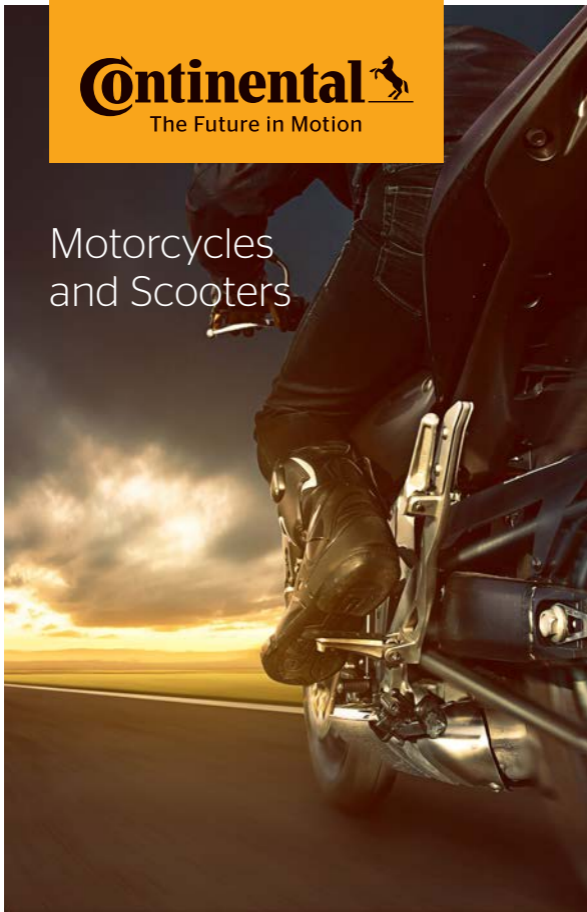


**Continental** 

The Future in Motion

Motorcycles  
and Scooters



Dear business partner,

Over the past few years Continental has progressively increased its activities around powered two-wheelers and we are constantly expanding our product offering.

Ultimately, we will provide a comprehensive portfolio for safety, connectivity, environment and comfort for standard two-wheelers as well as for high-end motorcycles and scooters.

In pursuit of this goal, we work closely with our development engineers in the passenger car sector, which enables us to offer innovations at a very early point in time.

This booklet sets out our portfolio. We hope you enjoy discovering all the options that Continental has to offer.

---

Introduction .....	3
Table of Contents .....	4
High-end Motorcycle.....	8
Standard Motorcycle.....	12
High-end Scooter .....	16
Standard Scooter.....	20

---



---

## Safe Mobility ..... 24

### Advanced Rider Assistance Systems

Adaptive Cruise Control (ACC).....	26
Advanced Radar Sensor 4xx.....	27
Blind Spot Detection (BSD).....	28
Emergency Brake Assist (EBA).....	29
Forward Collision Warning (FCW).....	30
Head Light Assist (HLA).....	31
Multi Function Mono Camera - MFC4xx.....	32
Short Range Radar - SRR3xx.....	33
Traffic Sign Assist (TSA).....	34

### Brake Systems

MiniMAB - One Channel ABS.....	35
MK 100® MAB - Anti-lock Brake System.....	36
MK 100® MIB - Motorcycle Integral Anti-lock Brake.....	37
MK 100® MIB-EVO - Motorcycle Anti-lock Brake.....	38
Sensorbox.....	39
Wheel Speed Sensors.....	40

### Body Functions

Body Control Unit.....	41
Universal Body Control Module.....	42

Engineering Services.....	44
---------------------------	----

### Tires

ContiAttack SM.....	46
ContiTrailAttack 2.....	47
TKC 80.....	48

---

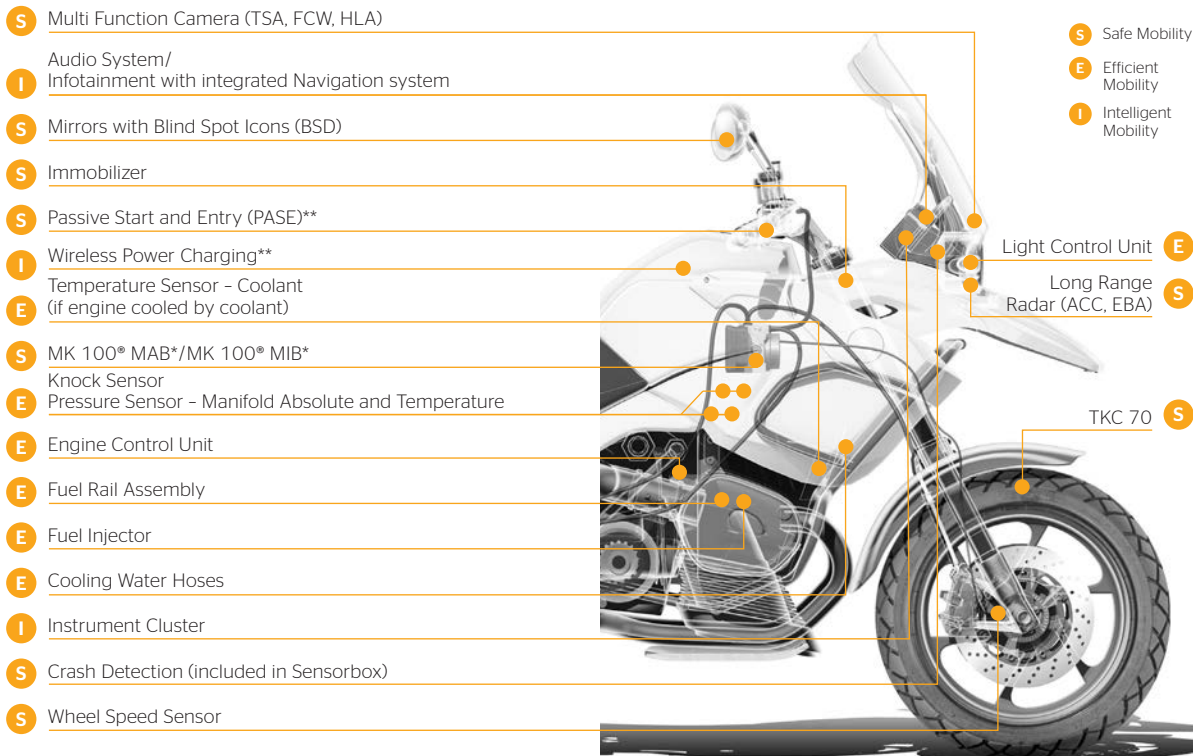
**Efficient Mobility ..... 50**

Customized Fuel Delivery Module.....	52
Customized Fuel Rail Assembly.....	53
Digital Linear Actuator - Standard Size Gen I.....	54
Digital Linear Actuator - Standard Size Gen V.....	55
Digital Linear Actuator - Compact Size Gen VII.....	56
Gasoline Deka 7 Port Fuel Injector.....	57
Gasoline Deka 10 Port Fuel Injector.....	58
Ignition Coil.....	59
Knock Sensor - M6 Small Design.....	60
M3A Air Module Engine Control Unit.....	61
M3B Air Module Engine Control Unit.....	62
M3C Engine Control Unit.....	63
M3D Ride by Wire Engine Control Unit.....	64
M4D Ride by Wire Engine Control Unit.....	65
M4L Air Module Engine Control Unit.....	66
METALIT® Catalytic Converter Substrate - LS-Design®.....	67
METALIT® Catalytic Converter Substrate - Standard.....	68
METALIT® Catalytic Converter Substrate - TS-Design®.....	69
Oxygen Sensor.....	70
Pressure Sensor - Manifold Absolute.....	71
Pressure Sensor - Manifold Absolute and Temperature.....	72
Temperature Sensor - Coolant.....	73
Throttle Control - Customized Electronic.....	74
Throttle Control - Electronic.....	75
Throttle Body Module - Mechanical.....	76
Transmission Control Unit.....	77
Transmission Smart Actuator Platform.....	78
Cooling Water Hoses.....	79
Fuel Lines.....	80
Heavy-duty Timing Belts.....	81
Oil Lines.....	82
Tubes and Hoses for Electro Mobility.....	83
Variable Speed Belts.....	84
Vent Hoses.....	85

**Intelligent Mobility ..... 86**

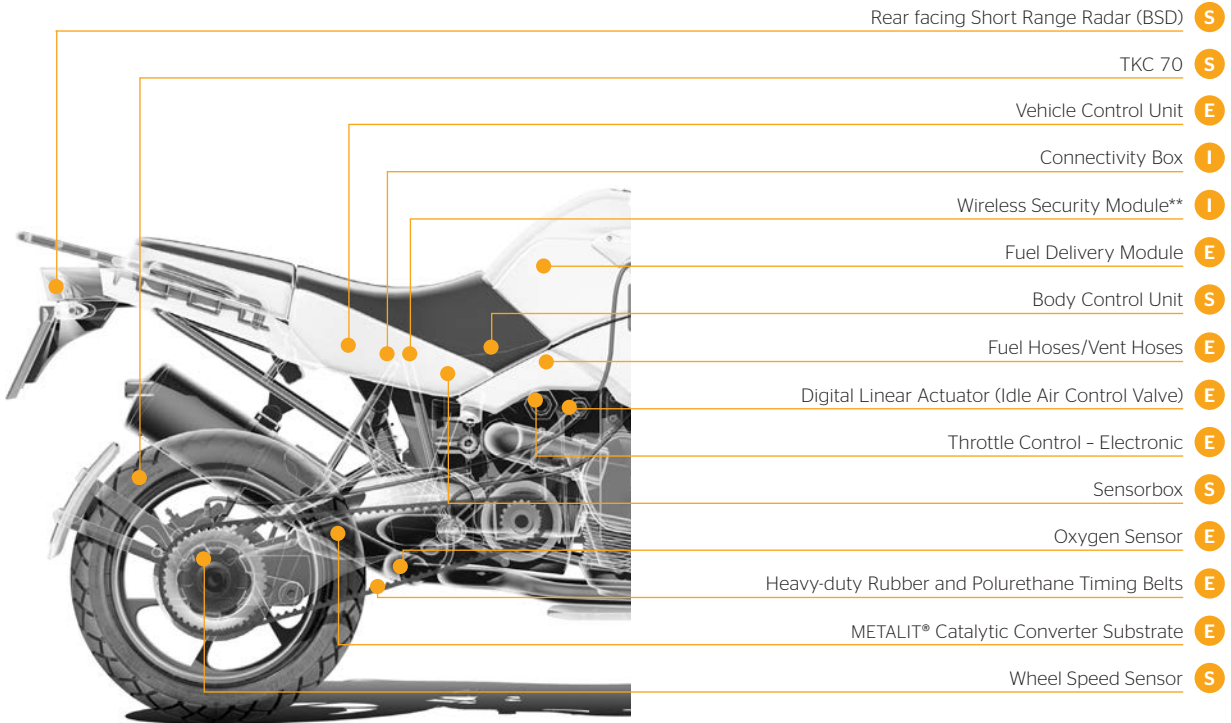
Adaptable Instrument Cluster for 2 Wheelers.....	88
Cluster + Integrated Speed Sensor.....	89
Connectivity Box.....	90
Electronic Instrument Cluster for 2W < 150cc.....	91
Electronic Instrument Cluster for 2W < 500cc.....	92
Full LCD Instrument Cluster.....	93
Multi Color Illumination Cluster.....	94
MultiViu®Sports5.....	95
Platform Instrument.....	96
eHorizon.....	98

# High-end Motorcycle

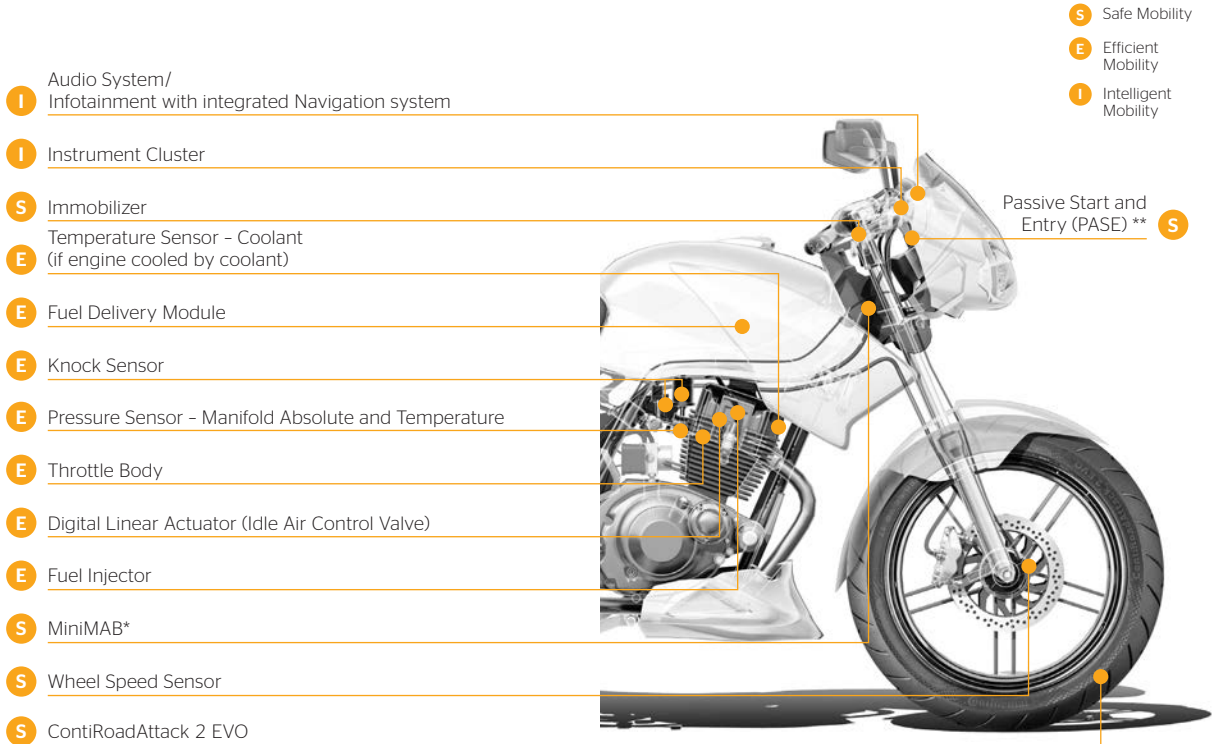


\* one or the other \*\* under development

# High-end Motorcycle



# Standard Motorcycle



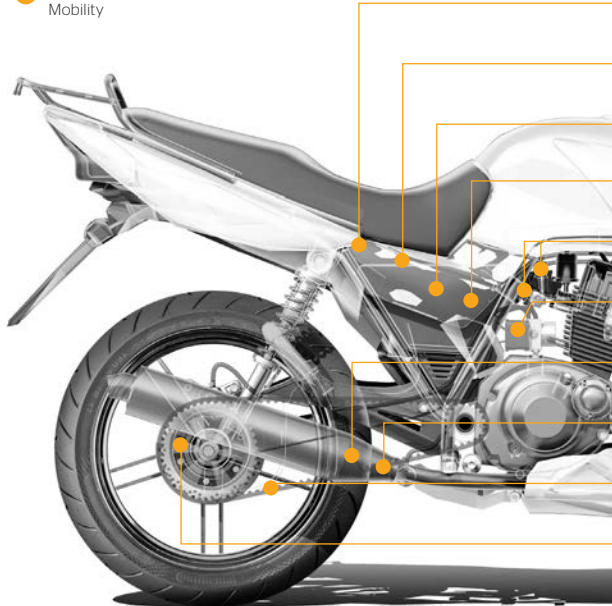
\* one or the other \*\* under development

# Standard Motorcycle

**S** Safe Mobility

**E** Efficient Mobility

**I** Intelligent Mobility



Wireless Security Module\*\* **I**

Body Control Unit **S**

Fuel Hoses/Vent Hoses **E**

Engine Control Unit **E**

Knock Sensor **S**

MK 100® MAB\* **E**

METALIT® Catalytic Converter Substrate **E**

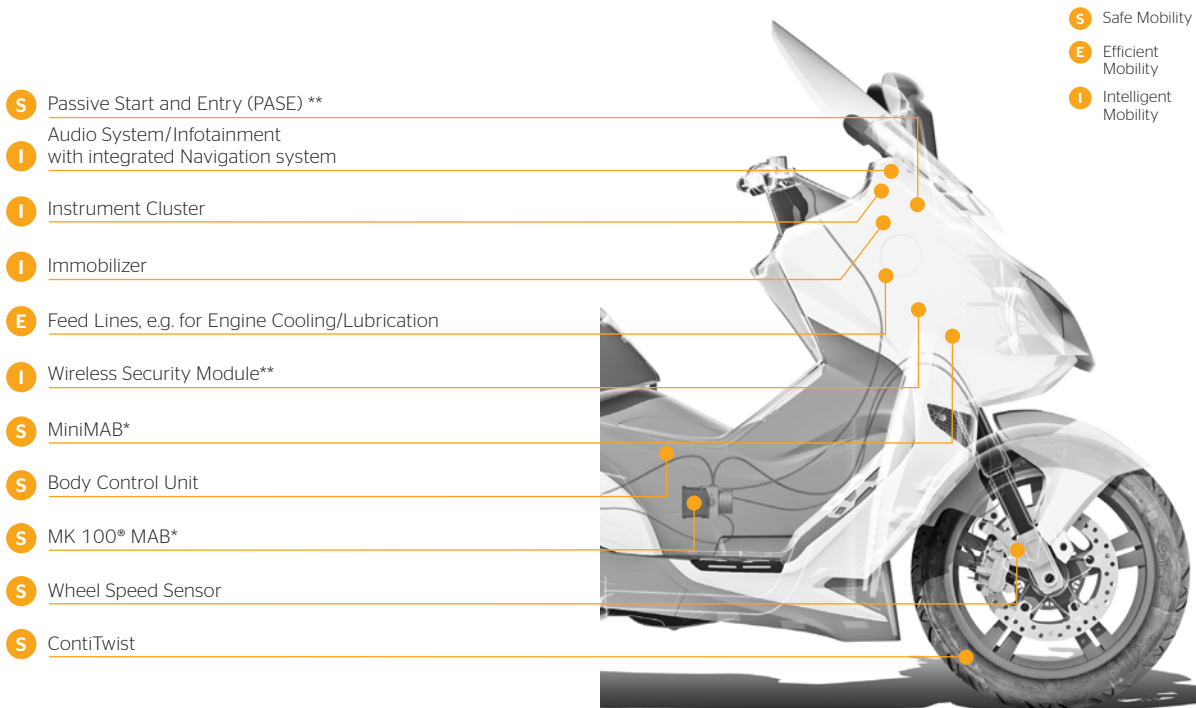
Oxygen Sensor **E**

Heavy-duty Rubber and Polurethane Timing Belts **E**

Wheel Speed Sensor **S**

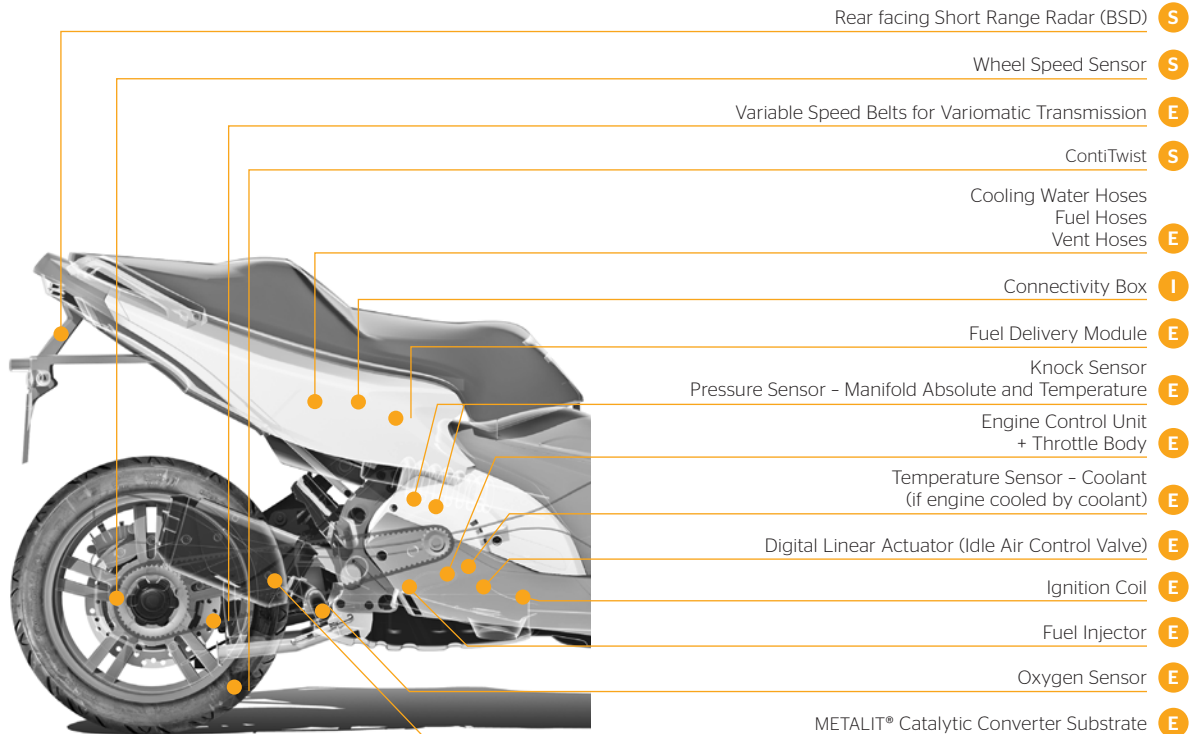


# High-end Scooter



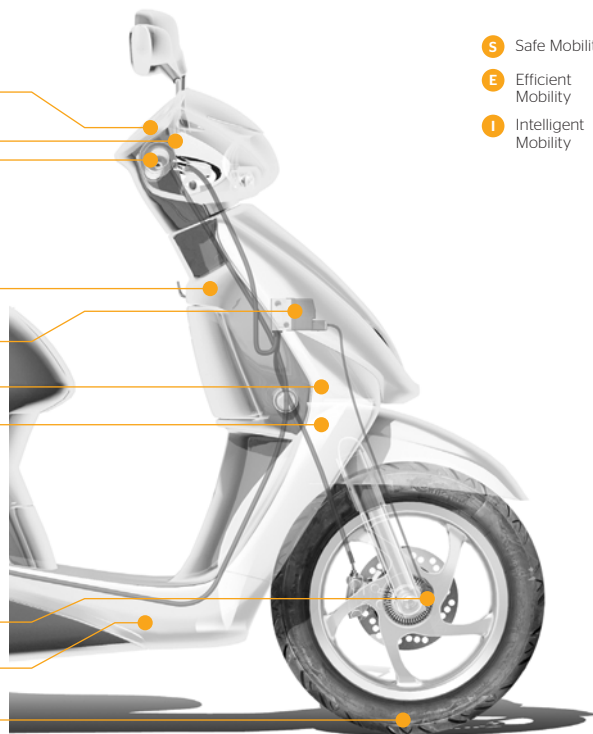
\* one or the other \*\* under development

# High-end Scooter



# Standard Scooter

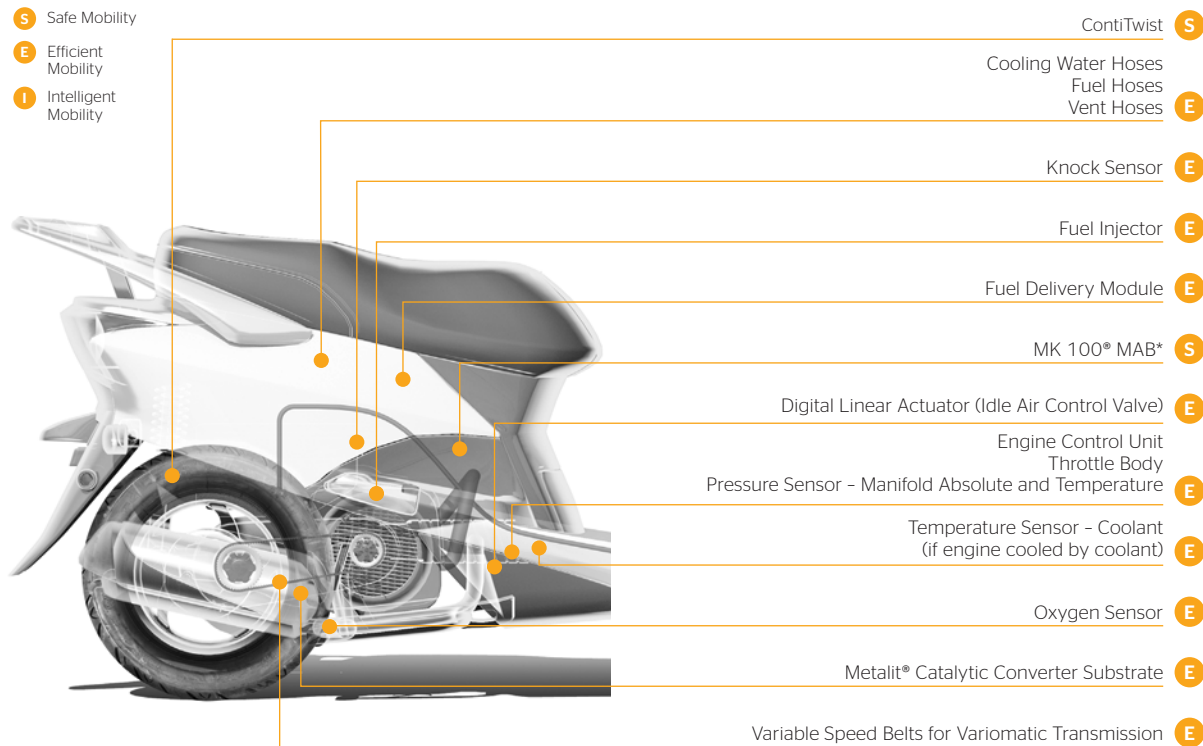
- I** Instrument Cluster
- I** Audio System
- S** Immobilizer
- E** Feed Lines, e.g. for Engine Cooling/Lubrication
- S** MiniMAB\*
- S** Body Control Unit
- I** Wireless Security Module\*\*
- S** Wheel Speed Sensor
- E** Ignition Coil
- S** ContiTwist



- S** Safe Mobility
- E** Efficient Mobility
- I** Intelligent Mobility

# Standard Scooter

- S** Safe Mobility
- E** Efficient Mobility
- I** Intelligent Mobility



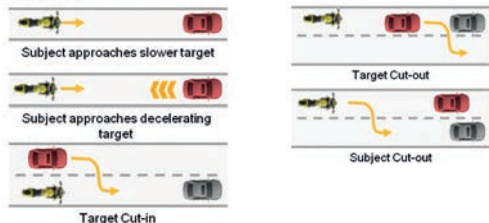
\* one or the other

## Safe Mobility



## Adaptive Cruise Control (ACC)

### Use Cases:



The Adaptive Cruise Control system shall behave as a conventional cruise control system in an open lane condition. When approaching a slower vehicle in the subject motorcycle path, the ACC system shall use the powertrain and the brakes to adjust the subject motorcycle speed in order to maintain the rider selected headway.

### Features & Benefits

- › The intention of ACC is to increase comfort by supporting the rider's task to maintain an appropriate headway with respect to any licensable vehicle in dense traffic situations on highways, secondary roads and in cities.

### Technical Information

- › Cruise Control switches, Headway switch
- › Instrument cluster: Status, selected speed/headway, object selected telltale
- › Take Over Request

## Advanced Radar Sensor 4xx



ARS4xx is a mid range radar sensor for forward looking applications. The sensor is designed for an installation behind a plastic cover in the front area of a vehicle (bumper, grill, etc.)

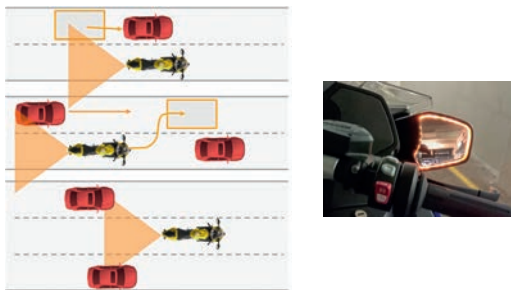
### Features & Benefits

- › Adaptive Cruise Control (ACC)
- › Forward Collision Warning (FCW)
- › Emergency Brake Assist (EBA)

### Technical Information

- › Weight..... 130 g
- › Dimensions..... 94x69x20 mm
- › Field of View..... Near  $\pm 45^\circ$  40-70 m,  
Mid.  $\pm 9^\circ$  120 m,  
Far  $\pm 4^\circ$  150 m
- › Resolution:..... 0,5 m / 0,43 kph
- › Accuracy:.....  $\pm 0,13$  m /  $\pm 0,1$  kph
- › Operation Frequent:..... 74 GHz
- › Temperature Range:..... -40°C up to 85°C

## Blind Spot Detection (BSD)



Failing to see a car approaching rapidly from behind in the left-hand lane or in the blind spot next to a customer's vehicle can happen easily. The Blind Spot Detection system can monitor these areas and take much of the strain off the driver to avoid hazardous situations. Sensors monitor the road area behind and next to the vehicle and warn if there is an attempt to pull out despite there being no gap.

### Features & Benefits

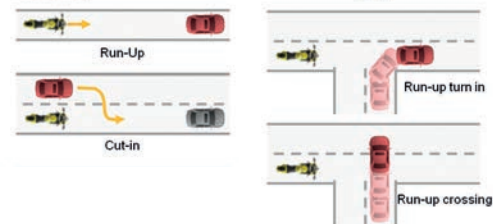
- › Increase safety during lane changes
- › Alert of driver to the presence of relevant objects
- › Optical (e.g. in the side mirrors) and/or haptic warning
- › No inattention by long turn of the head to see the vehicles in the blind spot

### Technical Information

- › Short Range Radar Sensor (SRRxx) for monitoring the traffic behind and in the blind spot
- › Realizes high spatial resolution in a narrow bandwidth
- › Distinguishes easily between static and moving objects

## Emergency Brake Assist (EBA)

### Use Cases:



The Emergency Brake Assist system is meant to avoid accidents by means of rider visual/audible alert, autonomous partial and full braking. The EBA function cascades the different warning and braking stages as well as the different levels of deceleration.

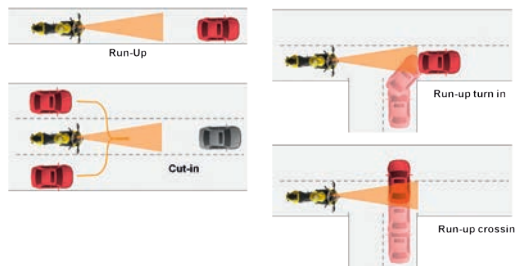
### Features & Benefits

- › This function is meant to reduce most of the accidents happening due to the rider lack of awareness of a hazardous situation such as approaching vehicles with high relative speed. This often occurs if the driver of the object vehicle fails to give way.

### Technical Information

- › Warning only (Forward Collision Warning - FCW)
- › Autonomous partial braking (5 m/s<sup>2</sup>)
- › Autonomous full braking with limited speed reduction

## Forward Collision Warning (FCW)



The Forward Collision Warning system is meant to avoid accidents caused by inattentive driver by means of optical and haptic alerts. Forward facing Long Range Radar or Camera detect, classify and position preceding traffic. Path prediction and warning modification based on lean angle. This function is meant to reduce most of the accidents happening due to the driver lack of awareness of a hazardous situation such as approaching vehicles with high relative speed or deceleration.

### Features & Benefits

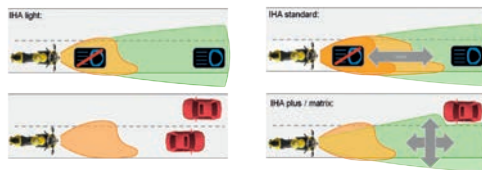
- › Increases safety significantly at risk by driver inattentiveness
- › Alert of driver of an impending collision
- › Optical and/or haptic warning

### Technical Information

- › Multi Function Camera and/or Long Range Radar for monitoring the preceding traffic

## Head Light Assist (HLA)

### Variants:



Optimal vision is essential at night, when the risk of an accident is twice as great as the risk while driving during the day. Head Light Assist (HLA) enables better vision at night. Delegate the constant tedious task of changing from high to low beam to your "electronic co-pilot". The system monitors oncoming vehicles and those traveling ahead of the driver's vehicle, ensuring that the headlamps are set to provide optimum lighting in any situation.

### Features & Benefits

- › More comfortable, safer driving thanks to better vision
- › Improved visibility without blinding encountering traffic
- › Adaptive environment modelling for optimized lighting

### Technical Information

- › HLA light: Automatically switches high-beam on and off
- › HLA standard: Additionally provides automatic adaption of low-beam lighting distance.
- › HLA plus/matrix: Glare-free high-beam with 1 to 5 cut-off regions for maximum visibility of environment.



## Multi Function Mono Camera - MFC4xx



MFC4xx is a Mono Function Camera for premium applications. Supports EuroNCAP 2018 use cases and provides object lists for radar fusion.

### Features & Benefits

- › Traffic Sign Assist (TSA)
- › Head Light Assist (HLA)
- › Forward Collision Warning (FCW)
- › Lane/Road Detection
- › Lane/Road Departure Warning/Protection
- › Lane/Road Keeping Assist

### Technical Information

- › Weight: ..... > 200 g
- › Dimensions: ..... 67x86x31.5 mm
- › Field of View: ..... horizontal 46°, vertical 29°
- › Resolution: ..... 22 px/p°
- › Temperature Range: ..... -40°C up to 85°C

## Short Range Radar - SRR3xx



The 3rd generation of the Short Range Radar sensor helps drivers to detect and avoid dangerous situations in the vehicle's immediate surroundings by warning the driver of relevant objects within the detection zone. Enabling a more relaxed driving and a significantly reduce of the driver's workload as well as safer lane changes and overtaking.

### Features & Benefits

- › Blind Spot Detection (BSD)
- › Lane Change Assist (LCA)

### Technical Information

- › Weight: ..... 141 g
- › Dimensions: ..... 86x106x26.5 mm
- › Field of View: ..... Near  $\pm 75^\circ$  30 m,  
Mid  $\pm 75^\circ$  60 m,  
Far  $\pm 50^\circ$  95 m
- › Resolution: ..... 1 m/1,2 kph
- › Accuracy: .....  $\pm 0,2$  m/ $\pm 0,2$  kph
- › Temperature Range: ..... -40°C up to 85°C

## Traffic Sign Assist (TSA)



The Traffic Sign Assist offers functions based on traffic sign detection and interpretation. Existing functions are:

- Speed Limit Assist (SLA): Detection of implicit and explicit speed limitation signs to inform the driver about the maximum allowable velocity;
- No-Passing Assist (NPA): Determination of no-passing regulations;
- Wrong Way Assist (WWA): Warning the driver when driving on the wrong side.

### Features & Benefits

- › Relief of strain through “memory function”
- › Prevention of non-deliberate violations of the maximum speed and no-passing regulation (safety gain, speeding tickets, driving bans)
- › Increased safety gain through warning in potentially dangerous situations

### Technical Information

- › Multi Function Mono Camera (MFC4xx)
- › With and without digital map input (eHorizon)
- › All main markets covered (Europe, Asia, North America)

## MiniMAB – One Channel ABS for Motorcycles



The small and lightweight solution for scooters and small motorcycles. Easy packaging and adaptation to the vehicle, because only one wheel speed sensor is required. The system prevents the front wheel from locking up and helps the driver to keep the vehicle in a stable state.

### Features & Benefits

- › Minimized box volume
- › Low weight ABS functionality at the front wheel
- › Mechanical drum brake on rear wheel possible
- › Motor driven pump enables unlimited ABS function
- › Second wheel speed sensor optional for improved functions. (Option)
- › Designed to meet ECE R78

### Technical Information

- › Box volume: ..... 285 cm<sup>3</sup>
- › Weight: ..... 420 g

## MK 100® MAB – Anti-lock Brake System



The two-channel ABS MK 100® Lock Brake System provides improved brake control and thus more driving safety through an optimized deceleration.

### Features & Benefits

- › Anti-lock brake function for the front wheel and rear wheel
- › Rear wheel lift-off protection for optimum deceleration and stability (RLP) (Option)
- › Different ABS settings for maximum riding pleasure. E.g.: Sport ABS for race track or off-road ABS for off-road driving. (Option)
- › Pressure sensor (optional) for improved functions and pressure control
- › Optimized Curve Braking (OCB) for increased stability when braking in turns (option)

### Technical Information

- › Box volume: ..... 452 ccm
- › Weight: ..... 620 g

## MK 100® MIB – Motorcycle Integral Anti-lock Brake



With the Motorcycle Integral Brake System (MIB) the brake can be applied to both wheels even though the driver only presses the front wheel brake lever. The system recognizes the driver's desire to brake and builds up active pressure at the rear wheel, thus decelerating both wheels.

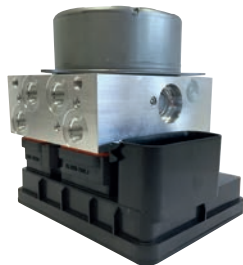
### Features & Benefits

- › ABS function combined with controlled brake force distribution to both wheels for optimum deceleration
- › Enhanced rear wheel lift-off detection
- › Optimized Curve Braking (OCB) for increased stability, when braking in turns
- › Hill Holding function provides comfortable stand still and drive-off maneuvers. (Option)

### Technical Information

- › Box volume: ..... 1.250 ccm
- › Weight: ..... 1.640 g
- › 4 pressure sensors

## MK 100® MIB-EVO – Motorcycle Integral Anti-lock Brake



Our next generation of integral brake system keeps the high functional level occupying 30% less volumen and weighting 30% less as MK 100® MIB. Optionally, sensor elements are integrated for new functions like OCB, head light control and many other functions.

### Features & Benefits

- › Anti-lock function combined with controlled brake force distribution to both wheels for optimum deceleration
- › Enhanced lift-off detection for the rear wheel
- › Active pressure build enables Hill Holding function (Option)

### Technical Information

- › Box volume: ..... 800 ccm (approximation)
- › Weight: ..... 1.100 g (approximation)
- › 4 pressure sensors, Optional: 3 acceleration and turn rate sensors

## Sensorbox



The Motorcycle Sensorbox comprises a modular concept up to six degrees of freedom (6DoF). And optionally the population of a crash detection sensor is possible. Based on the sensor signals and motorcycle specific characteristics the roll angle of a motorcycle is calculated. The pitch angle can be calculated optionally.

### Features & Benefits

- › Real 6DoF measurement unit
- › Yaw, roll & pitch rate sensing
- › Lateral, longitudinal and vertical acceleration recognition
- › Crash detection (optional)
- › Roll angle calculation
- › Pitch angle calculation (optional)

### Technical Information

- › Sensing Range: ..... Yaw/Roll/Pitch Rate  $\pm 300^\circ/s$
- › Sensing Range: ..... Acceleration (x/y/z)  $\pm 59 m/s^2$
- › Mounting Footprint: ..... 62 mm
- › Dimension (l/w/h): ..... 55x45x20 mm

## Wheel Speed Sensors



The control systems for ABS, TCS and ESC determine the wheel speed based on signals supplied by the wheel speed sensors. This information is used to prevent the wheels from locking or spinning, taking appropriate control action to maintain the vehicle's stability and steering responses.

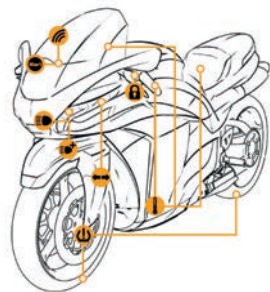
### Features & Benefits









- › Measurement of rotational speed
- › Large air-gap capability
- › True Zero Speed
- › High temperature resistance
- › Available for magnetized and ferromagnetic encoders
- › Available in Hall- or MR-technology

### Technical Information

- › Large speed range up to 360 km/h
- › Large air-gap range up to 4.5 mm
- › Standardized 2 level current output (7 mA/ 14 mA)
- › Temperature range from -40°C up to 150°C
- › Self diagnosis

## Body Control Unit



-  PASE (Authentication)
-  Engine Start/Stop
-  Immobilizer/Central Locking
-  Headlamp Control
-  Advanced Light Management
-  Turn Indicators
-  Heating Management
-  Tire Pressure Monitoring System

Advanced System Control Technology for Motorcycles. Central control unit with multiple functions, though extremely compact, yet capable of controlling numerous functional systems. This purpose-designed BCU is, of course, fully waterproofed for trouble-free, all-weather performance in the exposed environment of a motorcycle.

## Universal Body Control Module



The small and lightweight body controller solution for all types of motorbikes. This platform approach ensures fast integration and highest quality.

### Features & Benefits

- › Ruggedized, water-proof device (IP 69K)
- › Control for all driving lights (low/high beam, daytime running light, position light)
- › Blinker & hazard lights
- › Horn
- › Display control
- › Handle heating
- › Tank level sensor
- › Odometer/trip
- › CAN interface
- › Supervision for all inputs/outputs

### Technical Information

- › Weight: ..... 266 g
- › Dimensions: ..... 140x150x35 mm

## Engineering Services



Do you manufacture prototype or small series motorcycles?  
Do you have special requirements in the areas of powertrain, chassis, safety or usability?

Founded in 2006, Continental Engineering Services (CES) has evolved into a leading engineering and production partner for the automotive and motorcycle industry. With areas of expertise in "Interior", "Powertrain" and "Chassis and Safety", CES can develop customised solutions for technologically challenging tasks. Or, on request, adapt proven mass production technologies, thus reducing the development costs for small series, niche, two-wheeled and special vehicles.

CES makes mobility user-friendly, drive-efficient, safe and comfortable.

### Area of Expertise "Powertrain":

- › Transmission and engine management
- › Electrification

### Area of Expertise "Interior":

- › Instrumentation, displays & human machine interface
- › Comfort electronics (e.g. Body Control Modules)
- › Multimedia
- › Connectivity

### Area of Expertise "Chassis & Safety":

- › Engineering for brakes and safety applications
- › Engineering for chassis applications
- › Driver assistance systems
- › Functional safety management

### Additional Services:

- › Systems engineering
- › Electric and electronic architecture
- › Telematics
- › Low volume component manufacture
- › Concept & feasibility studies
- › Software services
- › NVH services



## ContiAttack SM



New high performance street-legal supermoto tire.

### Features & Benefits

- › Extraordinary light handling with outstanding grip and curve stability
- › Exceptional control and optimal feedback in the limit range
- › 0° steel belt construction for high stability and direct feedback when braking into and accelerating out of curves
- › Proven MultiGrip technology ensures high mileage as well as maximum grip in extreme lean angles
- › TractionSkin ensures an extremely safe and short run-in time
- › Original equipment KTM 690 SMC R and Husqvarna 701 Supermoto

## ContiTrailAttack 2



Specially developed road-suitable enduro tires for big and powerful dual-sport motorcycles.

### Features & Benefits

- › Better grip even in the wet combined with excellent mileage on long trips, all thanks to innovative compounding technology
- › A stronger carcass along with a progressive tread pattern design on the front wheel ensures increased precision and optimized wear behavior
- › TractionSkin ensures extremely safe and short run-in time
- › A 0° steel belted construction on the rear wheel for enhanced stability and comfort even at high speeds and with large payloads
- › Original equipment KTM 1290 Super Adventure R



---

## TKC 80



---

Well-trieed multi-use tire for both street and dirt.

### Features & Benefits

- › Proven and tested for adventure trips and competition
- › Self-cleaning tread pattern
- › High levels of side stability on soft surfaces
- › Very good on-road handling and mileage
- › Original equipment BMW R 1200 GS Adventure, F 800 GS Adventure, KTM 1090 Adventure R, KTM 1290 Super Adventure R and Husqvarna 701 Enduro

## Efficient Mobility



## Customized Fuel Delivery Module



For 1 or multiple cylinder, 2 and 4 stroke engines in all types of non-automotive applications.

### Features & Benefits

- › Metal and plastic flanges
- › Electrically conductive plastics
- › Fuel level sending units and low level switches
- › Integrated jet pump pulls fuel from hard-to-reach areas
- › Customized fuel line and electrical connector

### Technical Information

- › Designed and validated to customer specific requirements
- › Can provide simple assembly as "pump-on-a-stick"

## Customized Fuel Rail Assembly



For 1 or multiple cylinder, 2 and 4 stroke engines in all types of non-automotive applications.

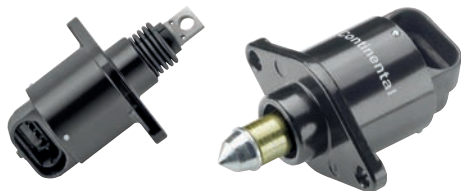
### Features & Benefits

- › Fully customized designs to meet any application requirements
- › Possible to integrate pressure sensors, diagnostic ports, pressure regulators or pulsation dampers
- › Plastic, brazed assemblies, extruded aluminum, forged aluminum designs
- › Validated automotive components
- › Materials meet J1645 ESD requirements
- › 100% leak tests all fuel rail assemblies in the factory
- › Assemblies with integrated sensors, hoses, dampers and regulators

### Technical Information

- › Designed and validated to customer specific requirements

## Digital Linear Actuator - Standard Size Gen I



Accurate and precise gas/air flow. Linear position control against external load.

### Features & Benefits

- › Accurate and stable idle air control
- › Various gas (air) flow curve can be achieved
- › High accuracy under severe conditions
- › Proven reliability and long durability
- › High resolution linear positioning against load

### Technical Information

- › Operating Voltage: ..... 12V (7.5V-14V)
- › Resistance per winding: ..... 53  $\Omega$
- › Linear resolution: ..... 0,042 mm/full step
- › Total travel (typical): ..... 8,5 mm (204 steps)
- › Operating temperature: ..... -40°C up to 125°C
- › Vibration capability: ..... up to 40 G
- › Life time durability: ..... 500 hours
- › Weight: ..... ~110 g

## Digital Linear Actuator - Standard Size Gen V



Accurate and precise gas/air flow. Linear position control against external load.

### Features & Benefits

- › Accurate and stable idle air control
- › Various gas (air) flow curve can be achieved
- › High accuracy under severe conditions
- › Proven reliability and long durability
- › Plastic sleeve gives lighter weight
- › High resolution linear positioning against load
- › Two packagings for different integration options

### Technical Information

- › Operating Voltage: ..... 12 V (7.5 V - 14 V)
- › Linear resolution: ..... 0.042 mm/full step
- › Total travel (typical): ..... 8.5 mm (204 steps)
- › Vibration capability: ..... up to 35 G
- › Life time durability: ..... up to 1000 hours
- › Weight: ..... 45-53 g

## Digital Linear Actuator – Compact Size Gen VII



Idle Airflow control for 2-Wheeler and small engines.

### Features & Benefits

- › Accurate and stable idle air control
- › Various gas (air) flow curve can be achieved
- › Light weighted and small sized robust design
- › Dedicated for 2W & Small Engine application
- › High resolution linear positioning against load
- › Two packagings for different integration options

### Technical Information

- › Operating Voltage: ..... 7.5V-14V
- › Resistance per winding:.... 53  $\Omega$
- › Resolution:..... 0.042 mm/step  
(full step mode)
- › Total travel (typical):..... 8.5 mm (204 steps)
- › Operating temp.:..... -30°C up to 110°C
- › Airflow control:..... up to 41.8 kg/hr  
@  $\Delta P=600$  hPa
- › Weight:..... 27-40 g

## Gasoline Deka 7 Port Fuel Injector



Port Fuel Injection (PFI) injector with unique flexibility body, tip and spray configurations.

### Features & Benefits

- › Various spray options and packaging configurations
- › Low minimum fueling with high linear performance and low voltage sensitivity
- › Improved leakage capabilities and extended operating pressures

### Technical Information

- › System pressure: ..... 1 to 6 bar
- › Static flow rate:..... per applic. 0.95 up to 6.0 g/s
- › SMD size:..... -50  $\mu$ m (depending on static flow and fuel pressure)
- › Opening time:..... < 1.10 ms
- › Closing time: ..... < 0.70 ms
- › Min. linear pulse:..... 1 up to 20 ms
- › Possible spray pattern:.. cone, bent and split spray
- › Fuel compatibility:..... gasoline and flex fuel

## Gasoline Deka 10 Port Fuel Injector



Features high flow range and reduced packaging for 2/3-wheeler business.

### Features & Benefits

- › High packaging flexibility (reduced size for non-automotive)
- › Increased flow range for T/C engines and 2/3-wheeler
- › Improved leakage capabilities to fulfill legislations
- › Extended operating pressures
- › Enhanced spray quality

### Technical Information

- › Pressure: ..... 4 bar (Range: 2 bar-12 bar)
- › Static flow rate: ..... 0.50 g/s to 8.0 g/s
- › Linear flow range: ..... 15:1 (SAE)
- › Tip leakage: .....  $\leq 1.0 \mu\text{l}/\text{min}$  (@380 kPa)
- › Spray atomization: .....  $\geq 40 \mu\text{m}$  SMD (depending on static flow and fuel pressure)
- › Spray patterns: ..... cone, bent and split
- › Major diameter: ..... 12.5 mm and 15 mm
- › Fuel compatibility: ..... E0 to E100/M0 to M15

## Ignition Coil



For mopeds, scooters, light motorcycles, lawn mowers, electric power generators.

### Features & Benefits

- › Small sized inductive coil
- › High voltage diode integrated
- › Standard high voltage connector
- › Standard primary connector

### Technical Information

- › Nominal voltage supply: ..... 14 V + 0.5 V
- › Maximum primary current: ..... 3.3 A
- › Dwell time: ..... < 6 ms
- › Arc duration (1,000 V Zener): ..... 0.5+0.2 ms
- › Recommended cable size (mm<sup>2</sup>): ..... 2.0-2.5
- › Recommended cable overall diameter (mm<sup>2</sup>): ..... 2.5-3.5

## Knock Sensor - M6 Small Design



Measures structural vibrations in the internal combustion engine to continuously adjust ignition parameters.

### Features & Benefits

- › Optimization of ignition timing for maximum efficiency
- › High sensitivity
- › Small design with M6 bolt for space and weight savings
- › Increase engine power and decrease fuel consumption
- › Fits for automotive, two wheelers and others

### Technical Information

- › Acceleration sensor based on piezo ceramic technology
- › With a range of:..... 0 up to 400 g
- › Frequency range:..... 3 up to 25 kHz
- › Possible integration of discharge resistor
- › Glue and nut designs available
- › Compatible with current ECU designs

## M3A Air Module Engine Control Unit



For 1 cylinder, 2 and 4 stroke engines from 50 cc up to 250 cc in light motorcycles, scooters, lawn mowers, generator sets.

### Features & Benefits

- › ECU with integrated throttle body ABV and sensors
- › Uses Continental electronic and mechanical designs
- › Easy mounting
- › Throttle body size:  $\varnothing 16$  up to 34 mm
- › Versatile configuration, exists in standalone ECU

### Technical Information

- › ABV, TPS and TMAP sensor integrated
- › 16 bit microcontroller at 16 MHz
- › 128 KB ROM (flash), 4 KB RAM
- › IP66 and IP6K9K (high pressure cleaning)
- › Input and output with full diagnostics and protection
- › Operating temperature range:  $-20^{\circ}\text{C}$  up to  $85^{\circ}\text{C}$
- › 32 pin connector with spares for vehicle functions
- › K-Line interface for diagnostics and reprogramming

## M3B Air Module Engine Control Unit



For 1 and 2 cylinder, 2 and 4 stroke engines up to 1,000 cc in motorcycles, scooters, lawn mowers, generator sets.

### Features & Benefits

- › ECU with integr. electronic throttle body and sensors
- › Uses Continental electronic and mechanical designs
- › Easy mounting
- › Different size of throttle body: Ø26 up to 50 mm
- › Versatile configuration

### Technical Information

- › TMAP sensor and ETC controller, monitoring unit integrated
- › 32 bit microcontroller at 40 MHz
- › 1 MB ROM (flash), 36 KB RAM
- › IP67 and IP6K9K (high pressure cleaning)
- › Input and output with full diagnostics and protection
- › Operating temperature range: -40°C up to 85°C
- › 32 pin connector with spares for vehicle functions
- › CAN interface for diagnostic and reprogramming

## M3C Engine Control Unit



For 1 and 2 cylinder, 2 and 4 stroke engines up to 1,000 cc in medium to high end motorcycles, scooters, ATV and snowmobiles.

### Features & Benefits

- › Uses Continental electronic and mechanical designs
- › Extended I/O for improved functionality
- › Enhanced timer module and control capability
- › Robust mechanics with aluminum casing

### Technical Information

- › 16 bit microcontroller at 16 MHz
- › 256 KB ROM (flash), 16 KB RAM
- › IP67 and IP6K9K (high pressure cleaning)
- › Two knock sensor inputs
- › Input and output with full diagnostics and protection
- › Operating temperature range: -40°C up to 85°C
- › 48 pin connector with spares for extended functions
- › CAN interface for diagnostics and reprogramming



## M3D Ride by Wire Engine Control Unit



For 1 up to 4 cylinder, 2 and 4 stroke engines up to 1,600 cc in high end motorcycles, scooters, ATV, snowmobiles.

### Features & Benefits

- › Uses Continental electronic and mechanical designs
- › Drives mechanical or electrical throttle body
- › Modular and scalable system approach
- › Designed to meet Euro 5 with EOBD

### Technical Information

- › 32 bit microcontroller at 40 MHz
- › 896 KB ROM (flash), 2 KB E2PROM and 32 KB RAM
- › IP67 and IP6K9K (high pressure cleaning)
- › Separate safety monitoring unit for ETC system
- › Input and output with full diagnostics and protection
- › Operating temperature range: -40°C up to 85°C
- › Double pocket 96 (32+64) pins CMC connector
- › CAN interface for diagnostics and reprogramming

## M4D Ride By Wire Engine Control Unit



For 1 up to 4 cylinder, 2 and 4 stroke engines running up to 16,000 rpm in high end motorcycles, scooters, ATV, snowmobiles and marine applications.

### Features & Benefits

- › Uses Continental electronic and mechanical designs
- › Drives simultaneously up to 2 individual electrical throttle bodies and 2 DC-motor actuators
- › Direct-drives up to 4 ignition coils (smart coils optional)
- › Designed to meet Euro 5 with EOBD
- › ISO-26262 compliant

### Technical Information

- › 32 bit microcontroller at 120 MHz, 2 MB Flash
- › IP67 and IP6K9K (high pressure cleaning)
- › Separate safety monitoring unit for ETC system
- › Operating temperature range: -40°C up to +85°C
- › Single pocket 120-pins CMX connector
- › Dual CAN and LIN interfaces
- › 2 knock inputs, 2-linear and 2-binary O<sub>2</sub>-sensors

## M4L Air Module Engine Control Unit



For 1 cylinder, 4 stroke engines from 50 cc up to 250 cc in light motorcycles and scooters.

### Features & Benefits

- › ECU with integrated throttle body and sensors
- › Uses Continental electronics and technologies
- › Very compact size and easy mounting
- › Versatile configuration: connector position, engine mounting interface, accelerator cable etc
- › EURO 5, China stage 4, Bharat stage 6, OBDII

### Technical Information

- › Throttle body size from  $\varnothing$  16 mm up to 32 mm
- › Integrated Throttle Position Sensor, Temperature Manifold Air Pressure and Idle Speed Stepper
- › 32 bit microcontroller at 32 MHz, 256 KB Flash
- › IP66 and IP6K9K (high pressure cleaning)
- › Operating temperature range:  $-20^{\circ}\text{C}$  up to  $+85^{\circ}\text{C}$
- › 18 pin connector with spares for vehicle functions

## METALIT<sup>®</sup> Catalytic Converter Substrate - LS-Design<sup>®</sup>



Metal substrate for catalytic converter.

### Features & Benefits

- › Further increased catalytic efficiency compared to standard structure, TS structure and ceramic substrates due to turbulence generating secondary corrugation
- › Significant performance improvement - alternative to higher cell density
- › Less material, improved light-off-performance, cost-effective
- › Backpressure advantage
- › Smaller package space

### Technical Information

- › Metal substrate to be coated with various catalyst formulations for combustion engine exhaust emission control
- › Application as three-way catalyst for gasoline engines as well as DOC, NOx-adsorber and SCR catalyst for diesel engines
- › Cell density from 100/200 cpsi up to 400/800 cpsi

## METALIT® Catalytic Converter Substrate - Standard



Metal substrate for catalytic converter.

### Features & Benefits

- › Larger geometric surface area than ceramic substrates
- › Improved cold-start performance
- › Lower backpressure
- › Smaller package space

### Technical Information

- › Metal substrate to be coated with various catalyst formulations for combustion engine exhaust emission control
- › Application as three-way catalyst for gasoline engines as well as DOC, NO<sub>x</sub>-adsorber and SCR catalyst for diesel engines
- › Cell density from 50 cpsi up to 1600 cpsi
- › Foil thickness 25 up to 110 μm (1 up to 4,3 mil)

## METALIT® Catalytic Converter Substrate - TS-Design®



Metal substrate for catalytic converter.

### Features & Benefits

- › Increased catalytic efficiency compared to standard structure and ceramic substrates
- › Alternative to higher cell density: less material, cost-effective
- › Backpressure advantage
- › Smaller package space

### Technical Information

- › Metal substrate to be coated with various catalyst formulations for combustion engine exhaust emission control
- › Application as three-way catalyst for gasoline engines as well as DOC, NO<sub>x</sub>-adsorber and SCR catalyst for diesel engines
- › Improved conversion performance by transversal structure corrugation ("TS")
- › Cell density from 100 cpsi up to 500 cpsi
- › Foil thickness 40 up to 110 μm (1,6 up to 4,3 mil)

## Oxygen Sensor



For 1 or multiple cylinder, 2 and 4 stroke engines in all types of non-automotive applications.

### Features & Benefits

- › Specifically developed for 2 wheeler environments
- › A hermetic structure which uses injection current pumping method against water splash
- › Resistant to water droplets
- › Vibration resistance

### Technical Information

- › Lead wire: ..... 4 wire
- › Cable length: ..... 500 mm
- › Body length: ..... 35 mm
- › Thread size: ..... M12
- › Reference air: ..... self pumping
- › Heater resistance: ..... 8.1 ohm

## Pressure Sensor - Manifold Absolute



Direct measurement of pressure in manifold.

### Features & Benefits

- › Flexible calibration of transfer functions
- › High accuracy and temperature stability
- › Low cost design and high quality
- › Fulfills toughest EMC requirements
- › Flexible housing, connector and mounting design

### Technical Information

- › Pressure range: ..... 40 up to 120 kPa (for BAP)
- › Pressure range: ..... 7 up to 500 kPa  
(for MAP and Turbo MAP)
- › Accuracy: ..... 1% full scale (10°C up to 85°C)
- › Temp. range: ..... -40°C up to 140°C
- › Output signal: ..... Analog or SENT

## Pressure Sensor - Manifold Absolute and Temperature



MAP with integrated Temperature Sensor directly measures the pressure and temperature in the manifold.

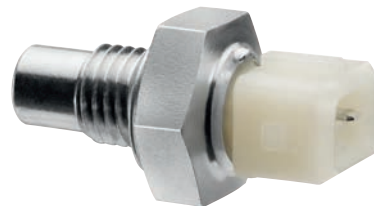
### Features & Benefits

- › Flexible calibration of transfer functions
- › High accuracy and temperature stability
- › Low cost design and high quality
- › Fulfills toughest EMC requirements
- › Flexible housing, connector and mounting design
- › Temperature Sensors with different characteristics available

### Technical Information

- › Pressure range: ..... 40 up to 120 kPa (for TBAP)
- › Pressure range: ..... 7 up to 500 kPa  
(for TMAP and TurboTMAP)
- › Accuracy: ..... 1% full scale (10°C up to 85°C)
- › Temp. range: ..... -40°C up to 140°C
- › Output signal: ..... Analog or SENT

## Temperature Sensor - Coolant



Temperature sensor is used in the water cooled motorcycle engines to record the temperature of cooling water and forward the measurement result to ECU.

### Features & Benefits

- › PINs Au or Sn plated
- › Steel body
- › Long term stability
- › Robust design
- › Fast response time
- › Small design

### Technical Information

- › PINs: ..... Au plated
- › Operating temperature: ..... -40°C up to 130°C
- › Accuracy: ..... -40°C up to 90°C: +/-<2°C
- › Accuracy: ..... 90°C up to 130°C: +/-<3°C
- › Response time: ..... <10 s

## Throttle Control - Customized Electronic



For high-end motorcycles, scooters, ATV, snowmobiles.  
Compatible with M3D ECU or other ride by wire ECU.

### Features & Benefits

- › Core components from existing ETC
- › Contactless redundant magneto resistive sensor
- › Master-slave concept based on automotive safety
- › Air channels designed to customer requirements
- › Integration with fuel injector is optional

### Technical Information

- › Minimum idle flow at 40 kPa  $\Delta P$ :... 2 kg / h
- › Single Throttle Position Sensor (TPS) linearity:.....  $\pm 1.5\%$
- › TPS synchronous tolerance:.....  $\pm 3\%$
- › TPS hysteresis:.....  $<0.1^\circ$
- › Response time of single throttle:.....  $<90$  ms (at  $25^\circ\text{C}$ )
- › E-motor nominal supply voltage:... 12 V
- › Vibration level:..... 30 g
- › Operating temperature range:.....  $-40^\circ\text{C}$  up to  $140^\circ\text{C}$

## Throttle Control - Electronic



Torque/load control on gasoline combustion engines.  
Supports idle speed, cruise and traction control.

### Features & Benefits

- › High performance throttle body actuator for gasoline combustion engines
- › High torque, fast response
- › Low weight, very small package
- › Capable for turbo and supercharged applications
- › Optional capable for high temperature applications
- › Very good EMC performance

### Technical Information

- › Temperature range:.....  $-40^\circ\text{C}$  up to  $140^\circ\text{C}/180^\circ\text{C}$
- › Response time (typ.):... 90 ms (13.5 V, RT)
- › Pressure range:..... up to 3 bar peak
- › Leakage (at stop):.....  $<1.7$  kg/h (52 mm)
- › TP diameter range:..... 40 mm up to 95 mm
- › Weight:..... 490 g (TP 48 mm)
- › Analog or digital (SENT) position feedback

## Throttle Body Module - Mechanical



For medium and high end motorcycles, scooters, ATV and snowmobiles. Suitable for off- and on-road applications.

### Features & Benefits

- › Integrated stepper motor, DLA (for IACV), TMAP sensor and injector
- › Bore diameter from Ø36 up to 50 mm
- › Flexible quadrant geometry and cable interface
- › Short bore length of 82 mm
- › Integration with fuel injector is optional

### Technical Information

- › Minimum idle flow at 40 kPa  $\Delta P$ :... 2 kg/h
- › TPS linearity:..... +/- 2%
- › Bypass flow: ..... up to 50 kg/hr
- › Load exerted on cable at idle:..... 6N
- › Vibration level: ..... 30 g
- › Tamper proof adjusting screw for idle air flow
- › Possibility to connect canister purge
- › Operating temperature range:.....-30°C up to 110°C

## Transmission Control Unit



The external TCU for automated manual (AMT) or double clutch transmissions (DCT) for motorcycle applications is a compact and rugged unit. It includes sophisticated electronic components for controlling clutches as well as gear shift actuators of automatic transmissions.

### Features & Benefits

- › Compact TCU for motorcycle transmissions
- › Closed loop pressure control for hydraulic clutch actuation
- › Integrated BLDC motor control for gear shift actuation
- › Full application software for AMT or DCT control functionality

### Technical Information

- › Substrate technology:..... PCB / HDI-PCB
- › Operation Temperature:.....-40°C to 105°C
- › Sensors: no sensors attached to TCU
- › Actuators: control of 10 PWM proportional controlled solenoids
- › Sealed housing IP67

## Transmission Smart Actuator Platform



The Smart Actuator Platform (SmAP) is a modular actuation platform for peripheral devices for transmissions. Based on application the actuators, BLDC motors and the housing can be selected in order to fulfill the requirements.

### Features & Benefits

- › Smart actuator including control module
- › Actuator can be an oil pump or a mechanical clutch or gear shift actuator
- › Scalable to customer requirements
- › Up to ASIL C possible

### Technical Information

- › Voltage rating: ..... 4.5 to 28 V
- Power BLDC motor: ..... 80 to 500 W
- Max. torque BLDC motor: ..... 2.5 Nm
- Operation Temperature: ..... -40°C to 140°C
- Sensors: ..... sensor or  
sensorless control

## Cooling Water Hoses



ContiTech offers customers especially cost-effective complete solutions with a large range of existing standard components for combustion engines and electric drives.

### Features & Benefits

- › Cooling water hoses in EPDM or TPV materials
- › Thermofixed plastic tubes in smooth and /or corrugated finishes with monolayer or multilayer design
- › Quick connectors made of plastic and metal for fast fitting (e.g. VDA coupling), steel tubes, aluminum tubes, t- and y-pieces, pre-positioned clamps etc.

### Technical Information

- › Hose and tube variants for a temperature range from - 40°C up to 180°C



## Fuel Lines



Fuel Lines with a broad temperature range for extremely high-power engines.

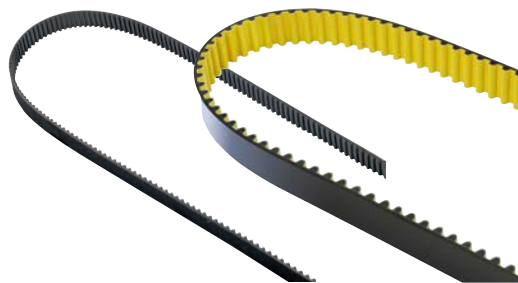
### Features & Benefits

- › Special inner linings with high resistance to aggressive fuels, resistant to RME, with very low fuel permeation
- › Hose assemblies comprising elastomer hoses, thermoplastic mono- or multilayer tubes in association with branched fittings and various coupling systems
- › Withstand defined fitting and removal forces

### Technical Information

- › Elastomer hoses with a temperature range from -40°C up to 175°C
- › Sold by the meter or as molded hoses
- › Thermofixed thermoplastic monolayer tubes; temperature-resistant to 160°C briefly
- › Thermofixed thermoplastic multilayer tubes with up to three layers
- › Additional safety thanks to flame retardance

## Heavy-duty Timing Belts



EFFICIENT  
MOBILITY

Heavy-duty Rubber and Polyurethane Timing Belts for motorcycles ensure reliable transfer of power from the transmission to the rear wheel.

### Features & Benefits

- › No re-tensioning necessary
- › Oil-free
- › Especially reliable in tight spaces
- › Withstand high forces

### Technical Information

- › High tensile strength
- › Made of rubber or polyurethane
- › Heavy-duty design
- › Tensile members of highly stressable glass cord or carbon

## Oil Lines



Oil Lines, e.g. for engine cooling/lubrication.

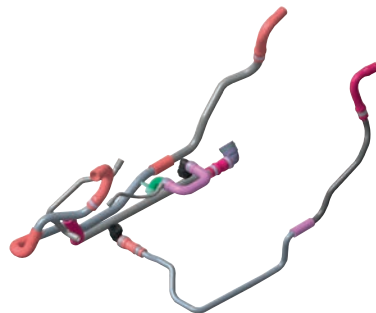
### Features & Benefits

- › Lines with high-temperature-resistant oil hoses to 15 bar
- › Sold by the meter or as molded hoses
- › Hose assemblies comprising stainless-steel tubes sheathed in Teflon corrugated tubing, polyester or fiberglass braid and stainless-steel outer braiding
- › Rigid tubes with movable rings allow tolerance compensation
- › Stainless-steel corrugated tubes for temperature requirements to 400°C

### Technical Information

- › Pressure-resistant to 15 bar
- › Elastomer hoses for sustained temperatures of up to 190°C
- › Temperature-resistant to 230°C

## Tubes and Hoses for Electro Mobility



Cooling and Heating Hoses for Batterie, Electronic and e-Engine.

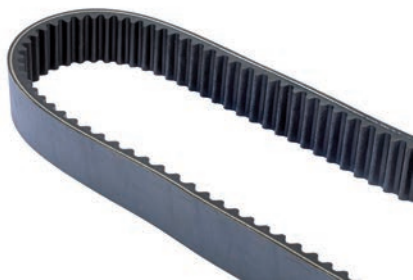
### Features & Benefits

- › Rubber/plastic tubes
- › Small diameter hoses/tubes
- › With or without quick coupling for rapid and safe fitting

### Technical Information

- › Elastomer hoses and thermofixed multilayer tubes for temperature range from -40°C up to 140°C

## Variable Speed Belts



ContiTech offers a heavy duty variable speed belt specially developed for the main drive on motor scooters.

### Features & Benefits

- › Maximum riding comfort without interruption of traction
- › Sporty driving style with acceleration-optimized strategy
- › Fuel economy and emission reduction thanks to increased efficiency

### Technical Information

- › Temperature resistance from  $-40^{\circ}\text{C}$  up to  $130^{\circ}\text{C}$
- › Heat resistant fiber-reinforced EPDM rubber compound
- › Polyester cord for dynamic load applications
- › Abrasion resistant due to new developed rubber compound

## Vent Hoses



Hoses and hose assemblies for venting fuel tanks, engine housings or crankcases.

### Features & Benefits

- › Special barrier layers with very high resistance to aggressive media, e.g. blowby gases/mixtures

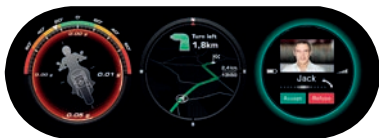
### Technical Information

- › High resistance to positive and negative pressure
- › High temperature resistance  $>220^{\circ}\text{C}$

## Intelligent Mobility



## Adaptable Instrument Cluster for 2 Wheelers



Continental Engineering Services provides a connected free programmable instrument cluster, which is especially designed for premium motorcycles and assures perfect functionality even under the harshest conditions. Next to the typical presented information, this instrument cluster offers a variety of extraordinary features for connecting your motorcycle in a smart way with the entire environment.

### Features & Benefits

- > Wide-view 10" IPS display with extremely powerful backlight
- > High-performance i.mx6 graphic processor
- > Individualization of different HMI styles
- > Accessibility through mobile devices via Bluetooth connection
- > Integrated updatable navigation system

## Cluster + Integrated Speed Sensor



The Cluster with integrated Speed Sensor is intended to give its customers an affordable technological advancement from a purely mechanical cluster to an electronic solution. Accurate and more reliable compared to the previous mechanical system.

## Connectivity Box



The connectivity module apart from facilitating typical automotive wireless functions like Keyless start, tire pressure monitoring, will also serve as a melting point of CE (Consumer electronics) world to the automotive world. Integration of wearable devices, smartphone and other devices enables seamless use cases for comfort and safety on the go.

## Electronic Instrument Cluster for 2W < 150cc



This electronic instrument cluster is a good solution for application in high volume and cost sensitive 2W markets, like in India or China.

## Electronic Instrument Cluster for 2W > 500cc



Electronic instrument cluster for European market.  
Complex design instrument with two LCD on different level.  
Compact and lightweight design.

## Full LCD Instrument Cluster



Full LCD Instrument Cluster for performance bikes.  
Segmented TN positive display. Blue or Red background  
illumination possible. Digital monitoring of all critical  
vehicle information.

## Multi Color Illumination Cluster



Segmented display with multi color background illumination. Display changes colour depending on the mode deployed. Digital monitoring of information.

## MultiViu® Sports5



The MultiViu® Sports5 is a technology-platform, where customer specific variants can be derived from. The functionalities, that can be supported are state of the art and optimized for the use in 2-Wheeler and other powersports environments. Ensuring Continental's high quality standard, the MultiViu® Sports 5 is using the proven KIBES®-32 toolchain in combination with a grADI programming for the graphical user interface. SOP depending on customer project schedule.



## Platform Instrument



Platform Instrument cluster for affordable markets. The SD1-2W design focuses on value and versatility. Monitoring of many parameters in a compact space. Variants available for both front mounting (Motorbike) and flush mounting (scooter).

eHorizon - providing predictive information of the road ahead to increase safety, eco-efficiency and comfort

Continental's eHorizon service for two-wheelers is a platform service which can deploy various use-cases that inter-connects motorcyclists and allows them share important predictive route information to increase their safety, improve eco-efficiency or enhance their riding pleasure. The platform ensures a cross-vehicle approach as it crowd-sources data from passenger vehicle sensorics for instance.

#### Use-Cases

- › Predictive Safety Information  
eHorizon notification about Dangerous Curves, Dangerous Road Sections, Slippery Road Conditions, Weather Information and other Road Hazards
- › Increased Eco-Efficiency  
Predictive road geometry information to optimize engine and battery management functions for electric motorcycles
- › Enhanced Riding Pleasure  
Customized route planning tailored to the needs of distinct motorcycle segments, such as road conditions, road geometry or accumulated rider segment behavior data



#### Features & Benefits

- › Cloud-based service provision of map and dynamic road event data
- › Collection and aggregation of accurate and up-to-date road information
- › Map matching of motorcycle sensor data
- › Community function, such as sharing important route information
- › Possibility for customization of eHorizon service applications

**Continental**   
The Future in Motion