**Smart HMI Surfaces with Touch Sensors**

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# Smart HMI Surfaces with Touch Sensors

- HMI Automotive Trends
- PolyIC – a KURZ Company
- PolyTC® Touch Sensors
- Smart HMI Surfaces with Touch Sensors
  - Products, Use Cases:
  - Decoration, Light & Function
- Contact / Address

POLY IC
a KURZ company

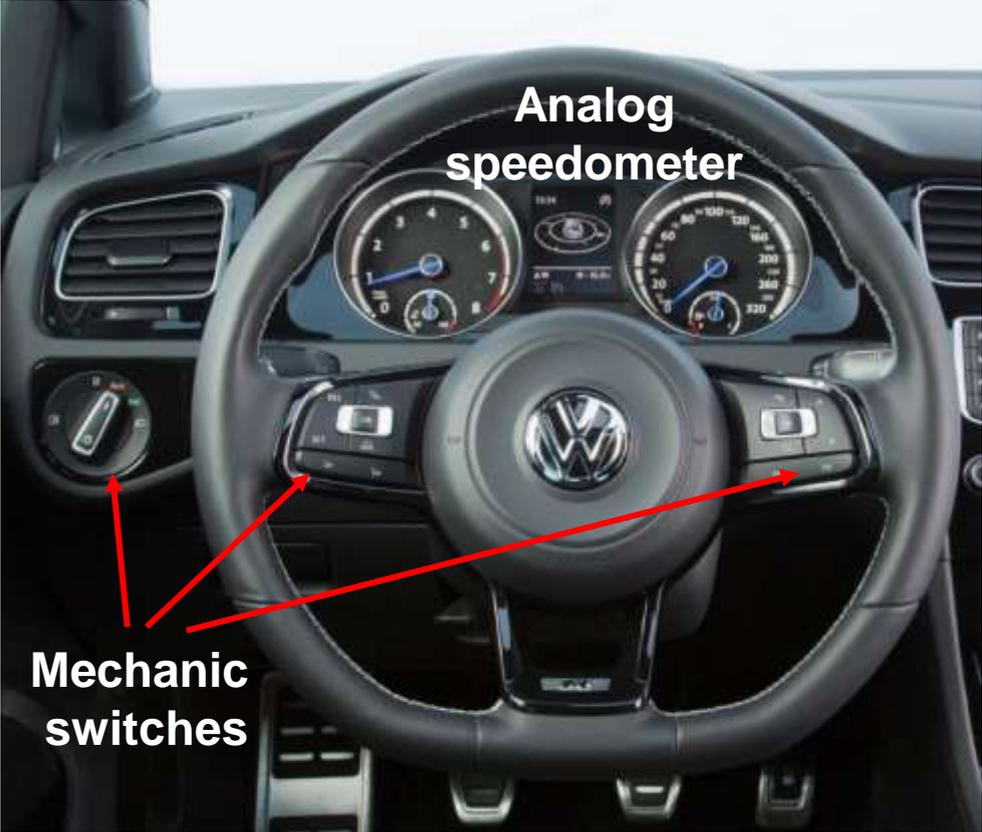# HMI Automotive Trends – Part I

BMW



Nissan

POLY IC
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# HMI Automotive Trends – Part II

## Capacitive switches everywhere – no more mechanical switches

Example Volkswagen Golf



**2019**

Analog speedometer

Mechanic switches

**2020**

Digital speedometer

Capacitive switches
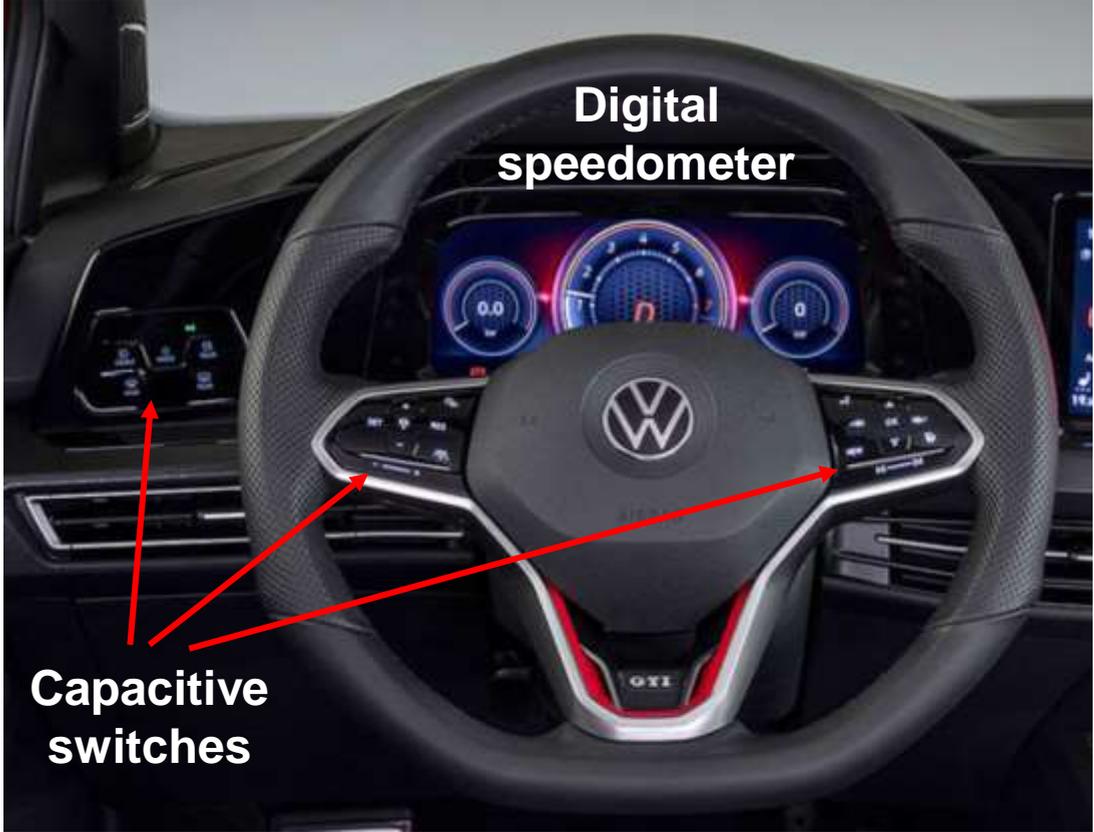
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# PolyIC – a KURZ Company

**PolyIC GmbH & Co. KG**

2003: Founded as joint venture between SIEMENS AG and LEONHARD KURZ Stiftung & Co. KG

2010: 100% part of LEONHARD KURZ Stiftung & Co. KG (KURZ)

- Place: Fürth / Germany
- **Products**: Capacitive touch sensors based on **PolyTC®** transparent and conductive films
- Focus of PolyIC Team is on Engineering and Product Management
- Production, Infrastructure & Sales: done by KURZ

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# PolyTC® Touch Sensors

## Roll-to-Roll Production

- Substrate: PET (Polyester)
- Silver (Ag) Metal Mesh Technology
- Ag layer thickness < 100 nm

## High performance

- High electrical conductivity
- High optical quality
- Thin, flexible & light weight
- Customized high-volume production
- Multiple integration options
- Low price level

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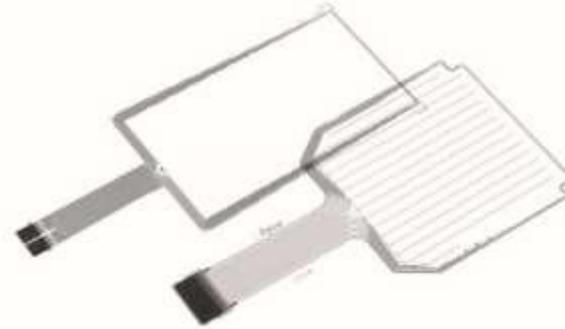
# the KURZ Group

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**KURZ** companies active in HMI solutions, besides **POLY IC**

- family run business since 1899 (5th generation)
- global leader in thin-film technology
- supplies products for surface finishing, decoration, labelling and counterfeit protection
- over 5,000 employees
- global presence in more than 30 locations
- manufactures in Europe, Asia and the USA

**BURG DESIGN**
- Production Company with strong Focus on Design

**SCHÖFER**
- Creative Molding Solutions and Part Production

**BAIER**
- Hot Stamping Machines
- FFB Machines

**H+M**
- Jigs and dies for Hot Stamping and FFB Applications

# Impressive Awards for KURZ

**KURZ**

**POLY IC**
a KURZ company

In 2020, KURZ was able to convince the juries of the Automotive Brand Contest, the Red Dot Award and the Bavarian Innovation Award (Innovationspreis Bayern 2020) with innovative concepts.

**Visionary exterior front panel**

Futuristic lighting concept with backlighting and self-healing surface thanks to our highly efficient dual technology IMD PUR in an aesthetic day-night design for visual interaction with other road users.

**PolyIC Touchscreen Sensor (IML, Lam)**

**PolyIC Button / Slider Sensor (FFB)**

**PolyIC 3D Slider Sensor (FFB+HPF+IML)**

reddot winner 2020 innovative product

**Automotive panel in functional dashboard design**

Smart HMI concept with capacitive sensor technology in backlit Dead-front design, realized by In-Mold Decoration (IMD), In-Mold Labeling (IML), Functional Foil Bonding (FFB) and a lamination process.

**Concept parts with 3D-molded sensor**

Combination of IMD VARIOFORM® and Functional Inmold Labeling (IML) processes: decorating, thermoforming, sensor integration and die-cutting in a single step. The 3D-molded PolyTC® capacitive touch sensor hugs the component seamlessly.

For more information click here

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© KURZ 2020

**Case studies Vacuum forming INS/PMD decoration by KURZ**

Light and function everywhere – hidden until lit, seamless, curved,  integrated
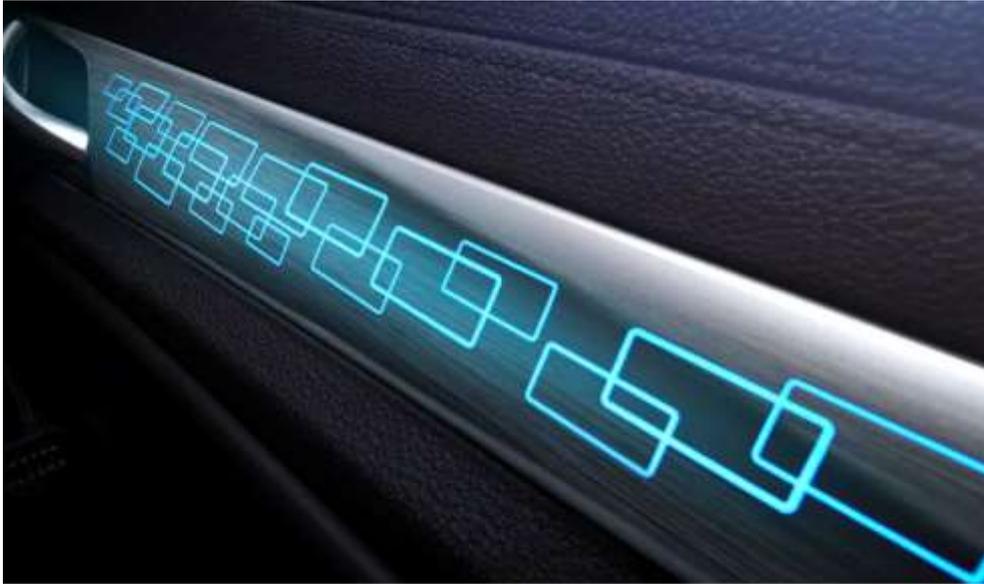
# HMI Automotive Trends, case studies

## VW ID.3 – Capacitive Steering Wheel Switch

- Capacitive Touch Sensor
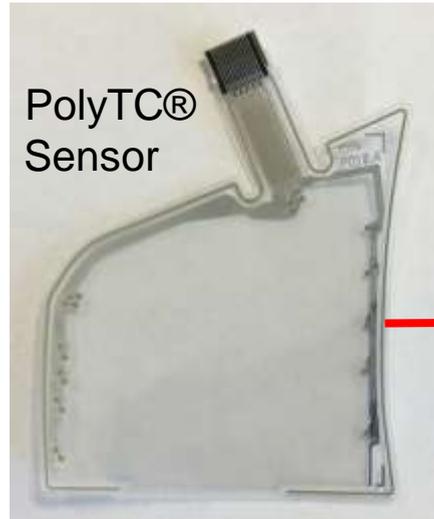- 3D shaped Panel
- Hidden until lit symbols
- Active haptic feedback

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# HMI Automotive Trends, case studies

## VW ID.3 – Capacitive Steering Wheel Switch



**Capacitive Steering Wheel Switch**

- Capacitive Touch Sensor
    - free programmable matrix
- 3D shaped Panel
    - Hidden until lit symbols
- Active haptic feedback

PolyTC®
Sensor

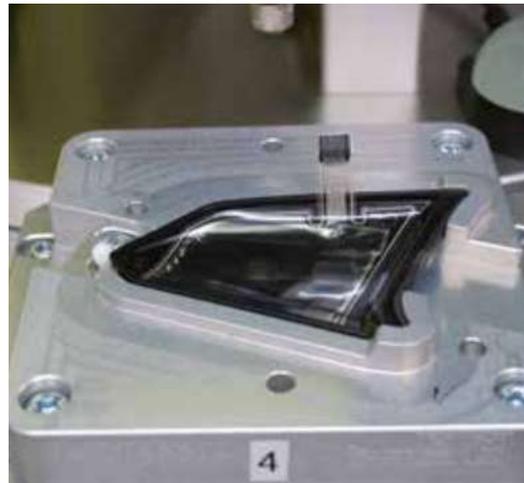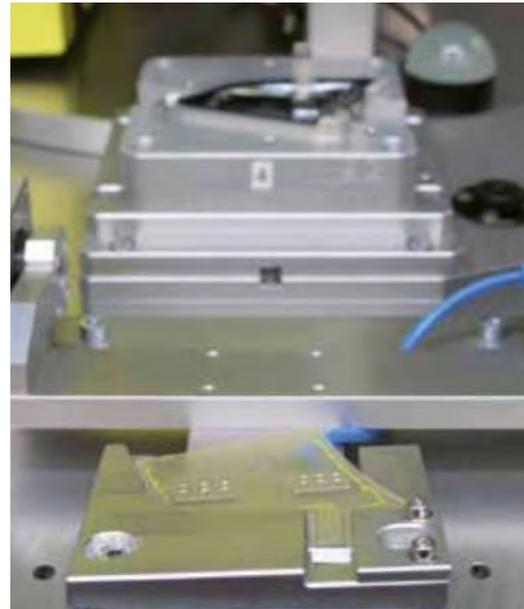# HMI Automotive Trends, case studies

## Capacitive Steering Wheel Switch

- PolyTC® touch sensors (matrix layout)
- Integration by Functional Foil Bonding (FFB)
- Bezel and FFB integration done by Kunststoff Helmbrechts – KH-Foliotec

PolyTC® sensors          Molded bezels

Pictures © Kunststoff Helmbrechts (innovation magazin 39/2020)

# HMI Automotive Trends, case studies

**Capacitive Steering Wheel Switch Button with haptic feedback**

- Capacitive Sensor
  - PolyTC® Technology
  - with transparent buttons/matrix area
- Function left side
  - 6 capacitive Buttons
  - 1 capacitive Slider
- Function right side
  - transparent matrix
  - Free touch function
- Haptic feedback by mechanic switch
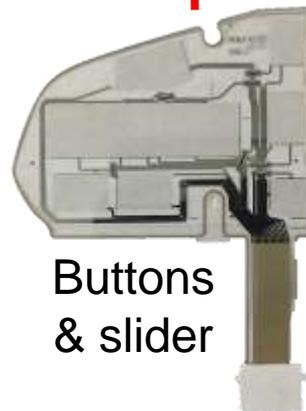


PolyTC® Sensor

Buttons & slider

Matrix

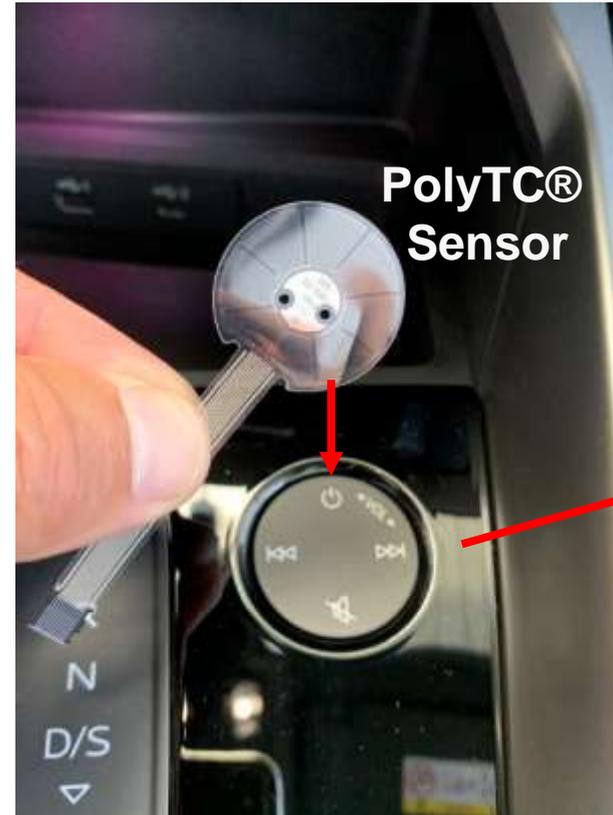# HMI Automotive Trends, case studies

**Capacitive Switch button with haptic feedback**

- Capacitive Sensor
  - PolyTC® Technology
  - with transparent buttons
- Function
  - Capacitive Rotary slider for volume control
  - 4 capacitive Buttons for
    - On/off; mute; backward; forward
- Haptic feedback by mechanic switch



**PolyTC® Sensor**

# HMI Automotive Trends, case studies

HMI – Door Control Unit

- PolyTC® touch sensor
  - Button type
  - FFB integrated
  - 3D shape
- Hidden until lit decoration
  - Colored backlight
  - 3D seamless setup
- Active haptic feedback
  - Inclusive sound
- Partners: Ge-T, KH-Foliotec
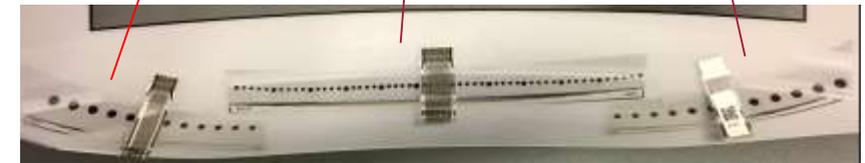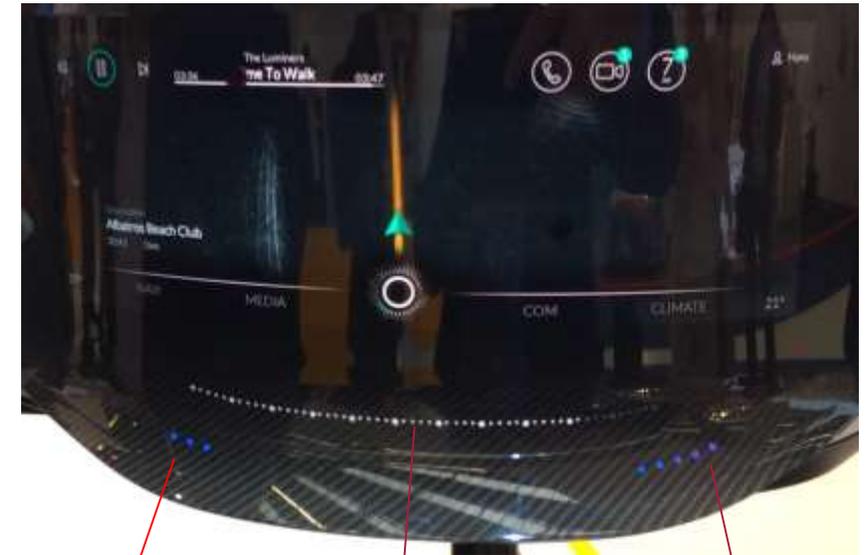
# HMI Automotive Trends, case studies

## Continental – Large Curved Plastic Lens

**Seamless, curved, large and Integrated Instrument Panel**

- IMD Top Coat by KURZ
- Touch Sliders by PolyIC



**3 Touch Sliders**

PolyTC®

**KURZ IMD Top Coat (UV post - cured)**

© PolyIC 2021

# HMI Automotive Trends, case studies

**Doortrim with day / night effect**

**Touch Control & Light management**

- Capacitive transparent touch sensor (buttons & slider)
- IMD decoration with day / night effect
- Integrated active control of backlight



PolyTC®

Sensor with 3 Buttons
& 1 Slider
Integration by FFB

Door trim with IMD Decoration

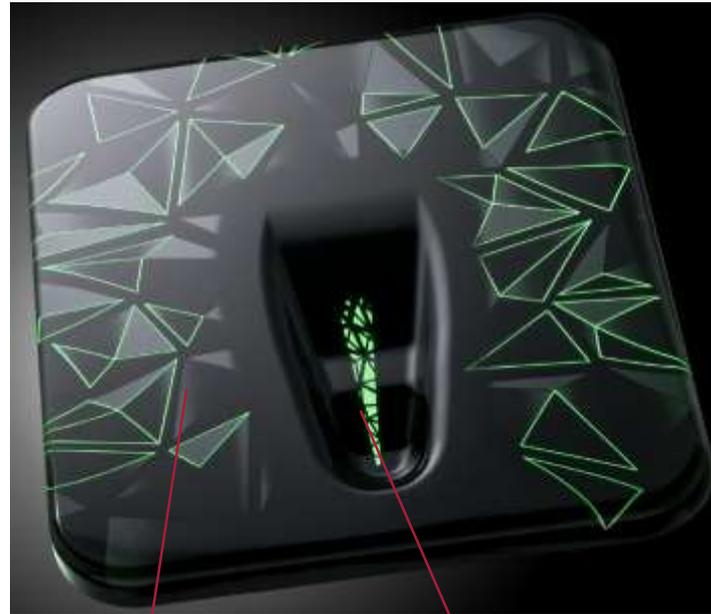Ambient light control by touch function

## Making Every Product Unique

### HMI 3D Control Unit Study

- KURZ IMD Varioform decoration
  - 3D Forming in mold tool
  - Single picture
  - Backlighting areas
- PolyIC 3D Touch Sensor
  - 3D form by HPF
  - Integration by IML
- Function
  - Capacitive slider
  - Sensor controls light



**KURZ
IMD Varioform
Decoration**

**3D shaped
sensor**

# HMI Automotive Trends, case studies

reddot winner 2020
innovative product

## HMI – Instrument Panel

Organic shaped IMD decorated surface with *shytech backlighting* effects, a *seamless touchscreen* and *hidden til lit buttons* for intuitive touch operation
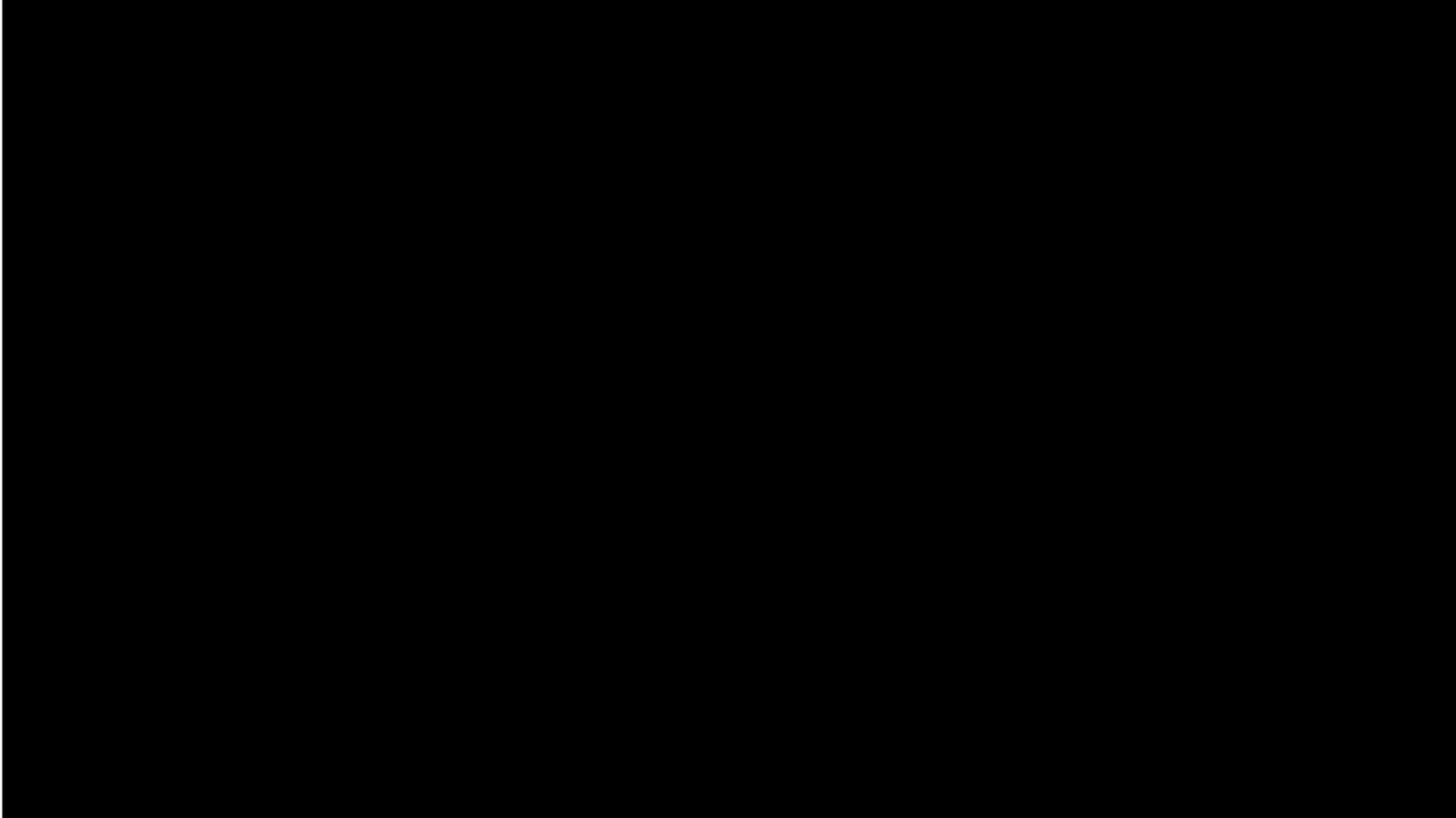
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# HMI Automotive Trends, case studies

**Making Every Product Unique**

**HMI – Instrument Panel**

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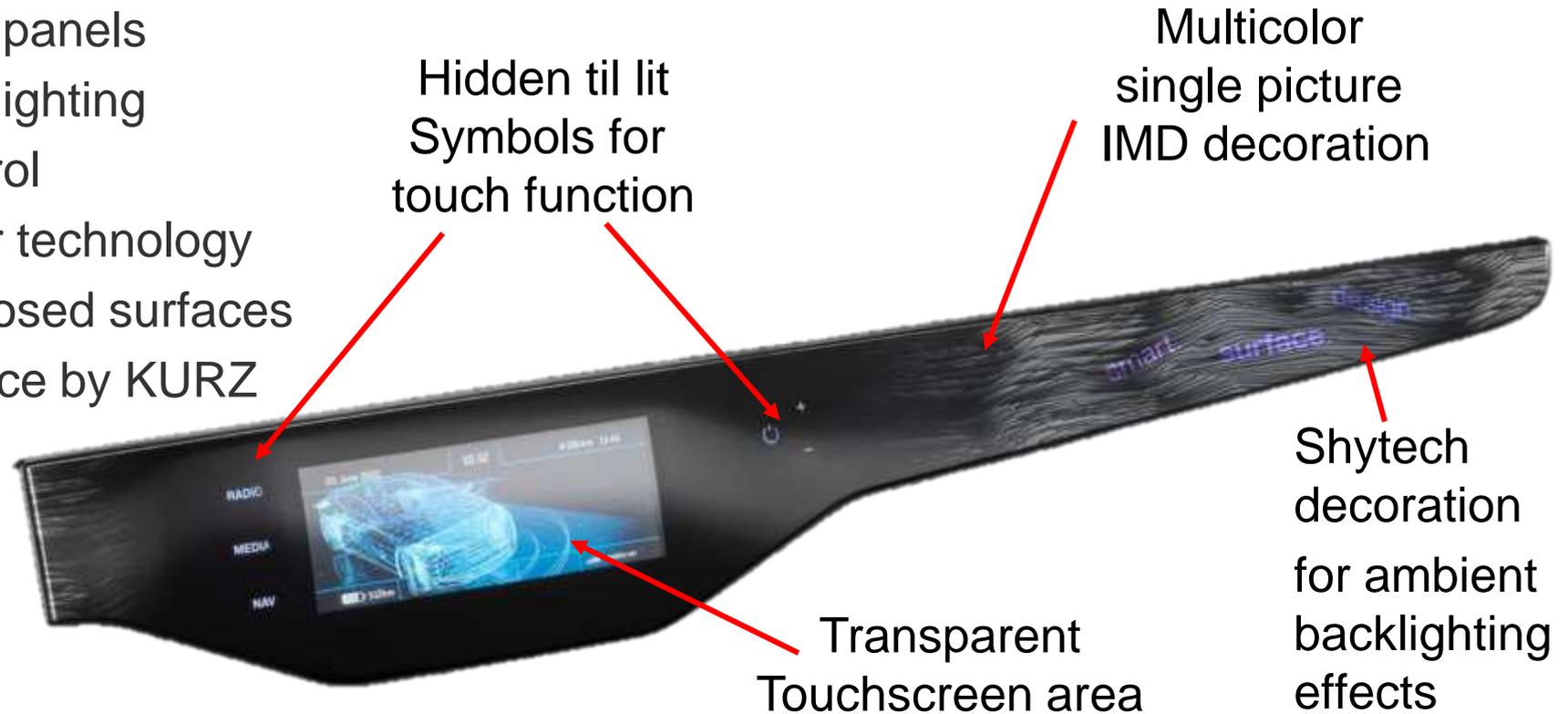
# HMI Automotive Trends, case studies

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**HMI Instrument Panel**

- Organically shaped surfaces
- Seamless control panels
- Shytech ambient lighting
- Active touch control
- Capacitive sensor technology
- Homogenously closed surfaces
- Design competence by KURZ

**Front side**

## KURZ IMD Decoration with transparent PC mold, total width > 900 mm

Hidden til lit
Symbols for
touch function

Multicolor
single picture
IMD decoration

Shytech
decoration

for ambient
backlighting
effects

Transparent
Touchscreen area

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# HMI Automotive Trends, case studies

reddot winner 2020
innovative product

## HMI Instrument Panel

- Capacitive sensor technology
- PolyTC® Touchscreen sensor
  - Integration by IML or Lamination
- PolyTC® Button & Slider
  - Integration by FFB or Lamination
- PolyTC® Capactive proximity sensor
  - Integration by FFB or Lamination

**PolyTC® touch sensor**
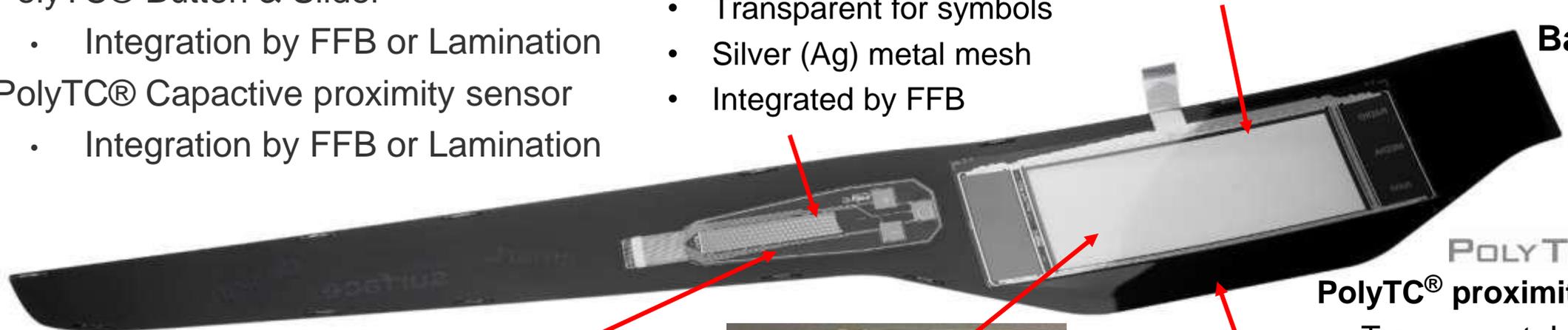
3 buttons & 1 slider
- Transparent for symbols
- Silver (Ag) metal mesh
- Integrated by FFB

**PolyTC® 8" multi touch sensor**
- Single layer multi touch
- Side buttons included
- Silver (Ag) metal mesh
- Integration by functional IML or lamination

**Back side**

**PolyTC® proximity sensor**
- Transparent; Integration by FFB or lamination
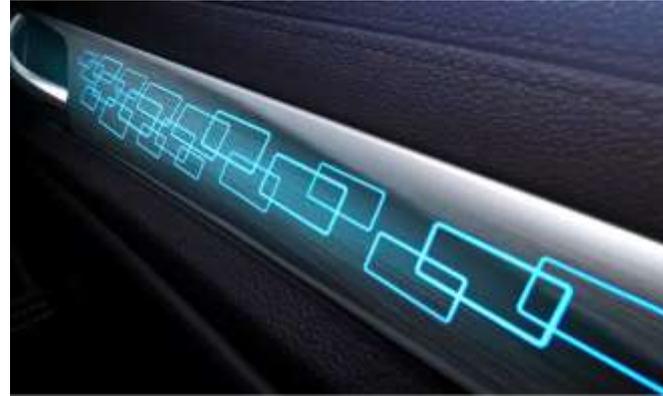
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# Smart HMI Surfaces with Touch Sensors

## Our Solutions for your HMI products

- **Plastic Decoration**
  - IMD, INS, PMD, and more

- **Function**
  - PolyTC®
    Touch Sensors

- **Integration**
  - IML, FFB, and more

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