

Faszination Innovation – Trends und Entwicklungen bei Chassis, Fahrwerk und Antrieb

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The Continental Corporation Division Structure

Continental Corporation Continental S Divisions				
TEMIC RIXENBERG	Continental Contin	Ceneral Tire Co		
	Sales (BN	€) 13.8 **		
	Employees	79,800 **		
			Database: 200	

** without Motorola Automotive Electronics



CAS Continental Automotive Systems Business Structure



Continental Engineering Services GmbH



A Day in a Life of CAS

57,000	EBS Systems per day
232,000	Wheel Speed Sensors per day
43,000	Airbag ECU and Sensors per day
151,000	Calipers per day
53,000	Brake Boosters per day
147,000	Brake Hoses per day
3,100	Transmission Control Units per day
12,900	Telematics Control Units per day
79,000	Body Electronic Modules per day
14,000	Engine Cooling Fans per day

Base 230 working days



Continental Automotive Systems OE Customers worldwide



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The Continental Vision in a Global Automotive Environment

Our Vision:	We make individual mobility safer and more comfortable. Creating value is our driving force
Our Way:	Generate customer benefit by cost attractive solutions at highest quality level

The Eight Automotive Market Needs

- Safe Driving
- Car Security
- Comfortable / Convenient Driving
- Environmentally Friendly Driving
- Driving Performance
- Low-Cost Cars / Affordable Cars
- Niche & Lifestyle Cars
- Intelligent Mobility



CAS Innovation Process

The institutionalized innovation process at CAS integrates strategic and technological aspects and leads to a stream of innovative products.





Market Needs & Technologies

The Eight Automotive Market Needs	CAS New Products (Selection)			
Safe Driving	EHC ESPII RWS CADS DDS+ APIA			
Car Security				
Comfortable / Convenient Driving	EPB EPA CADS EHC			
Environmentally Friendly Driving	Hybrid Drives RBS			
Driving Performance	RWS Hybrid Drives			
Low-Cost Cars / Affordable Cars	RBS Hybrid Drives			
Niche & Lifestyle Cars				
Intelligent Mobility	C2C, C2X			
RBSRegenerative Brake SystemEHCElectric Hydraulic Combi BrakeRWSRear Wheel SteeringDDS+Deflation Detection System PlusEPAEnhanced Parking AssistEHPElectro Hydraulic Parking Brake	ESPIIESP with active Steering InterventionCADSContinental Air Damping SystemEPBElectric Parking BrakeAPIAActive Passive Integration ApproachC2CCar to Car CommunicationC2XCar to X Communication			





- adds mileage by start/stop & regen braking *
- reduces emissions by start/stop & regen braking *
- adds engine torque by e-drive

* new brake system needed



Hybrid Drives System Roadmaps





RBS Regenerative Brake System System Layout





RBS Regenerative Brake System Components





EHC Electric Hydraulic Combi Brake The Premium Solution for Future Braking





Features

- outstanding NVH and pedal feel
- fuel saving by RA pad clearance control
- easy installation (plug & play)
- pad wear monitoring
- integrated Parking Brake function
- optimized brake-force distribution
- 12V technology



EPB Electric Parking Brake The Comfort Extension of Standard Brake Systems





CADS Continental Air Damping System The Premium Solution for Future Ride & Handling





Features:

- Integrated leveling control
- Matching suspension and damping to vehicle load
- Improvement of acoustics and vibration comfort
- Improved compromise between driving dynamics and comfort
- Environmentally friendly
- Lower cost air suspension



GCC Global Chassis Control Motivation

Global Chassis Control (GCC) targets, in the case of a given configuration of electronically controlled chassis-subsystems (ESP, CDC, EAS, EPAS, ESAS, 4WS, ARS, ...) under respective given driving conditions the global optimization of

- active safety
- driving comfort
- driving pleasure/fun

ESP Electronic Stability Program ARP Active Rollover Protection CDC Continuous Damping Control EAS Electronic Air Suspension EPAS Electric Power Assisted Steering ESAS Electric Steer Assisted Steering 4WS 4-Wheel Steering ARS Active Roll Stabilization



GCC Subsystem (Brake, Engine & Steering Control) ESP II – ESP with Integrated Front Steering Control





GCC Subsystem (Brake, Engine & Steering Control) ESP II – ESP with Integrated (Front) & Rear Steering Control



ESP Basic Features:

- Antilock Brake System ABS
- Traction Control System TCS
- Electronic Brake Force Distribution EBD
- Active Yaw Control AYC

Enhanced Features:

- broader and easier to control stability range
- reduction of braking distance and steering effort on µ-split surfaces
- RWS in counter-phase at lower speed for
 - more steering comfort & direct responsiveness
 - smaller turning circle
- RWS in phase at higher speed for
 - improved vehicle stability
- comfortable compensation of load alterations
- optimized Rollover- and Trailer-Stability



GCC Subsystem Rear Wheel Steering Actuator







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APIA Active Passive Integration Approach Active Safety to come





APIA Active Passive Integration Approach Crash Types, Safety Measures



Pre-Crash measures with headway sensors & telematics to close the Safety Gap!



APIA Active Passive Integration Approach Crash Probability Calculator





APIA Active Passive Integration Approach Advanced Brake Assist BA+





APIA Active Passive Integration Approach Front to Rear Crash Scenario





APIA Active Passive Integration Approach Lane Change Scenario





EPA Enhanced Parking Assist Steering Assist Utilizing CMOS Camera





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Assists

- while selecting the parking gap
- while parking by steering (optional by additional braking)

Features

- ► APIA_{side} integrated System
- Usage of CMOS camera for high measurement accuracy & fast processing
- Curb detection
- Gap evaluation & trajectory calculation supported by wheel speed sensor information
- Networked with EPAS* & ABS or ESP for automated steering into parking gap
- Brake intervention as option
- Independent of or integrated with ultrasonic PDC*
- * EPAS Electric Power Assisted Steering
- * PDC Park Distance Control



EPA Enhanced Parking Assist Steering Assist Utilizing Infrared Distance Sensor



Assists

- while selecting the parking gap
- while parking by steering (optional by additional braking)

Features

- Cost-attractive system
- Usage of Infrared sideway sensor for high measurement accuracy & fast processing
- Gap evaluation & trajectory calculation supported by wheel speed sensor information
- Networked with EPAS* & ABS or ESP for automated steering into parking gap
- Brake intervention as option
- Independent of or integrated with ultrasonic PDC*
- * EPAS Electric Power Assisted Steering
- * PDC Park Distance Control



Telematics Motivation (Examples)



<u>Safety</u>

- C2C, C2X
- eCall
- Remote local warnings

Comfort & Convenience

- Roadside assistance
- Remote diagnosis

Security

Tracing / tracking & recovery

C2C, C2X – Car to Car, Car to Infrastructure, ... Motivation (Examples)

Danger behind a curve

Bad visibility

Slippery road ahead

Roadworks ahead

