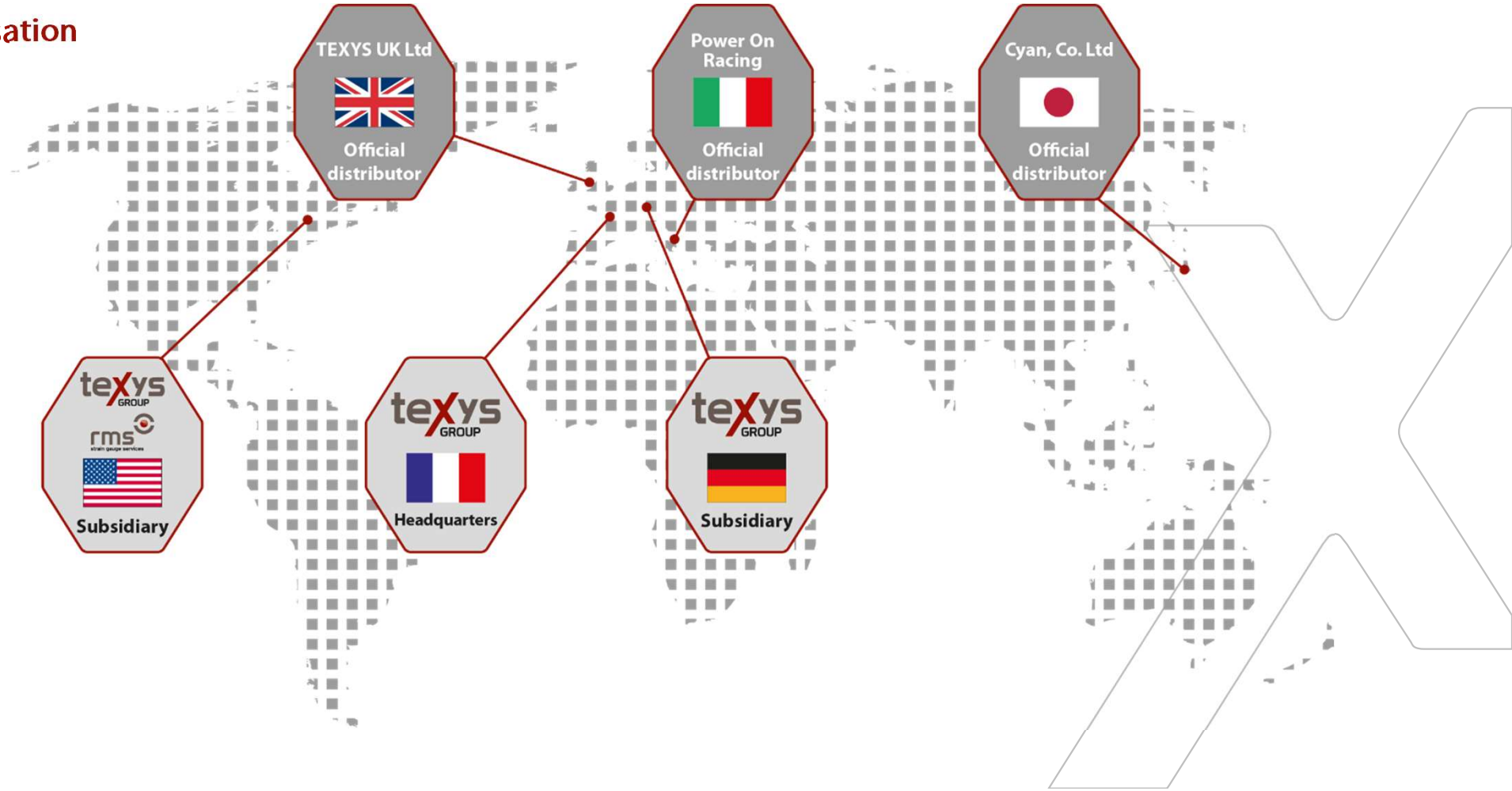
**2019** — Launch of H2 Motronics

**2020** — Optel-Thevon becomes **OPTEL-TEXYS** and Light Guide Solutions becomes **LGS by TEXYS**

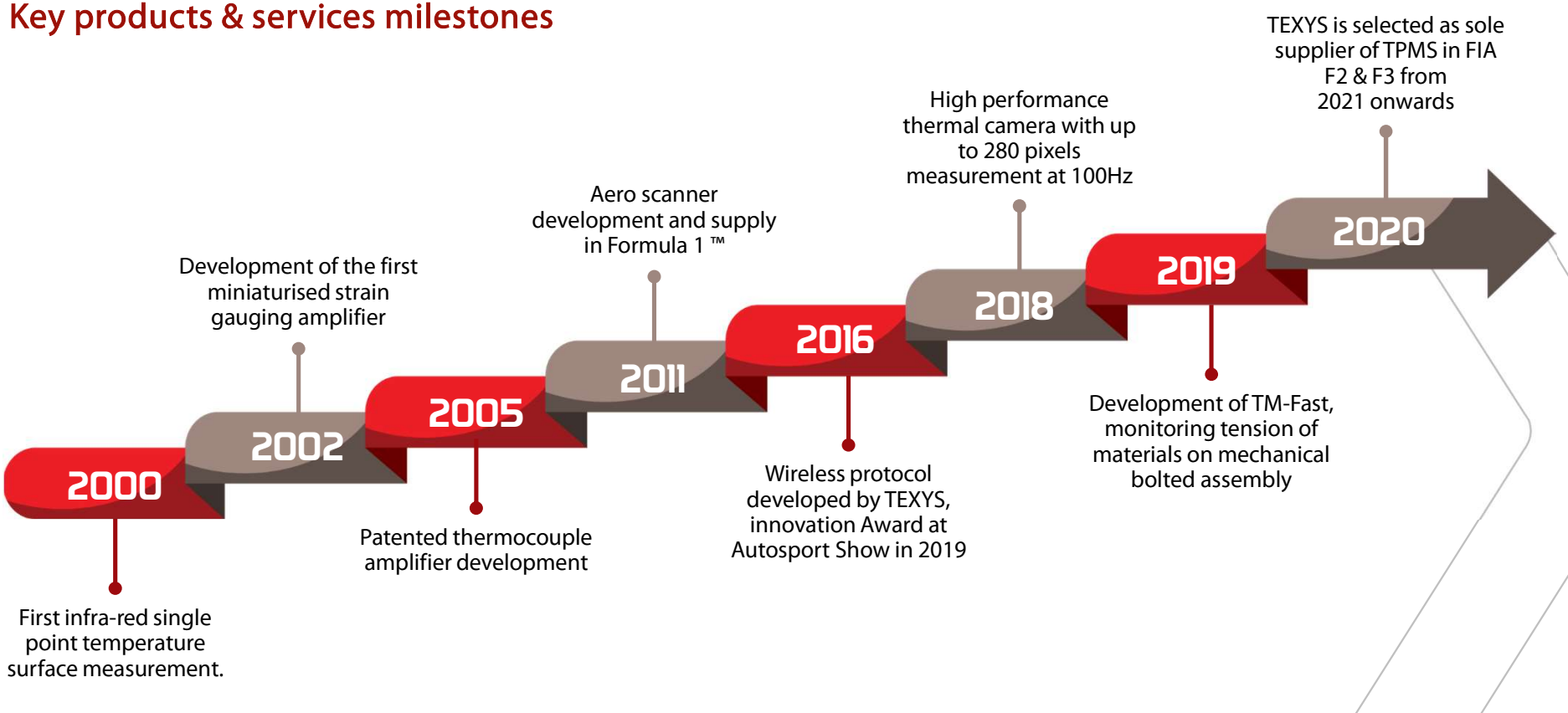

## 2020 figures

- 5 M€ TO
- 45 People
- 15000 Sensors produced

# Our organisation



## Key products & services milestones



CHAPTER 2

# TEXENSE® Products, Services & Applications

## TEXENSE®, Services & Applications

Specialists in **contactless infrared temperature measurement**, to suit any installation and emissivity, offering single, multipoint and wireless IR measurement.

Market leading accelerometers, gyroscopes, inertial modules and aerodynamics sensors which combine great reliability, accuracy and packaging.

Dedicated **strain gauging** fitting facilities **(in France and in the U.S.A.).**

ISO9001 certification

## 1. Strain Gauging

- Strain gauging service on customers components for compression, traction or torque loads measurement (on steel and carbon driveshafts), with signal conditioning thanks to our proprietary XN4 digitally controlled amplifier and its sequential thermal compensation/calibration cycle process.
- 38V version of the amplifier available for aeronautic and aerospace applications.

## 2. Wireless Systems

### GenWM Receiver

Generic master receiver, CAN output, auto tuning tri-band RF, can pair with up to **22** wireless sensors, sampling capability of **200Hz**


**433, 868, 902 or 920 MHz**

### THN2x-WS

Wireless 2ch thermocouple conditioner, secure tri-band RF, pairs to GenWM receiver, **K type -100 to +1250°C**

### THN4x-WS

Wireless 4ch thermocouple conditioner, secure tri-band RF, pairs to GenWM receiver, **K type -100 to +1250°C**

### IRN8-WS4

Wireless 8ch tyre temperature sensor, award winning design, secure tri-band RF, pairs to GenWM receiver**, 0-200°C**

### ANA-WS

2ch analog to wireless hub, secure tri-band RF, pairs to GenWM receiver, sampling capability up to **200Hz**

### WTS

Torque sensor, can be used on driveshafts, propshafts, IPS etc, pairs to GenWM receiver, sampling capability up to **200Hz**

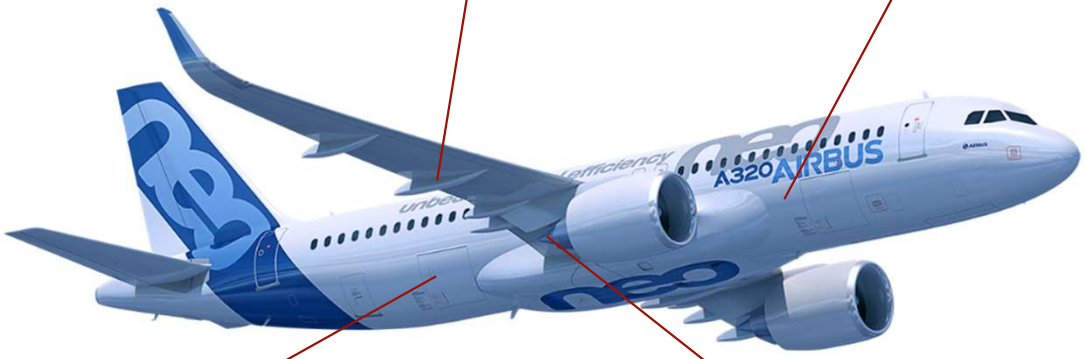
### IRN-RC-WS

Flexible IR tyre temp sensor, 3-8 sensing heads with adjustable distance, secure tri-band RF, **range: 0-200°C**

TEXENSE® has developed its own wireless communication protocol offering even more flexibility and security to customers using TEXENSE® sensing technologies.

More recently, infrared temperature sensors have been developped integrating a bluetooth low energy (BLE) technology.

## 3. Aeronautics, Aerospace & Automotive Applications




**CHARGE AMPLIFIER**

Converts the charge generated by a piezoelectric sensor into a normal voltage signal

**CURRENT MONITORING SENSOR**

Used for measurement of electrical current

**THERMOCOUPLES & PT AMPLIFIERS**

Temperature measurement of various components

**STRAIN GAUGING**

Developed to accurately monitor Structural loads on components


**GYROSCOPES**

Incorporated into navigation systems

*Four products are currently certified for test applications by Airbus*

## CHAPTER 2
TEXENSE® Products, Services & Applications

**LOAD CELLS**
Suspension, steering

**AERODYNAMICS**
Differential pressure & Pitot

**INERTIAL SENSORS**
Accelerometers, Gyros, Lean angle & Inertial boxes

**THERMOCOUPLES & PT AMPLIFIERS**

**TPMS Receiver with Antenna**

**ECU**

**TPMS Receiver with Antenna**

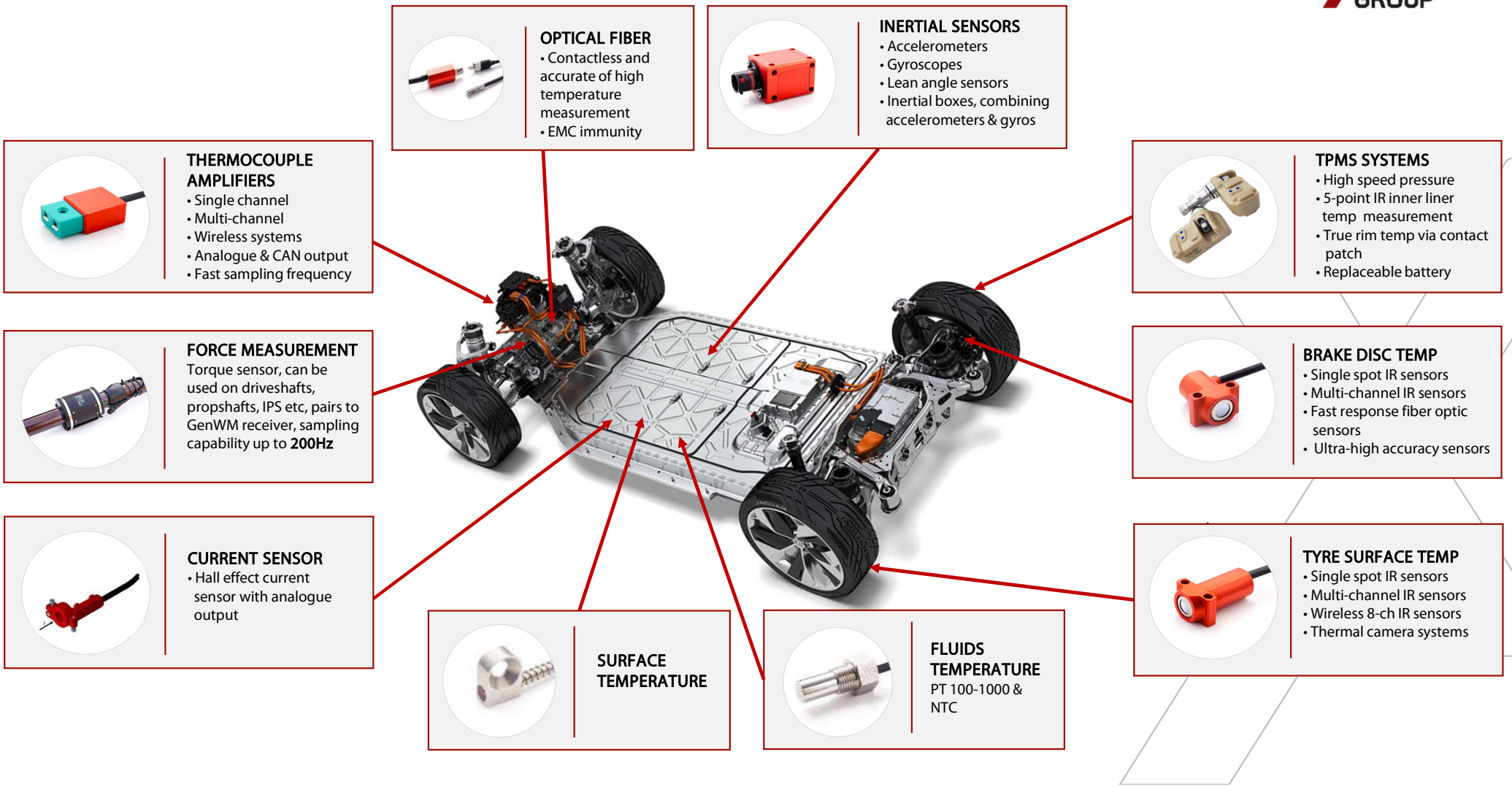
**FLUIDS TEMPERATURE**
PT 100-1000 & NTC

**CALIPERS TEMPERATURE**

**TYRE SURFACE**
Contactless infrared temperature measurement (single or multi-point)

**TRACK SURFACE TEMPERATURE**
with flush design

**BRAKE DISCS**
Contactless infrared temperature measurement


OPTICAL FIBER
• Contactless and accurate of high temperature measurement
• EMC immunity
INERTIAL SENSORS
• Accelerometers
• Gyroscopes
• Lean angle sensors
• Inertial boxes, combining accelerometers & gyros
THERMOCOUPLE AMPLIFIERS
• Single channel
• Multi-channel
• Wireless systems
• Analogue & CAN output
• Fast sampling frequency
TPMS SYSTEMS
• High speed pressure
• 5-point IR inner liner temp measurement
• True rim temp via contact patch
• Replaceable battery
FORCE MEASUREMENT
Torque sensor, can be used on driveshafts, propshafts, IPS etc, pairs to GenWM receiver, sampling capability up to 200Hz
BRAKE DISC TEMP
• Single spot IR sensors
• Multi-channel IR sensors
• Fast response fiber optic sensors
• Ultra-high accuracy sensors
CURRENT SENSOR
• Hall effect current sensor with analogue output
TYRE SURFACE TEMP
• Single spot IR sensors
• Multi-channel IR sensors
• Wireless 8-ch IR sensors
• Thermal camera systems
SURFACE TEMPERATURE
FLUIDS TEMPERATURE
PT 100-1000 & NTC

# 4. TEXENSE® Tyre Pressure Monitoring Systems

## TPMS-CR (Car Receiver)

- Easy Installation (plug on CAN bus)
- No Additional Loom Required

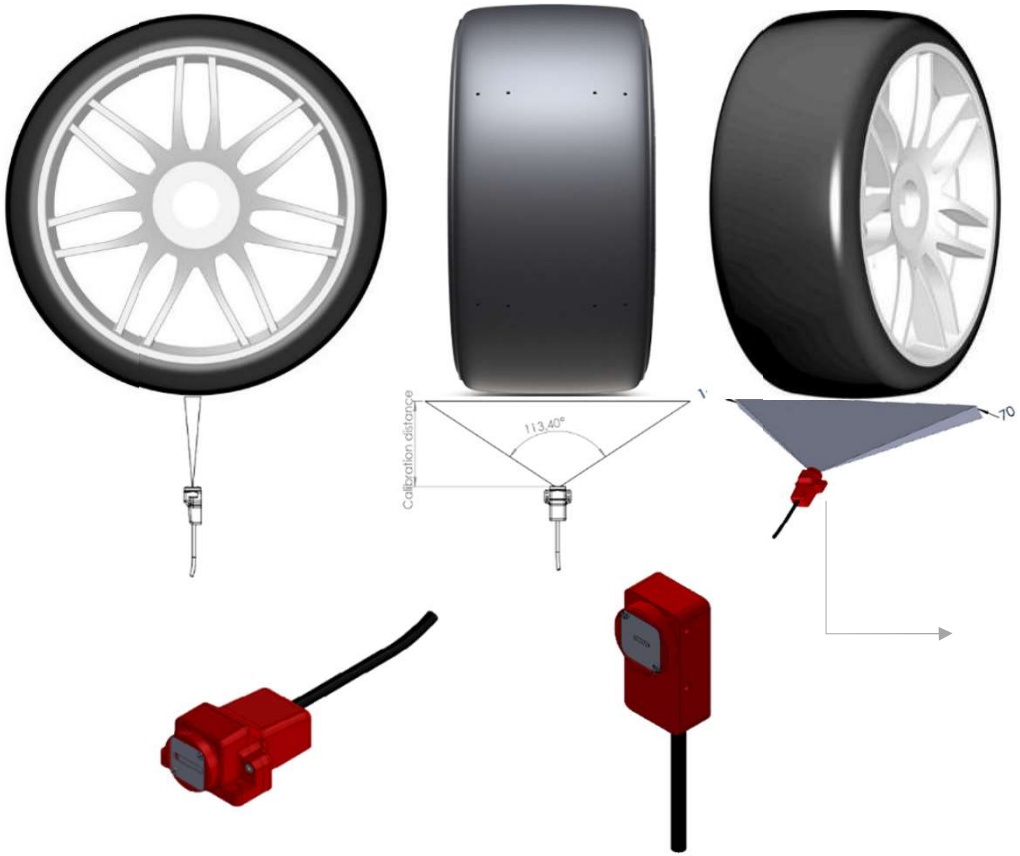
## TPMS-IR21

- Relative humidity
- Pressure and temperature
- 5 Infrared spots for carcass temp.
- Rim Temperature Measurement


## TPMS-RH (Handheld)

- Best Ergonomics in the Industry
- Controls ALL parameters w/o any PC

## 5. TEXENSE® MIB, class-leading surface temperature measurement tool




Thanks to 3 years of extensive developments, and kilometers covered during tests & races on, the MIcro-Bolometer (MIB) is today the benchmark tool for tyre development:

- F1 race proven embedded device,
- High frequency thermal camera (up to 100 Hz),
- Electronic shutter function for high accuracy,
- Ultra light & compact housing with different mechanical options,
- Bespoke calibration for measurement up to 1m distance,
- Up to 280 measurement points.

## 6. Devices for brake disc temperature, caliper and clutch temperature measurement

- Infrared sensors : single of multipoints, analog or CAN
- Remote signal conditioning for clutch sensors i.e. and for optical fibre devices

## 7. TM-Fast: an instrumented bolt for tightening loads monitoring

### A patented technology with key advantages:

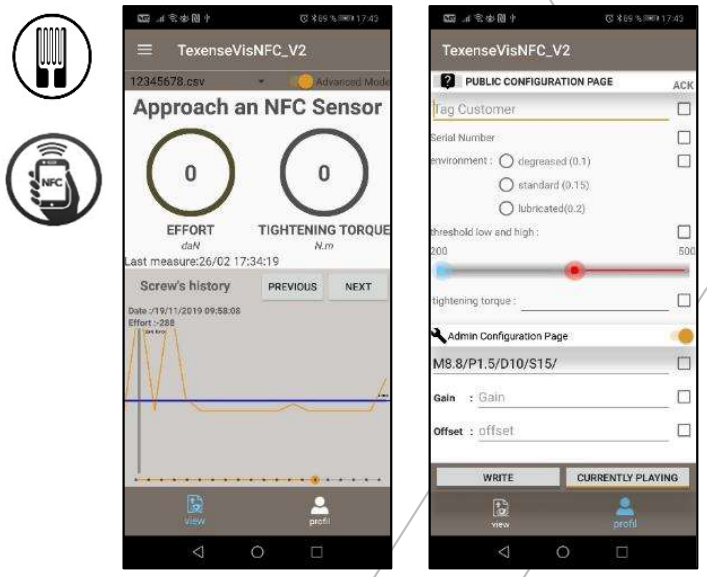
- No modification of the bolt's mechanical properties.
- Measurement of traction loads facilitating preventive maintenance and R&D

### NFC Technology

- Instrumented bolt with strain gauging fitted in the bolt's head
- Encapsulated PCB with signal conditioning
- Wireless communication capabilities :
  - Peer-to-Peer data transfer
  - Pairing quicker than Bluetooth technology
- No power supply requirement from the bolt

### Smartphone application

- Monitoring, measurement data, and user inputs,
- Effort and tightening torque
- Bolt ID
- Timestamp, historic data, assembly information
- CSV format file export



CHAPTER 3

# OPTEL-TEXYS

## Advanced Sensing System

# High speed measurement for rotating applications using optic fiber technology

**For 60 years**, OPTEL-TEXYS has been the specialist of **non-invasive optical sensors**.

The company enjoys worldwide recognition for its high-speed and accurate sensors in the market sectors of the rotating machines and turbines.

Our developments focus on the field of non-destructive control, preventive and predictive maintenance, monitoring and control, safety, durability and reliability, for test bench and on-board measurement.

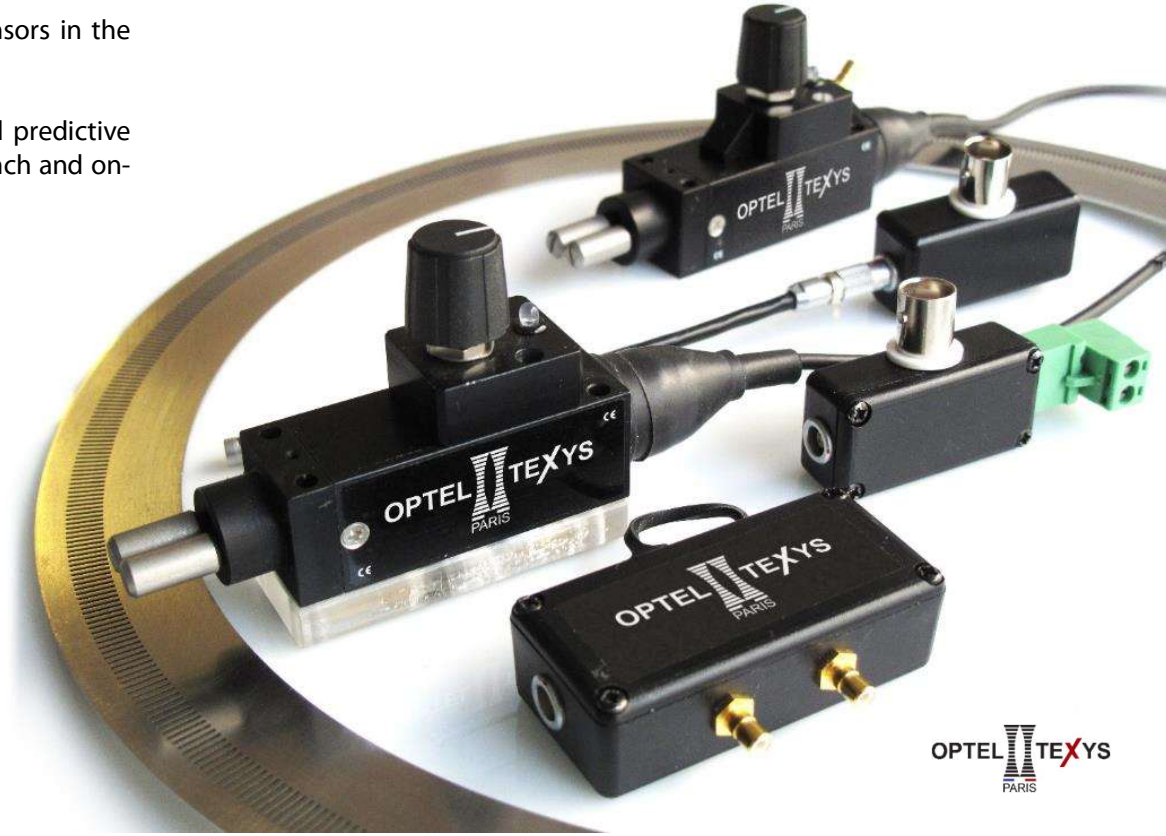
**Optel-Texys measurement solutions cover several industries:**

**TRANSPORT**

**OFF ROAD**

**ENERGY ELECTRICAL MOBILITY**

**INDUSTRY**



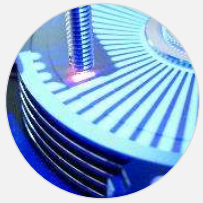
## The world reference for torsional vibration analysis

- **High Frequency** Analysis up to **1.6 MHz**
- **Very low phase shift** and response time (ns)
- Continuous detection: measurement possible **from 0 to max speed**
- Near Infra Red **not dangerous for operators**
- The Light beam does not diffract in oil mist
- **Multiple Options:** TTL / Analogue outputs - Remote Potentiometer
- **High resolution** with probe dimension
- **EMC immunity**
- Can be **operated in ATEX area**
- Probe operates **up to 200°C**
- Possible **detection in liquids**

## ACYCLISM

Characterisation of the **Acyclism** between crankshaft and accessories
Analysis of **Sliding** phenomena between pulley and belt

## TORSIONAL VIBRATION



**Torsional Vibration** analysis on Engine, accessories, powertrain, electrical and hybrid motors and rotating machines

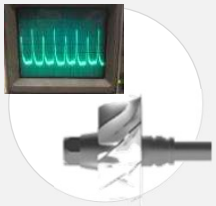
## TORQUE

**Torque** measurement by detecting the angular position
Pumps and Compressor shaft-motion

## BEARING

Through-Beam detection on **Bearing**

## BALANCING & TIP-TIMING



**Balancing** for quality control of Turbo Charger
**Tip-timing** analysis on blade of an aeronautic fan

CHAPTER 4

# LGS by TEXYS

## Engineering of Photonic Solutions

## Engineering of photonic systems

- **Light Guide Solutions** (LGS) was **founded in 2007, by Dr. Mohamed BOUAMRA**, expert in photonic science.
- **15 years of experience** in the development & manufacturing of systems based on **Fiber Bragg Grating (FBG)**.

LGS by TEXYS core business is the **development and manufacturing of optical fiber sensors measurement systems** for various industries:


Handling, Weighing, Transport & Logistics


Aeronautics, Space and Defense,


Agri-food, Biomedical, chemical and petrochemical industries,


Energy, Production & Distribution of Electricity Power, Wind Turbines,


Civil engineering, Structural Health Monitoring (SHM),

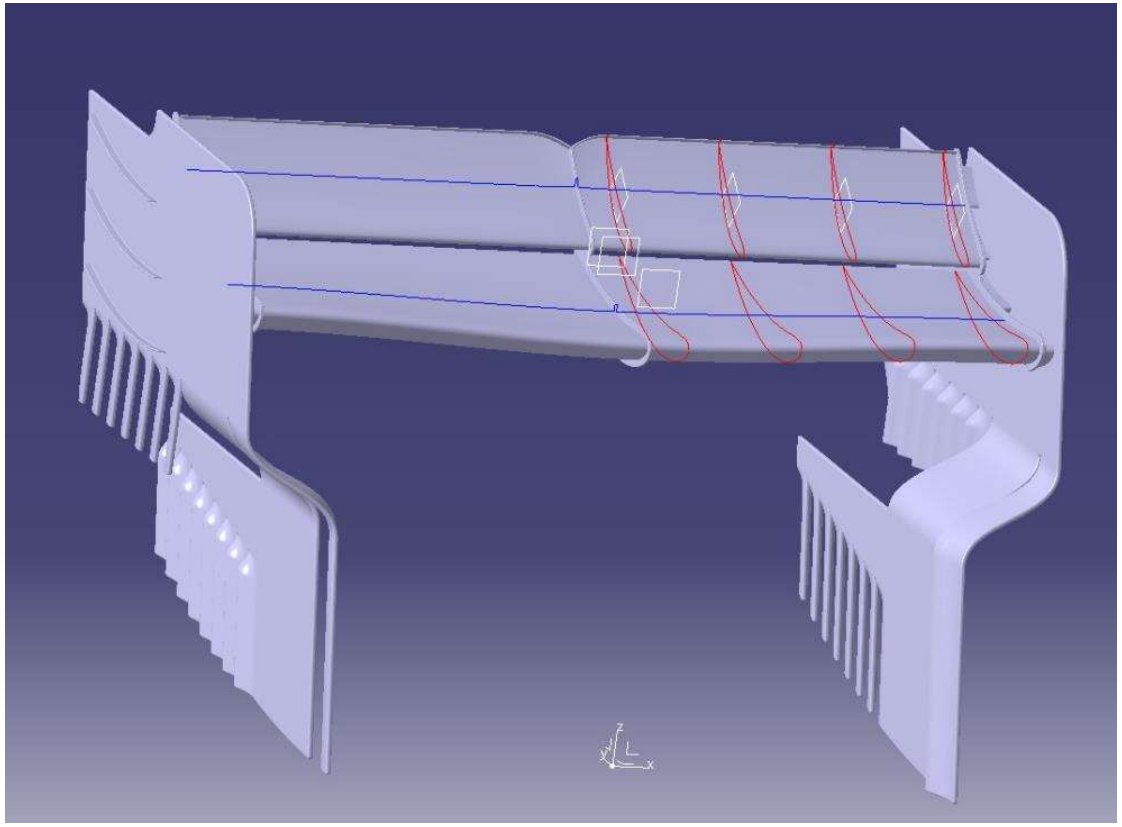

Railway and Automotive industries

## A wide range of products

**The wide range of products covers measurement of temperature, force, pressure, tilt, vibration and shocks, with:**

- Fiber Bragg Grating interrogators,
- Fiber Bragg Grating Sensors,
- Pressure sensitive carpets,
- Anti-pinch sensors.

## Coming developments using embedded Fiber Bragg Grating technology



### Embedded FBG technology for motorsport applications :

- Strain, pressure and temperature measurements on chassis parts, bodywork or aerodynamic devices,
- Development of an embedded FBG interrogator for racing operating environment with optimised packaging (dimensions and weight)

CHAPTER 5

# TEXYS Group,

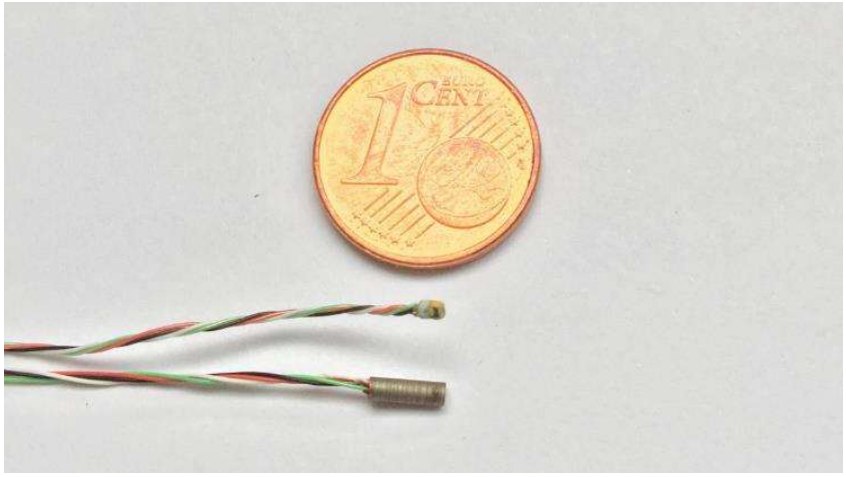
# Distributor of SENSORADE

# Miniaturised Pressure Sensors

# Miniaturised pressure sensors for aerodynamic applications

**SENSORADE is specialised in ultra-miniaturised pressure sensors :**

- for harsh environments ranging up to 185°C operating temperatures
- unique technology serving the Wind Tunnel and Testing Engineering community
- highest performance level in terms of accuracy, responsiveness and compacity (from 1.2 to 2.4 mm diameter).




**TEXYS Group is official distributor of SENSORADE products for:**

- China
- France
- Germany
- India
- Italy
- South Korea
- United Kingdom
- U.S.A.

# THANK YOU


## Texys Group

Z.A. des Chamonds

16 rue Edouard Branly

58640 Varennes-Vauzelles – France

www.texysgroup.com

+33 (0) 386 212 718