JACQUES ASCHENBROICH
CHAIRMAN AND CHIEF EXECUTIVE OFFICER
A NEW VALEO

MORE TECHNOLOGICAL
MORE INNOVATIVE
MORE DYNAMIC
MORE PROFITABLE
VALEO, A TECH COMPANY
WELL POSITIONED FOR THE 3 REVOLUTIONS OF THE AUTOMOTIVE INDUSTRY

FROM MECHANICS TO ELECTRONICS AND SOFTWARE
INNOVATION : OUR DNA

WORLDWIDE INNOVATION

17 R&D CENTERS**
35 DEVELOPMENT CENTERS**

GROWTH ENGINES*

TRADITIONAL PRODUCTS

2014

2020

Source: Valeo

* Strategic products and services that are positioned on growth markets or generate a significant increase in Group sales

** As at end-2015
WE ARE AHEAD OF THE PLAN ANNOUNCED IN MARCH 2015
ORDER INTAKE AT RECORD HIGH THANKS TO INNOVATION

* PRODUCTS AND TECHNOLOGIES IN SERIES PRODUCTION FOR LESS THAN THREE YEARS
(YEAR 2015)
FOCUS ON GROWTH AND PROFITABILITY

VALEO SALES
In €bn

- €9.6bn (2010)
- €14.5bn (2015)
- >€20bn (2020)

OEM

VALEO OPERATING MARGIN
IN % OF SALES

- 3.3% (2007)
- 6.4% (2010)
- 7.7% (2015)
- 8.0% (H1 2016)
- [8-9%] (2020)
4 BALANCED & COHERENT BUSINESS GROUPS

WITH LEADING MARKET POSITIONS AND GROWTH POTENTIAL
2015

€4.1 BILLION IN SALES
28% OF GROUP TOTAL
10.7% EBITDA
24% OF GROUP TOTAL
20,100 EMPLOYEES
48 PRODUCTION SITES

2020

> €5.0 BILLION IN SALES*
~12.5% EBITDA*

We are ahead of the plan

*PRESENTED AT OUR INVESTOR DAY HELD IN LONDON IN MARCH 2015
GROWTH WILL BE FUELED BY ELECTRIFICATION

<table>
<thead>
<tr>
<th>THERMAL SYSTEMS CONTENT</th>
<th>PER CAR SEGMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICE</td>
<td>100</td>
</tr>
<tr>
<td>High performance ICE</td>
<td>120</td>
</tr>
<tr>
<td>PHEV BEV</td>
<td>150</td>
</tr>
<tr>
<td>Fuel cell</td>
<td>300</td>
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</tbody>
</table>

ELECTRIFICATION DEMAND IN BATTERY COOLERS

- **HONDA, PSA, FORD HYBRIDS 2002-2016**
  - AIR COOLING

- **NEW GENERATION OF PHEV 2016**
  - DIRECT REFRIGERANT COOLER
  - LIQUID COOLERS & CHILLERS

- **HIGH POWER BEV 2017-2020**
  - ULTRA LARGE & FLAT LIQUID COOLERS & CHILLERS
2015

€4.2 BILLION IN SALES
28% OF GROUP TOTAL
12.4% EBITDA
28% OF GROUP TOTAL
26,300 EMPLOYEES
35 PRODUCTION SITES

2020

> €5.5 BILLION IN SALES*
~12.5% EBITDA*

VISIBILITY SYSTEMS BUSINESS GROUP

We are ahead of the plan

*PRESENTED AT OUR INVESTOR DAY HELD IN LONDON IN MARCH 2015
ELECTRIFICATION AND ADAS WILL FUEL VISIBILITY GROWTH

ELECTRIFICATION WILL ACCELERATE LED TAKE RATE

LED FOR ADAS COMMUNICATION SYSTEMS

SENSOR CLEANING

INTERIOR LIGHTING
POWERTRAIN SYSTEMS BUSINESS GROUP

2015

€3.8 BILLION IN SALES

26% OF GROUP TOTAL

12.8% EBITDA

26% OF GROUP TOTAL

19,400 EMPLOYEES

36 PRODUCTION SITES

2020

> €6.0 BILLION IN SALES*

~13.5% EBITDA*

We are ahead of the plan

*PRESENTED AT OUR INVESTOR DAY HELD IN LONDON IN MARCH 2015
COMFORT & DRIVING ASSISTANCE SYSTEMS BUSINESS GROUP

2015

€2.7 BILLION IN SALES
18% OF GROUP TOTAL
14.5% EBITDA
26% OF GROUP TOTAL
15,300 EMPLOYEES
26 PRODUCTION SITES

We are ahead of the plan

2020

> €4.0 BILLION IN SALES*
~17.5% EBITDA*

*PRESENTED AT OUR INVESTOR DAY HELD IN LONDON IN MARCH 2015
PTS GROWTH IS FUELED BY SUCCESSIVE INNOVATION WAVES

1 WAVE  
TRANSMISSION

2 WAVE  
MEDIUM POWER ELECTRIFICATION  
12V + 48V

3 WAVE  
HIGH POWER ELECTRIFICATION

2016  2019  2022  2025
CDA GROWTH IS FUELED BY SUCCESSIVE INNOVATION WAVES

1. TRADITIONAL PRODUCTS
2. INTUITIVE DRIVING
3. AUTONOMOUS CAR
CHRISTOPHE PÉRILLAT
CHIEF OPERATING OFFICER
WE CONTROL OUR GROWTH

What we have done: profitable growth

What we are going to do: ACCELERATE profitable growth

VALEO SALES In €bn

- 2010: €9.6bn
- 2015: €14.5bn
- 2020: >€20bn

VALEO ORDER INTAKE In €bn

- 2009: €8.8bn
- 2014: €17.5bn
- 2015: €20.1bn

And we will continue to deliver
A CULTURE OF EXCELLENCE AND IMPROVEMENT

ORDER INTAKE = TRUST
A HIRING MACHINE AT WORK

+30,600 EMPLOYEES DURING 2010 - 2015 (INCL. ~11 300 ENGINEERS)

~ 20,000 SPONTANEOUS APPLICATIONS RECEIVED IN 2015

A TRAINING MACHINE AT WORK

VALEO TECHNICAL INSTITUTES

~ 750,000 HOURS OF TECHNICAL TRAINING FOR ENGINEERS
EXCITEMENT AND ENGAGEMENT AT WORK

STRIKING IMPROVEMENT IN LEADERSHIP

- Exciting vision
- Supporting diversity
- Communicating down the line
- Decisions consistent with values
- Leading by example

SOURCE: BIENNIAL INTERNAL ANONYMOUS SURVEY - TOWERS WATSON AGENCY
STRICT FOLLOW-UP OF PROJECT MILESTONES

HIGH LEVEL OF **STANDARDIZATION**

**SYSTEMATIC DESIGN REVIEW**, **INDEPENDENT FROM PROJECT TEAMS**

**RATIO OF PROJECTS REQUIRING ESCALATION DIVIDED BY TWO** (2015 VS 2013)

**STRICT FOLLOW-UP OF PROFITABILITY** **IN LINE WITH EXPECTATIONS**
MORE GROWTH FOR OUR SUPPLIERS

A SOURCING MACHINE AT WORK

€200m - €250m SOURCED EVERY WEEK
BEST IN CLASS IN QUALITY

4 PPM
H1 2016

65 AWARDS
YTD 2016 (X2 VERSUS 2015)

PPM: NUMBER OF DEFECTIVE PARTS PRODUCED PER MILLION MEASURED IN CUSTOMER PLANTS
MORE EFFICIENCY IN OUR PLANTS

LABOR COST / SALES (%)
- 2010: 13.5%
- 2015: 12.4%

SALES / M² (€K/M²)
- 2010: 5.4 €K/M²
- 2015: 7.4 €K/M²

DIRECT LABOR HEADCOUNT IN LOW COST COUNTRIES (%)
- 2010: 50%
- 2015: 65%
TOWARDS PAPERLESS AND E-PROCESSES

INCREASING ROBOTIZATION

ROBOTICS DENSITY
(# ROBOTS / 10,000 MANUFACTURING EMPLOYEES)

VALEO FACTORY OF THE NEAR FUTURE

2015 2016 2018 2019 2021

1,060

800

2015 2016 2018 2019 2021

PTS San Luis Potosi, Mexico
PTS Bursa, Turkey
PTS Isle d’Abeau, France
VIS Interlagos, Brazil

THS Greensburg, USA
THS Zebak, Czech
THS Allison, Canada

CDA Sashil, China
CDA Veszprem, Hungary
VIS Chartellerault, France
VIS Angers, France
VALEO’S LEADERSHIP IN THE FIELD OF DRIVING ASSISTANCE
MARC VRECKO
COMFORT & DRIVING ASSISTANCE SYSTEMS
BUSINESS GROUP PRESIDENT

JOACHIM MATHES
DRIVING ASSISTANCE SYSTEMS
MARKETING, RESEARCH AND DEVELOPMENT DIRECTOR
CDA GROWTH IS FUELED BY SUCCESSIVE INNOVATION WAVES

1 WAVE  
TRADITIONAL PRODUCTS

2 WAVE  
INTUITIVE DRIVING

3 WAVE  
AUTONOMOUS CAR
GROWTH POTENTIAL AHEAD OF THE PLAN

INVESTOR DAY HELD IN LONDON ON MARCH 15, 2015

OEM SALES GROWTH

* Strategic products and services that are positioned on growth markets or generate a significant increase in Group sales.
A UNIQUE ORGANISATION
FOCUSED ON THE USER EXPERIENCE

THE ONLY PLAYER SIMULTANEOUSLY WITHIN THE AUTONOMOUS CAR SEGMENT, CONNECTED CAR SEGMENT AND INTUITIVE HMI ACTIVITIES
A UNIQUE AND COHERENT OFFERING FOR THE AUTONOMOUS CAR

NEW USER EXPERIENCE THROUGH INTUITIVE CONTROLS

FULL CONNECTIVITY FROM SHORT DISTANCE TO CLOUD

FULL ADAS TECHNOLOGIES AND SYSTEM OFFERING FOR AUTOMATED CARS

A COMPREHENSIVE TECHNOLOGY PORTFOLIO FOR AUTONOMOUS CARS, CONNECTED CARS, INTUITIVE HMI PRODUCTS AND SYSTEMS
VALEO ROADMAP FOR AUTOMATED DRIVING

ADDRESSING ALL LEVELS OF AUTOMATION
PRIVATE AS WELL AS FLEET-OPERATED MOBILITY
MOBILITY AND OWNERSHIP MODELS WILL DIVERSIFY WITH NEW PLAYERS EMERGING

PERSONAL MOBILE LIVING SPACE (OWNERSHIP)

TRADITIONAL CAR MARKET

CAR MANUFACTURERS

AUTONOMOUS DRIVING

MOBILITY ON DEMAND (SERVICE)

MANUAL DRIVING

MOBILITY PROVIDERS
MOBILITY AND OWNERSHIP MODELS WILL DIVERSIFY WITH NEW PLAYERS EMERGING

AUTONOMOUS DRIVING

PERSONAL MOBILE LIVING SPACE (OWNERSHIP)

“The car is growing beyond its role as a mere means of transport and will ultimately become a mobile living space.”

DR. DIETER ZETSCHÉ, DAIMLER CEO

CAR MANUFACTURERS

MOBILITY PROVIDERS

MANUAL DRIVING

MOBILITY ON DEMAND (SERVICE)

"Self-driving cars will enable car-sharing even in spread-out suburbs. A car will come to you just when you need it. And when you are done with it, the car will just drive away."

SEBASTIAN THRÚN, FORMER GOOGLE VP, NOW UDACITY
INCREMEENTAL PATH
VS MOON SHOT APPROACH

EVERYTHING
SOMETHING
EVERYWHERE
EVERY TIME
SOMETHING
EVERYWHERE
EVERY TIME

LEVEL 4
LEVEL 3
LEVEL 2
LEVEL 4/5

AUTONOMOUS DRIVING
MANUAL DRIVING
MOBILITY PROVIDERS
CAR MANUFACTURERS

FLEET MANAGEMENT HELPS RESTRICT FUNCTIONAL AND GEOGRAPHIC COVERAGE
SENSORS ARE THE FOUNDATION OF AUTONOMOUS DRIVING

FULL 360° COVERAGE, SAFETY THROUGH REDUNDANCY, HIGH RESOLUTION DATA WITH 3D MODELING
BUILDING THE BROADEST SENSOR PORTFOLIO IN THE AUTOMOTIVE INDUSTRY

ULTRASONIC PARK ASSIST
MIRROR-INTEGRATED RAIN SENSOR
STEERING ANGLE SENSOR FOR ESC
PROGRAMMABLE SENSOR (ASIC)
LANEVUE®
5-CAMERA SYSTEM
PARK4U®
PARK4U® 2.0 (BRAKING)
PARK4U® WITH COMFORT BRAKING
360VUE®
RAIN-LIGHT-HUMIDITY
LANE CHANCE ASSIST
FLANKGUARD
ETHERNET MPIX (OBJECT DET.)
PARK4U® REMOTE
SCALA LASER SCANNER
FUSION CONTROL UNIT

BUILDING THE BROADEST SENSOR PORTFOLIO IN THE AUTOMOTIVE INDUSTRY

A CUMULATIVE TOTAL OF MORE THAN 700 MILLION ADAS SENSORS DELIVERED BY END OF THE YEAR NEARLY 20% OF THIS TOTAL WILL BE DELIVERED IN 2016
VALEO SENSING COCOON
FOR THE CAR OF TOMORROW
SENSOR LEADERSHIP AS A FOUNDATION FOR AUTONOMOUS DRIVING

- SENSORS
- FUSION OF SENSORS MAP FUSION
- MISSIONS
SENSOR LEADERSHIP AS A FOUNDATION FOR AUTONOMOUS DRIVING

SENSORS
- FRONT CAMERA
- LASER SCANNER
- ULTRASONIC SYSTEMS
- INFRARED RANGING
- SURROUND CAMERA
- COCOON RADAR

FUSION OF SENSORS MAP FUSION
MISSIONS
VALEO LEADERSHIP IN SENSOR TECHNOLOGY

ULTRASONIC SYSTEMS

ROADMAP

HIDDEN ULS
GENERATION 6

HIGH PERF. ULS
GENERATION 6

USV MID
GENERATION 10.1

USV HIGH
GENERATION 10.2

STANDARD ULS
GENERATION 5

LIN ULS
GENERATION 5.8

USV LOW
GENERATION 10.3

USV NG
GENERATION 11

MORE THAN 600 MILLION VALEO SENSORS AND
12 MILLION PARK4U SYSTEMS ON THE ROAD

45%
MARKET SHARE
2015

MORE THAN 600 MILLION VALEO SENSORS AND
12 MILLION PARK4U SYSTEMS ON THE ROAD
VALEO LEADERSHIP IN SENSOR TECHNOLOGY

CAMERA SYSTEMS

ROADMAP

SATELLITE CAM
GENERATION 4

SATELLITE CAM
GENERATION 7

SATELLITE CAM
GENERATION 3

HD CAMERA
GENERATION 1

SMART CAM
GENERATION 5

SMART CAM
GENERATION 6

INTERIOR CAM
GENERATION 1

PASSENGER CAM
GENERATION 2

30% MARKET SHARE
2015

STRONG MARKET EXPANSION DRIVEN BY HIGHER TAKE RATE
AND GROWING NUMBER OF APPLICATIONS
VALEO LEADERSHIP IN SENSOR TECHNOLOGY
LASER SCANNER SYSTEMS

FIRST TO MARKET 2017

ROADMAP

SCALA GENERATION 1
SCALA GENERATION 2
SCALA GENERATION 3
LOW-COST SOLID STATE
SOLID-STATE SIDE SENSOR

UNIQUE PRODUCT FOR AUTOMATED DRIVING,
BUILDING COMPETENCY AND UNRIVALED MILEAGE EXPERIENCE
SENSORS LEADERSHIP AS A FOUNDATION FOR AUTONOMOUS DRIVING
A BRAIN FOR SENSOR FUSION AND VEHICLE CONTROL

ROADMAP

- AUTOM. PARKING ULTRASONIC
- SURROUND VIEW VIEWING CAMERA
- ACC RADAR/FRONT CAMERA
- LANE KEEPING FRONT CAMERA
- MANEUVERING CONTROLLER
- ACTIVE SAFETY CONTROLLER
- FUSION PLATFORM
- VEHICLE CONTROLLER

PARK4U REMOTE FUSION PLATFORM LAUNCHED IN 2016,
& CRUISE4U FUSION PLATFORM ON THE ROAD TODAY
SENSOR LEADERSHIP AS A FOUNDATION FOR AUTONOMOUS DRIVING
SEVERAL MISSIONS FOR AUTOMATED VEHICLES IN PROGRESS

AUTOMATED DRIVING PLATFORM (LEVEL 2-5)

GLOBAL ACADEMIC BACKGROUND

FOLLOW THE ROAD

MOTORWAY ASSIST INCL. OVERTAKING

TRAFFIC JAM CHAUFFEUR DYNAMIC PLANNING

URBAN DRIVING DARING STRATEGY

LEARNING CAR

CRUISE4U (LEVEL3) TRAFFIC JAM & MOTORWAY

CRUISE4U - US

DRIVE4U (LEVEL4/5) MEDIUM SPEED COUNTRY ROADS & CITY DRIVING

DRIVE4U - US

MORE THAN 125 000 KM COVERED IN AUTOMATED MODE ON TWO CONTINENTS IN 2016
BY END 2016, A CUMULATIVE TOTAL OF 8 PETABYTES WILL BE COLLECTED FROM REAL DRIVE CONDITIONS TO VALIDATE ALGORITHMS
MACHINE LEARNING IS BECOMING THE GAME CHANGER

EXPERT NETWORK ACROSS ORGANIZATIONS AND SITES, COMPLEMENTED BY AN ECOSYSTEM OF EXTERNAL PARTNERS
TRADITIONAL/INCREMENTAL PATH VS. MOON SHOT APPROACH

CAR MANUFACTURERS

MANUAL DRIVING

MOBILITY PROVIDERS

AUTONOMOUS DRIVING

LEVEL 2

LEVEL 2 - PARTIAL AUTOMATION
~ €500

LEVEL 3

LEVEL 4

LEVEL 4/5

VALEO DRIVING ASSISTANCE CONTENT PER CAR BASED ON 2016 PRODUCTS (PRICES & TECHNOLOGY)
TRADITIONAL/INCREMENTAL PATH VS. MOON SHOT APPROACH

AUTONOMOUS DRIVING

LEVEL 4

LEVEL 3

LEVEL 2

LEVEL 4/5

LEVEL 3

CONDITIONAL AUTOMATION

~ €1,500

LEVEL 2 - PARTIAL AUTOMATION

~ €500

CAR MANUFACTURERS

MANUAL DRIVING

MOBILITY PROVIDERS

VALEO DRIVING ASSISTANCE CONTENT PER CAR BASED ON 2016 PRODUCTS (PRICES & TECHNOLOGY)
TRADITIONAL/INCREMENTAL PATH VS. MOON SHOT APPROACH

AUTONOMOUS DRIVING

LEVEL 4/5
HIGH / FULL AUTOMATION
> €5,000

LEVEL 3
CONDITIONAL AUTOMATION
~ €1,500

LEVEL 2 - PARTIAL AUTOMATION
~ €500

MANUAL DRIVING

CAR MANUFACTURERS

MOBILITY PROVIDERS

VALEO DRIVING ASSISTANCE CONTENT PER CAR BASED ON 2016 PRODUCTS (PRICES & TECHNOLOGY)
VALEO PEIKER TELEMATICS: A LEADER IN THE CONNECTED CAR

VALEO PEIKER IN FIGURES

#2 WORLDWIDE

14% MARKET SHARE

1,000 EMPLOYEES WORLDWIDE

(INCL. 300 ENGINEERS)

SOLUTIONS FOR TELEMATICS APPLICATIONS
PLATFORM FOR PROPRIETARY NAD
FAST AND RELIABLE DATA EXCHANGE BETWEEN VEHICLE AND ITS SURROUNDINGS
ECALL (MANDATORY IN THE EU BY 2018)

CONNECTIVITY IS KEY TO AUTONOMOUS DRIVING, VALEO PEIKER IS ADDING CRUCIAL BUILDING BLOCKS WITH ITS TECHNOLOGICAL LEADERSHIP
OPEN INNOVATION AND PARTNERSHIPS TO BOOST TIME TO MARKET
CONCLUSION

VALEO CDA GROWTH IS BEING FUELED BY SUCCESSIVE INNOVATION WAVES AROUND ITS AUTONOMOUS DRIVING, CONNECTIVITY AND INTUITIVE HMI HIGH-TECH PRODUCTS

HIGH PERFORMING SENSORS ARE THE ABSOLUTE FOUNDATION OF AUTONOMOUS DRIVING: VALEO HAS DEVELOPED THE BROADEST SENSOR PORTFOLIO IN THE AUTOMOTIVE INDUSTRY

BUILDING ON ITS LEADERSHIP IN SENSOR TECHNOLOGY, VALEO CDA IS AN ACTIVE PLAYER IN THE DEVELOPMENT OF FUSION OF SENSORS AND MISSION PLANNING SYSTEMS FOR A BROAD RANGE OF AUTONOMOUS DRIVING SOLUTIONS
VALEO’S LEADERSHIP IN THE FIELD OF POWERTRAIN ELECTRIFICATION
LESS DIESEL = MORE ELECTRIFICATION

DIESEL TAKE RATE IN EUROPE

48% INITIAL

33% GREEN

23% DISRUPTIVE

15%

2014 2016 2018 2020 2022 2024

3 SCENARIOS ANALYSIS
- DIESEL = + ELECTRIFICATION = + CONTENT PER CAR FOR VALEO
ELECTRIFICATION TREND
THERE IS NO SINGLE SOLUTION

LOW VOLTAGE SOLUTIONS (12V & 48V)

- CITY
  - ZERO EMISSION (ZE) AREAS
  - SHORT TRIPS
  - EASY PLUG-IN

- SMALL
  - LOW COST
  - ALREADY LOW CO₂
  - COMMUTERS

- MEDIUM LARGE
  - ALTERNATIVE TO DIESEL
  - PRICE CONSTRAINT
  - COMMUTERS

HIGH VOLTAGE SOLUTIONS (60V+)

- PREMIUM
  - LONG HAUL
  - HIGH EMISSIONS
  - HIGH PRICE
  - NEED TO ENTER ZE AREAS

- HIGH POWER
  - PERFORMANCE
  - ACCELERATION
  - GREEN LUXURY

LOW POWER BEV
(Battery Electric Vehicle)

12V MILD HYBRID

48V MILD HYBRID

PHEV
(Plug-In Hybrid Vehicle)

HIGH POWER BEV
(Battery Electric Vehicle)
VALEO POWERTRAIN
CONTENT PER CAR

LOW VOLTAGE SOLUTIONS (12V & 48V)
- CITY: x2
  - LOW POWER BEV (Battery Electric Vehicle)
- SMALL: x2
  - 12V MILD HYBRID
- MEDIUM: x3
  - 48V MILD HYBRID
- LARGE

HIGH VOLTAGE SOLUTIONS (60V+)
- PREMIUM: x9
  - PHEV (Plug-In Hybrid Vehicle)
- HIGH POWER: x7
  - HIGH POWER BEV (Battery Electric Vehicle)

BASED ON 2016 PRODUCTS (PRICES & TECHNOLOGY)
PTS GROWTH IS FUELED BY SUCCESSIVE INNOVATION WAVES

1 WAVE
TRANSMISSION

2 WAVE
MEDIUM POWER ELECTRIFICATION
12V + 48V

3 WAVE
HIGH POWER ELECTRIFICATION

2016 2019 2022 2025
PTS GROWTH IS FUELED BY SUCCESSIVE INNOVATION WAVES

- **1 WAVE**: TRANSMISSION
- **2 WAVE**: MEDIUM POWER ELECTRIFICATION 12V + 48V
- **3 WAVE**: HIGH POWER ELECTRIFICATION

The growth is fueled by successive innovation waves from 2016 to 2025.
TRANSMISSIONS – VALEO’S POSITION

No.2 WORLDWIDE IN TRANSMISSION SYSTEMS

- VALEO PATENTED LONG TRAVEL DAMPER BECOMES STANDARD
- LAUNCH OF DUAL DRY CLUTCH IN CHINA AND KOREA
- LAUNCH OF DUAL WET CLUTCH
- LAUNCH OF PENDULUM DAMPER
- DEVELOPMENT OF A TECHNICAL BREAKTHROUGH: THE BLADE DAMPER
- REVOLUTION IN MANUAL TRANSMISSIONS LAUNCH OF E-CLUTCH

2013 2014 2015 2016 2017 2019
TRANSMISSIONS – VALEO’S POSITION

No. 2 WORLDWIDE IN TRANSMISSION SYSTEMS

Valeo Dual Clutches production
Dry and Wet cumulated (in millions of units)

Valeo pendulum damper production (in millions of units)

2013 2014 2015 2016 2017 2019
STILL MORE VALUE AHEAD

MORE AUTOMATIC TRANSMISSIONS

MARKET CAGR 2015 - 2026

OVERALL MARKET CAGR 15-26: 4%

ELECTROMECHANICAL ACTUATION 48%

ELECTROHYDRAULIC ACTUATION 33%

DAMPERS 49%

Manual | Automatic
---|---
CLUTCH | ✓ |
DUAL CLUTCH OR TORQUE CONVERTER | | ✓
PASSIVE HYDRAULIC | ✓ |
ELECTROHYDRAULIC ACTUATION | ✓ |
ELECTROMECHANICAL ACTUATION | ✓ |
ELECTRONIC CONTROL | ✓ |

VALEO AVERAGE CONTENT PER CAR
BASED ON 2016 PRODUCTS (PRICES & TECHNOLOGY)
EVEN MORE VALUE AHEAD

- LAUNCH OF VALEO PENDULUM TECHNOLOGY
- LAUNCH OF VALEO DOUBLE DRY CLUTCH
- LAUNCH OF VALEO WET CLUTCH FOR SEVERAL OE
- VALEO REACHES 1M PENDULUM DAMPERS
- VALEO REACHES 3M DOUBLE CLUTCHES
- LAUNCH OF E-CLUTCH
- LAUNCH OF BLADE DAMPER

TRANSMISSION

VALEO REACHES 1M PENDULUM DAMPERS
VALEO REACHES 3M DOUBLE CLUTCHES

IN MILLIONS OF UNITS

DAMPER
DUAL CLUTCH
PTS GROWTH IS FUELED BY SUCCESSIVE INNOVATION WAVES

- **WAVE 1**: TRANSMISSION
- **WAVE 2**: MEDIUM POWER ELECTRIFICATION 12V + 48V
- **WAVE 3**: HIGH POWER ELECTRIFICATION
ICE POWERTRAIN SYSTEMS WILL CONTINUE TO GROW THROUGH 2026
ELECTRIFICATION – VALEO’S LEADERSHIP

No.1 WORLDWIDE IN ELECTRICAL SYSTEMS:
1 IN 3 CARS WITH A VALEO MACHINE ON PLANET EARTH

World’s first 12V Stop-Start.
MORE THAN 3 MU PRODUCED SINCE 2004

Invention of 48V Mild Hybrid “HYBRID4ALL”

World’s first 12V MILD HYBRID on Nissan Serena

World’s first of ELECTRIC SUPERCHARGER on Audi SQ7

12V SMART HYBRID on Suzuki Maruti Ciaz

World’s first aircooled 48V BELT STARTER GENERATOR AND DC/DC CONVERTER

No.1 WORLDWIDE IN 48V SYSTEMS: WITH MORE THAN 25 CONTRACTS AT THE END OF 2016 (CHINA, EUROPE, INDIA, KOREA)

ELECTRIFICATION TREND
THERE IS NO SINGLE SOLUTION

DIFFERENT USAGES, DIFFERENT SEGMENTS, DIFFERENT SOLUTIONS

- ZERO EMISSION (ZE) AREAS
- SHORT TRIPS
- EASY PLUG-IN

CITY

LOW POWER BEV
(Battery Electric Vehicle)

- LOW COST
- ALREADY LOW CO₂
- COMMUTERS

SMALL

12V MILD HYBRID

- ALTERNATIVE TO DIESEL
- PRICE CONSTRAINT
- COMMUTERS

MEDIUM LARGE

48V MILD HYBRID

- LOW COST
- ALREADY LOW CO₂
- COMMUTERS

PREMIUM

PHEV
(Plug-In Hybrid Vehicle)

- LONG HAUL
- HIGH EMISSIONS
- HIGH PRICE
- NEED TO ENTER ZE AREAS

HIGH POWER

HIGH POWER BEV
(Battery Electric Vehicle)

- PERFORMANCE
- ACCELERATION
- GREEN LUXURY
ELECTRIFICATION TREND
THERE IS NO SINGLE SOLUTION

LOW VOLTAGE SOLUTIONS (12V & 48V)
- ZERO EMISSION (ZE) AREAS
- SHORT TRIPS
- EASY PLUG-IN

LOW POWER BEV
(Battery Electric Vehicle)

12V MILD HYBRID

48V MILD HYBRID

HIGH VOLTAGE SOLUTIONS (60V+)
- LONG HAUL
- HIGH EMISSIONS
- HIGH PRICE
- NEED TO ENTER ZE AREAS

PREMIUM

PHEV
(Plug-In Hybrid Vehicle)

HIGH POWER

HIGH POWER BEV
(Battery Electric Vehicle)

• PERFORMANCE
• ACCELERATION
• GREEN LUXURY

CITY

SMALL

MEDIUM LARGE

PREMIUM

HIGH POWER
PTS GROWTH IS FUELED BY SUCCESSIVE INNOVATION WAVES

1 WAVE
TRANSMISSION

2 WAVE
MEDIUM POWER ELECTRIFICATION
12V + 48V

3 WAVE
HIGH POWER ELECTRIFICATION

12V + 48V
ELECTRIFICATION TREND
WAVE 2: LOW VOLTAGE

LOW VOLTAGE SOLUTIONS (12V & 48V)

- LOW POWER BEV
  (Battery Electric Vehicle)
  CAGR ~15%

- 12V MILD HYBRID
  CAGR ~26%

- 48V MILD HYBRID
  CAGR ~51%

IN MILLION OF VEHICLES

- Low Power BEV
- Mild Hybrid 48V
- Mild Hybrid 12V
- ICE Conventional (incl. Stop-Start)
• 12V Belt Starter Generator with Dual 12V battery and e-Clutch for coasting function
• Low power (6 kW) energy recovery and boost
• Up to 6-8% fuel economy
• Hybrid tag in India (FAME program) and in Japan (Minivans and Kei-cars)
• Energy recovery for Europe and US with potential off-cycle credits
ELECTRIFICATION TREND
WAVE 2: LOW VOLTAGE

- 12V Belt Starter Generator with Dual 12V battery and e-Clutch for coasting function
- Low power (6 kW) energy recovery and boost
- Up to 6-8% fuel economy
- Hybrid tag in India (FAME program) and in Japan (Minivans and Kei-cars)
- Energy recovery for Europe and US with potential off-cycle credits

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<th>12V MILD HYBRID</th>
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<tr>
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<tr>
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<tr>
<td>DAMPER</td>
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VALEO AVERAGE CONTENT PER CAR
BASED ON 2016 PRODUCTS (PRICES & TECHNOLOGY)
• 48V Belt Starter Generator with 48V battery and a DC/DC converter
• Optional e-Clutch and e-Supercharger
• Medium power (12 kW) energy recovery and boost
• Up to 10-13% fuel economy (all markets)
• Mainstream solution in China to meet CAFE 2020 standards
• Lower cost than Diesel
• Enabler of higher power consumers in premium cars (e.g. active suspension, e-Supercharger)
ELECTRIFICATION TREND
WAVE 2: LOW VOLTAGE

- 48V Belt Starter Generator with 48V battery and a DC/DC converter
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- Lower cost than Diesel
- Enabler of higher power consumers in premium cars (e.g. active suspension, e-Supercharger)

**ICE**

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</table>

**48V MILD HYBRID**

- BASED ON 2016 PRODUCTS (PRICES & TECHNOLOGY)
- MAINSTREAM SOLUTION IN CHINA TO MEET CAFE 2020 STANDARDS
- UP TO 10-13% FUEL ECONOMY (ALL MARKETS)
- MEDIUM POWER (12 kW) ENERGY RECOVERY AND BOOST
- LOWER COST THAN DIESEL
- ENABLER OF HIGHER POWER CONSUMERS IN PREMIUM CARS (E.G. ACTIVE SUSPENSION, E-SUPERCHARGER)

**VALEO AVERAGE CONTENT PER CAR**

LOW POWER BEV
(Battery Electric Vehicle)

• 48V e-motor on rear axle with speed reducer, DC/DC converter and 48V battery charger
• Low power (15-25 kW) electric propulsion
• Double hundred (100km/h, 100km range) in China
• Entry BEV vehicle in India
• Entry car pooling in Europe (Milan, Rome)

ELECTRIFICATION TREND
WAVE 2: LOW VOLTAGE

IN MILLIONS OF VEHICLES

CAGR ~14%

48V ELECTRIC REAR AXLE DRIVE
12-48V DC/DC
48V BATTERY CHARGER

2016
2026
0.8
3.0

2016
2026

MEDIUM POWER ELECTRIFICATION
12V + 48V

LOW VOLTAGE WAVE 2:

WAVE 2: LOW VOLTAGE

2016
2026

IN MILLIONS OF VEHICLES

CAGR ~14%

48V ELECTRIC REAR AXLE DRIVE
12-48V DC/DC
48V BATTERY CHARGER
ELECTRIFICATION TREND
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- 48V ELECTRIC REAR AXLE DRIVE
- 12-48V DC/DC
- 48V BATTERY CHARGER
TODAY
World No.1 in 12V machines
25 million generators produced per year
More than 3 million Belt Starter Generators in the field

High efficiency generator

Stop-Start and Mild Hybrid 12V Belt Starter Generator

30%

LOW VOLTAGE VALEO HISTORY
LOW VOLTAGE VALEO HISTORY

MEDIUM POWER ELECTRIFICATION
12V + 48V

TOMORROW
World No.1 in 48V Mild Hybrids in 2020

Mild-Hybrid
48V Belt Starter Generator

WORLDWIDE MARKET SHARE IN 2020

40%
48V MILD HYBRID SYSTEM

HOW IT WORKS

BELT STARTER
GENERATOR

ENGINE
START

48V BATTERY

48-12V DC/DC CONVERTER

12V BATTERY

CRANKING

MEDIUM POWER ELECTRIFICATION
12V + 48V
48V MILD HYBRID SYSTEM

HOW IT WORKS

BELT STARTER GENERATOR

ENERGY RECOVERY

48V BATTERY

48-12V DC/DC CONVERTER

12V BATTERY

BRAKING
48V MILD HYBRID SYSTEM

HOW IT WORKS

BELT STARTER GENERATOR

EXTRA POWER

ACCELERATION

48V BATTERY

48-12V DC/DC CONVERTER

12V BATTERY
48V MILD HYBRID SYSTEM

HOW IT WORKS

ENGINE OFF

LOW SPEED ELECTRIC DRIVE

ZERO EMISSION DRIVE

BELT STARTER GENERATOR

48-12V DC/DC CONVERTER

48V BATTERY

12V BATTERY

48V BATTERY

MEDIUM POWER ELECTRIFICATION
12V + 48V
48V SYSTEMS
WE DEVELOP OUR ROADMAP

40% WORLWIDE MARKET SHARE IN 2020

60% WORLWIDE MARKET SHARE IN 2020

48V HYBRID DCT (DUAL CLUTCH TRANSMISSION)

48V ELECTRIC REAR AXLE

48V PERFORMANCE PACK (HYBRID + E-SUPERCHARGER + E-REAR AXLE)


94 MEDIUM POWER ELECTRIFICATION 12V + 48V

MEDIUM POWER ELECTRIFICATION 12V + 48V
PTS GROWTH IS FUELED BY SUCCESSIVE INNOVATION WAVES

1. TRANSMISSION
2. MEDIUM POWER ELECTRIFICATION 12V + 48V
3. HIGH POWER ELECTRIFICATION
ELECTRIFICATION TREND
WAVE 3: HIGH VOLTAGE

HIGH VOLTAGE SOLUTIONS (60V+)

BASE SCENARIO ON BEV TAKE RATE
HIGH SCENARIO ON BEV TAKE RATE

PHEV
HP BEV

IN MILLIONS OF VEHICLES

BASE SCENARIO ON BEV TAKE RATE
HIGH SCENARIO ON BEV TAKE RATE

TOTAL CAGR ~24%

HIGH POWER BEV (Battery Electric Vehicle)
CAGR ~26%

HIGH POWER BEV (Battery Electric Vehicle)
CAGR ~34%

PHEV
CAGR ~23%
(P plug-in Hybrid Vehicle)

PHEV
CAGR ~20%
(P plug-in Hybrid Vehicle)
ELECTRIFICATION TREND
WAVE 3: HIGH VOLTAGE

- 2 engines in the car: ICE with auto transmission for long range, e-motor for short range (30km to 50km)
- Supercredits in Europe for vehicle < 50g CO₂/km, incentives in China

- AUTOMATED TRANSMISSION
- INVERTER + DC/DC
- BATTERY CHARGER
- ELECTRIC TRACTION MOTOR
- BSG FOR CRANKING

BASE SCENARIO ON BEV TAKE RATE
2016: 2.6
2026: 21.0

HIGH SCENARIO ON BEV TAKE RATE
2026: 16.5

CAGR ~23%
CAGR ~20%

IN MILLIONS OF VEHICLES
### ELECTRIFICATION TREND

**WAVE 3: HIGH VOLTAGE**

- **2 engines in the car:** ICE with auto transmission for long range, e-motor for short range (30km to 50km)
- **Supercredits in Europe for vehicle < 50g CO₂/km, incentives in China**

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**VALEO AVERAGE CONTENT PER CAR**

Based on 2016 products (prices & technology)

---

x9
ELECTRIFICATION TREND
WAVE 3: HIGH VOLTAGE

- Pure electric drive: Electric motor + speed reducer, HV inverter, HV DC/DC, HV battery charger
- Access to Zero Emission areas (London), HOV lines (Los Angeles, Boston etc.)
- Tax incentives in EU, China, US…
**ELECTRIFICATION TREND**
**WAVE 3: HIGH VOLTAGE**

- Pure electric drive: Electric motor + speed reducer, HV inverter, HV DC/DC, HV battery charger
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*VALEO AVERAGE CONTENT PER CAR BASED ON 2016 PRODUCTS (PRICES & TECHNOLOGY)*

x7
HIGH VOLTAGE
A WINNING TEAM WITH SIEMENS

POWER CONVERTERS AND INVERTERS

BATTERY CHARGER

LITHIUM-ION BATTERY

ELECTRIC MOTOR

SIEMENS
HV SYSTEMS
THE EV ROADMAP IN PROGRESS

• E-MOTORS
• INVERTERS
• CHARGERS
• DC/DC CONVERTERS
• RANGE EXTENDERS

SUPERPOWER ELECTRONICS

• HYBRID MODULES
• WIRELESS CHARGE

ELECTRIC WHEELS
ELECTRIC TRANSMISSION

TODAY

TOMORROW
PROTECTING OUR INNOVATIONS

PATENT FILING PLAN FOR EACH WAVE

1 WAVE
PATENTS FOR TRANSMISSIONS

2 WAVE
PATENTS ELECTRIFICATION FOR MEDIUM POWER 12V + 48V

3 WAVE
PATENTS ELECTRIFICATION FOR HIGH POWER INCLUDING SIEMENS CONTRIBUTION

PATENTS ELECTRIFICATION FOR HIGH POWER INCLUDING SIEMENS CONTRIBUTION
VALEO POWERTRAIN
CONTENT PER CAR

LOW VOLTAGE SOLUTIONS (12V & 48V)

CITY
x2
LOW POWER BEV (Battery Electric Vehicle)

SMALL
x2
12V MILD HYBRID

MEDIUM
x3
48V MILD HYBRID

LARGE

HIGH VOLTAGE SOLUTIONS (60V+)

PREMIUM
x9
PHEV (Plug-In Hybrid Vehicle)

HIGH POWER
x7
HIGH POWER BEV (Battery Electric Vehicle)

BASED ON 2016 PRODUCTS (PRICES & TECHNOLOGY)
WE HAVE A **SOLID BASELINE GROWTH SCENARIO FOR ENGINES AND TRANSMISSIONS**

THE SECOND WAVE IS EMERGING NOW WITH LOW VOLTAGE MILD HYBRIDS IN WHICH **VALEO IS A KEY TECHNOLOGY PLAYER** WITH A COMPREHENSIVE AND PROVEN OFFERING

TOGETHER WITH SIEMENS, WE ARE READY FOR THE THIRD WAVE OF HIGH VOLTAGE HYBRIDS AND ELECTRIC VEHICLES, WITH A BROAD OFFERING COVERING ALL ARCHITECTURES AND THE AGILITY TO RESPOND TO MARKET EVOLUTIONS

**VALEO:**
THE LEADER IN POWERTRAIN ELECTRIFICATION
Automotive technology, naturally