Valeo showcases its latest technologies for commercial vehicles

at the IAA Commercial Vehicles 2016

Wednesday September 21st, 2016
Hannover
I. Valeo unveils its latest technologies at the 66th IAA Commercial Vehicles Show ....3
   1. Valeo 48 V hybrid solutions: to improve powertrain efficiency.........................4
   2. Remote Clean4U™: a remote windshield defrosting and cleaning system..........5
   3. Sightstream®: when a camera replaces the rearview mirrors..............................6
   4. Active Grille Shutters: to regulate front-end air inlet flow ................................6

II. Valeo’s solutions for the commercial vehicles market: an offensive strategy .......7
   1. Innovation: Valeo’s driving force ........................................................................7
   2. Strategic acquisitions and partnerships for future success ...................................8

III. Valeo’s innovation, facing the challenge of the transportation market .............9
   1. Hight Torque Low Stiffness Clutch Disc ...............................................................9
   2. Valeo Compressors for heavy duty: enhancing benefits for operators and passengers .................................................................9
   3. HVAC: Advanced air conditioning module in line with today’s truck market expectations .................................................................10
   4. Optimal thermal management solutions for hybrid and electric vehicles heavy duty and buses .................................................................10
   5. SCALA® laser scanner .......................................................................................12
   6. Full LED lighting systems .....................................................................................12
   7. Light Weight Bolster for a significant weight saving .............................................13
   8. Intuitive and fluid displays and faceplates ............................................................13
   9. New modular switches to meet increasing customer requirements ...................13

IV. Appendix ............................................................................................................14
   1. Key figures ...........................................................................................................14
   2. Working to build the vehicles of tomorrow .........................................................15

V. Toolbox ..............................................................................................................16
   1. Videos ..................................................................................................................16
   2. Group websites ...................................................................................................16
   3. Social media ........................................................................................................16
   4. Useful contacts ....................................................................................................16
I. Valeo unveils its latest technologies at the 66th IAA Commercial Vehicles Show

Today, Valeo is taking part in the IAA Commercial Vehicles show in Hannover (Germany), which runs from September 21 to 29, 2016. On show will be Valeo’s latest innovations that provide optimal safety, enhanced driving comfort and greater energy efficiency. The Group offers solutions that reduce the consumption of internal combustion engines, as well as the weight and energy use of components, and systems for hybrid and electric vehicles.

Attendees will have a chance to discover Valeo’s latest connected innovations, at the Valeo booth in Hall 16 (Booth A31). These include the 48 V hybrid solutions designed to significantly improve fuel economy, the Active Grille Shutters, a system which closes the radiator grille located at the front of the vehicle when the cooling system does not work at its full capacity, or for better aerodynamics, and Sightstream®, a camera monitoring system to replace mirrors that will undoubtedly offer new styling and aerodynamics potential to the commercial vehicle market.

Valeo is a major player in the global automotive industry and ranks among the world’s top automotive suppliers. As a technology company, Valeo is fully focused on the design, production and sale of components, integrated systems and modules for the car and truck industry in both the original equipment and replacement segments.

Visit Valeo’s Booth
Hall 16 Booth A31
1. **Valeo 48 V hybrid solutions: to improve powertrain efficiency**

At this year’s IAA Commercial Vehicles show in Hannover, Valeo is unveiling its new 48 V solutions designed to significantly improve fuel economy.

Drawing on years of experience dating back to the Stop & Start system in 2004, Valeo has extended its conventional line-up with numerous hybrid innovations and is now the world leader in 48 V technologies. 48 V solutions can apply to all vehicle segments, and are particularly well suited to commercial vehicles because of their ability to eliminate idle phases and to recover energy during braking. As typical urban or regional delivery trucks waste between 15% and 20% of fuel during idling and braking, these solutions can therefore enable significant fuel economy. In addition they offer numerous advantages, such as up to 20% fewer CO₂ emissions* (NEDC standards) or up to 20% better in-gear acceleration.

**Valeo’s iBSG 48V – Belt Starter Generator with Integrated electronics**

Valeo’s iBSG 48 V, available in two versions (4 kW and 8 kW continuous power), is one of these solutions. Easy to implement, Valeo’s iBSG offers “Stop and Start” and “Regenerative Braking” features.

- **“Stop and Start”** turns off the engine at idle and restarts it when the vehicle is ready to move.
- **“Regenerative Braking”** recovers energy during braking phases by generating electricity and storing it into the 48 V battery. This energy is then reused to boost the engine during vehicle acceleration and to supply electrical components directly at 48 V or at 12 V/24 V through the DC/DC converter.

With an efficiency of more than 80%, Valeo’s iBSG system offers a fuel economy improvement from 3%* to 5%* on Medium Duty Vehicles and from 5%* to 10%* on Light Duty Vehicles, depending on the driving pattern. In order to offer a competitive solution for both OEMs and fleet owners with a quick payback, Valeo has adapted its existing iBSG 48 V to the specific constraints of commercial vehicles – such as longer lifetime - leveraging the scale effect brought by high volume passenger car programs.

**Valeo’s GMG 48 V – Gearbox Motor Generator**

Going further with fuel economy improvement, Valeo is developing a more powerful system: the GMG rated at 48 V and 15 kW peak, coupled with the gearbox, which offers fuel economy improvement from 5%* to 8%* on Medium Duty Vehicles and from 10%* to 20%* on Light Duty Vehicles, depending on vehicle environment and driving patterns.

* Valeo fuel consumption estimations for illustrative purposes will vary based on various factors such as vehicle application and usage.
At this year’s IAA Commercial Vehicles show, Valeo is presenting Remote Clean4U™, a revolutionary remote windshield defrosting and cleaning system that is controlled via a smartphone application.

This easy-to-use system is more efficient than other methods and significantly improves driving safety and comfort. The Remote Clean4U™ system has two innovative functions that the user can control remotely from a smartphone: **Defrosting**, which automatically defrosts a windshield in less than 90 seconds, and **Debugging**, which washes away insects stuck to the windshield in record time.

### In line with market expectations

For end-users the three most important advantages of Remote Clean4U™ are:
- the very short time needed to defrost (60% of respondents in a Valeo survey),
- the comfort linked to remote control (57%)
- the fact that it works without the engine running, so saving energy (25%).

Another interesting aspect of this innovation is that the need for Remote Clean4U™ is shared by all types of drivers, irrespective of the type of vehicle. In an IPSOS survey, 98% of owners consider Remote Clean4U™ Defrost as essential or useful.

The **Defrosting function** distributes an environmentally friendly defrosting fluid through Valeo’s exclusive AquaBlade® windshield wiper system. The fluid is not projected onto the windshield but precisely distributed across its entire surface, cleaning it more evenly and uniformly without wasting fluid. This system is more efficient than a heated windshield and consumes 28 times less energy than an electric defrosting system. Not only is it environmentally friendly and more efficient, the system is also more convenient thanks to its remote Defrosting function, which allows the driver to defrost the windshield without having to go out to start the engine.

Using a smartphone application, the driver can remotely start Remote Clean4U™’s **Debugging function** to wash away insects stuck to the windshield in record time. Thanks to its specially formulated cleaning fluid distributed through the AquaBlade® windshield wiper system, this innovative function improves visibility while using less fluid and energy. AquaBlade® also makes the vehicle 2 kilograms lighter since only a small amount of fluid is needed to clean the windshield.
3. **Sightstream®**: when a camera replaces the rearview mirrors

Valeo is showcasing its Sightstream® at the Hannover IAA Commercial Vehicle Show, a camera monitoring system to replace mirrors.

Sightstream® not only sharpens the driver’s perception of driving conditions, thereby enhancing safety, but also reduces fuel consumption by improving the vehicle's aerodynamics. Cameras are installed where the exterior side mirrors are usually mounted. The video image displayed on the screens offers better visibility in all weather, even at night.

The Sightstream® system can also be incorporated into driver assistance features such as blind spot detection, and assist with door opening by detecting and displaying surrounding vehicles, motorcycles or bicycles, which is a huge advantage for commercial vehicles. Sightstream® can also help during lane changes and when passing, by displaying information on the dashboard directly in the driver's line of sight.

United Nations Legislation UN-R46 allows the replacement of mirrors on light and heavy vehicles in European and Japanese Markets. US and other jurisdictions are expect to follow suit. Valeo anticipates massive demand for Sightstream® technology as drivers and fleet managers alike become aware of all the benefits listed above.

4. **Active Grille Shutters**: to regulate front-end air inlet flow

In a Germany premiere, Valeo is unveiling its Active Grille Shutters, a system which improves the vehicle aerodynamics by closing the radiator grille located at the front of the vehicle when the cooling system does not work at its full capacity.

Valeo has already supplied Active Grille Shutters for passenger cars and commercial vehicle, and is now able to offer solutions for trucks.

Thanks to this innovation, the average aero drag coefficient of the vehicle is improved by 9%* when the Active Grille Shutters are closed and the warming time in cold conditions is halved. Valeo has improved it Active Grille Shutter design to offer an ever lighter solution with screwless assembly, new flap technology and in house Smart Actuator range. The latest Active Air Grille Shutters range, including Valeo actuators, regulates front-end air inlet flow, thereby reducing drag and heat loss. It also contributes to reduce fuel consumption and CO₂ emissions.

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*Valeo estimation for illustrative purposes will vary based on various factors such as vehicle application and usage.
II. Valeo’s solutions for the commercial vehicles market: an offensive strategy

Between 2015 and 2025, the commercial vehicles market is expected to grow not only in terms of production (a 5.5% compound annual growth rate) but also in terms of value (a 10% compound annual growth rate). This trend represents a great opportunity for Valeo, which is gaining towards leading positions in commercial vehicle technologies such as clutches, wipers and electrical systems. To meet this increasing demand, Valeo has developed a strategy based on a two-fold dynamic: innovation and acquisition.

1. Innovation: Valeo’s driving force

Focused on CO₂ emissions reduction and intuitive driving, innovation forms the first driving force of Valeo’s strategy. The vast resources engaged by the Group to remain at the cutting edge of technology are testament to this strategic focus: Valeo is engaged in over 2,500 projects with vehicle makers worldwide and can rely on the commitment of 12,000 engineers and technicians working at 19 research centers and 35 development centers across the world. Equally impressive is Valeo’s financial investment, with more than 1.3 billion euros invested in Research and Development in 2015.

The Group has also diversified its sources of inspiration through open innovation, forming partnerships with universities, laboratories, major industrial groups and promising start-ups so that innovation can be defined through constant interaction with customers and consumers. The entire innovation strategy is aimed at one goal: anticipate driver and fleet owners preferences before anyone else.

That’s why Valeo has often been a pioneer and is now better placed than ever to continue leading the way, including in the commercial vehicles market: designed to take into account fuel saving issues, safety and intuitive driving, the Group’s technological solutions are perfectly suited to tackle the challenge of the commercial vehicles market, optimizing mobility management while increasing driver comfort.
2. Strategic acquisitions and partnerships for future success

Valeo maintains a constant global innovation watch and works with a range of partners in the commercial vehicle market to ensure flexible innovation and consolidate its technological expertise. In particular, Valeo acquired Spheros, the worldwide leader in air conditioning systems for buses in April 2016.

Spheros (now Valeo’s Thermal Bus Systems Product Group) leverages its technological leadership to supply air conditioning systems to all the main bus manufacturers and major fleet operators. It has a leading market position in Europe – 36%, North America – 20%, India – 27% and Latin America – 26% (all products combined) thanks to a worldwide sales network and a vast industrial footprint, with plants in Germany, Finland, Turkey, the United States, Brazil, China and India.

This acquisition will allow Valeo to extend its thermal management activities to the vibrant bus market, which is expected to grow by more than 5% annually over the coming years, driven by the expansion of public transportation throughout the world. Moreover, this acquisition offers great potential synergy for both Valeo and Spheros regarding hybrid and electric applications: innovative air conditioning components, newly developed control software and the “Spheros Body Interface” which provides for the first time an interface for analysis values and system feedback.
III. Valeo’s innovation, facing the challenge of the transportation market

To respond effectively to market demands, Valeo offers innovative technologies to make vehicles more intuitive as well as safer, easier to drive and more fuel efficient.

1. High Torque Low Stiffness Clutch Disc

Engine down-speeding is one of the most important levers to improve fuel economy and reduce CO₂ emissions. Unfortunately it also increases torque and vibrations that can induce noise and even failure into the gearbox. To solve this dilemma, Valeo has developed the HTLS (High Torque Low Stiffness), a breakthrough damper technology able to increase by 40% the dampening performance while transmitting a torque up to 4200 Newton meters. This allows reducing the engine speed by up to 200 RPM, which translates into fuel savings between 1%* and 2%*.

2. Valeo Compressors for heavy duty: enhancing benefits for operators and passengers

Valeo is showcasing its TM43 and TM65 compressors for large bus applications and its DKS-15 technology for trucks at the 66th IAA Commercial Vehicles show. For over 50 years Valeo has developed its expertise in air conditioning compressors. In particular, Valeo has developed the TM compressor series, an oil leak free solution (no oil change required by the compressor) around 50% lighter and smaller in comparison with a regular reciprocating type compressor. TM compressors can lower by up to 40% the number of parts and significantly reduce noise and vibration involving less failure modes and more reliability for operators as well as a comfortable ride for the passengers.

* Valeo fuel consumption estimations for illustrative purposes will vary based on various factors such as vehicle application and usage.
The intelligent and compact cubic form of TM technology allows the compressor to be easily installed alongside the engine, freeing up valuable space in the engine compartment for fuel-saving and emission reduction systems like SCR (selective catalytic reduction), EGR (exhaust gas recirculation) and tanks for AdBlue® (fluid for exhaust gas after treatment). This advantageous design is recognized by the world’s leading engine manufacturers.

**TM65 & TM43**

TM65 (displacement of 635cc) is the world’s largest displacement compressor based on swash plate enabling high energy efficiency in the bus air conditioning system. TM43 (displacement of 425cc) and its four flexible adaptors allow HVAC engineers to integrate a space saving solution for both front and rear engine applications in city and tour buses.

Also displayed on Valeo booth, Valeo DKS-15 serves the standard truck market with durable HD-built compressors based on a validated automotive design. With a fixed displacement piston design, it is reliable and robust in order to match long haulage transport needs.

**3. HVAC: Advanced air conditioning module in line with today’s truck market expectations**

For truck drivers, fleet operators and vehicle makers, the focus for today’s air conditioning systems is on low energy consumption, low CO₂ emissions, improved system performance and durability and a higher level of driver comfort. On this basis Valeo has developed air conditioning modules that guarantee a high degree of energy efficiency, improved performance, longer product life and more comfort, combined with reduced CO₂ emissions.

Brushless blower motors used in the HVAC are key to achieving Valeo’s ambitious targets for cutting CO₂ emissions and reducing the noise level. The development team has also worked on substantially reducing the packaging space required. The compactness of the HVAC has resulted in up to 30% weight reduction compared to conventional HVACs. Further, the solid aluminum heat exchangers designed by Valeo provide high power density alongside extreme resistance to pressure changes, making this a highly robust and durable solution. In particular, HGVs (Heavy Goods Vehicles) with water cooled retarders require heat exchangers which are able to operate reliably despite extreme pressure changes and cyclical thermal loads.

Depending on specifications and the equipment requirements of long distance, delivery and construction site traffic, the AC system can be fitted with a cabin filter best suited to the respective application: particle, combined (active charcoal filter) or very high efficiency filter (filtering particles which are smaller than 2.5 µm aero-diameter). Valeo also develops other technical solutions to improve the well-being of the driver and reduce pollution and the impregnated odors in the truck cab. Taking all this into account, the air conditioning module developed by Valeo sets entirely new standards in terms of CO₂ emissions, comfort, noise, performance and durability.
4. Optimal thermal management solutions for hybrid and electric vehicles
heavy duty and buses

In urban driving conditions in winter, a vehicle in full-electric driving mode uses practically as much energy to heat the cabin as it does to drive. This is even more the case for buses for instance, with regard to the size of the cabin. The thermal management challenge in this situation is to ensure the vehicle maintains an acceptable range.

In response, Valeo presents **Entelligence**, the most efficient air conditioning system currently on the market for hybrid and electric buses. Due to the low energy density of today’s traction batteries and the limited supply of useable waste heat in hybrid and electric buses, the energy supply to the vehicle’s air conditioning continues to present a key challenge to the vehicle’s air conditioning. Entelligence contributes to making the best use of existing energy resources, thus significantly increasing the range of hybrid and electrobuses.

It incorporates innovative air conditioning components, re-engineered software that intelligently regulates the HVAC components with the highest level of efficiency, and the “Spheros Body Interface” operating and control concept. This offers for the first time an interface for analysis values and system feedback.

**Electric Compressor EDC**

In addition, Valeo is studying the development of a heavy duty enhanced Electric Compressor called EDC derived from Valeo automotive technology. Made unique by its small packaging and Ferrite electric motor without any rare earth material, Valeo EDC achieves the highest cooling capacity in its 34cc displacement range. The electric compressor is fully designed in-house, weighs less than 6kg and provides both safety and comfort thanks to conformity with global regulatory standards.

**Optimum Li-ion battery**

Batteries are expensive in the cost breakdown of a vehicle or bus. Optimum Li-ion battery thermal management to guarantee unrivaled reliability and durability is key for an electrified vehicle. Valeo’s offer is unique in its capacity of offering high-performance air-, liquid- and refrigerant-based cooling systems calibrated to every engine architecture. Our engineers are able to suggest the right technology to each particular technical expectation. For buses in particular, emphasis has to be put on extra large and powerfull solutions able to efficiently cool down large battery packs.
5. **SCALA® laser scanner**

Valeo is showcasing its SCALA® laser scanner, a key technology for highly automated driving.

Valeo SCALA® laser device scans the area in front of the vehicle and detects vehicles, motorbikes, pedestrians and static obstacles like trees, parked vehicles and guard rails—all with an extremely high level of accuracy. It works during the day and at night, when the vehicle is driving at both high and low speeds. Using the collected data, the scanner creates a map of the environment allowing it to analyze and anticipate events around the vehicle. This technology serves to enhance active safety by initiating measures like evasion maneuvers and emergency braking whenever vehicles or pedestrians suddenly appear in front of the vehicle.

Valeo SCALA® technology enables Valeo, which is already market leader in driving assistance systems, to promote innovative active safety features and automated driving.

6. **Full LED lighting systems**

Visitors at this year IAA Commercial Vehicles motor show, can get a first-hand look at the full range of Valeo’s latest lighting system technologies for trucks and commercial vehicles.

- **Super Oscar LED 1200 lumen lamp**: LED version of the flagship Super Oscar headlamp, which combines a wide LED beam of up to 500 meters and a LED position lamp.

- **MyBeam LED work lamp**: in production since 2016, the MyBeam 1500s is one of the best products on the market in terms of performance ratio (900 lumens on the road), weight (325 grams with the bracket) and energy consumption (18W). Also on show is the MyBeam 3000s, which offers a brightness of 1600 lumens on the road.

- **ST90 LED fog lamp**: The LED version of the best-selling fog lamp, with its distinctive 90-millimeter round design, the ST90 is a low-power 8W solution offering enhanced safety for driving in fog and around bends.

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**Valeo’s FullLED lighting solutions advantages**

- **Superior performance** to ensure driver safety.
- **Zero maintenance**, meaning no more replacing light bulbs.
- **Color appearance similar to daylight**, providing maximum visibility in all conditions.
- **Performance equivalent to xenon bulbs**, with just 20W of power required per headlamp.
- **Design freedom enhancement**, offering greater vehicle customization possibilities.
7. Light Weight Bolster for a significant weight saving

In order to get fuel economy thanks to a light, efficient and aerodynamic front end module, Valeo has designed a Light Weight Bolster with an innovative composite material using continuous fibres preimpregnated in thermoplastic resin.

This new technology provides a significant mass reduction, without compromising on the performance of the components: for a similar tensile strength, glass fibre thermoplastic composites are roughly 30% to 40% lighter than steel and 25% to 30% lighter than aluminium.

8. Intuitive and fluid displays and faceplates

As a world leader in interior controls, Valeo offers a wide portfolio of Human Machine Interface solutions from traditional mechanical products to all types of displays and faceplates. They offer numerous functions such as high picture quality, approach detection, touch force measurement, anti-glare/dirt/reflection coating, dynamic ambient lighting and “Black mask” buttons to simplify the driver’s view. Valeo displays and faceplates provide a holistic approach to integration for an optimized user experience with high visibility under all conditions and a high degree of styling freedom.

9. New modular switches to meet increasing customer requirements

Valeo has developed a new concept of switch to allow customer specific application without expensive development, tooling cost and leadtime. In particular it provides common functions, styling, etc. for one brand identity.

Contactless switches withstanding extreme operating conditions

Valeo contactless switches create a new standard in terms of flexibility, durability and lifetime as they offer lower maintenance cost due to increased life time, consistent haptic performance over lifetime and high flexibility due to their design compatibility with various architectures (CAN, LIN, low current switching…). They also provide a higher reliability as they can be used in extreme environments and are resistant to rough handling.
IV. Appendix

1. Key figures

<table>
<thead>
<tr>
<th>14.5 billion euros in sales</th>
<th>88,800 employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.4% of original equipment sales invested in R&amp;D</td>
<td>12,500 researchers</td>
</tr>
<tr>
<td>1,406 patents filed</td>
<td>148 plants</td>
</tr>
<tr>
<td>27% more than in 2014</td>
<td>19 research centers</td>
</tr>
<tr>
<td>37% of the order backlog corresponds to innovative products</td>
<td>35 development centers</td>
</tr>
</tbody>
</table>

* With the acquisition of Spheros, Valeo’s global presence increases with new production site in Finland, as well as additional service and sales points in Columbia, Middle East and Australia.
2. Working to build the vehicles of tomorrow

With sales of 14.5 billion euros, Valeo achieved the best results in its history in 2015, and became one of today’s best performing French companies in the CAC 40. The driving force behind the Group’s growth is its innovation strategy, which for years has been founded on CO₂ emissions reduction and intuitive driving. Thanks to this strategy, Valeo is now a major player in the global automotive industry, not to mention one of the main automotive suppliers worldwide.

CO₂ emissions reduction and intuitive driving

The Group’s Research & Development strategy aims first and foremost to assist the transition to low-carbon mobility. Each year, the Group invests more than 10% of its original equipment sales in R&D, with the aim of developing innovative solutions that help reduce fuel consumption and CO₂ and pollutant emissions without compromising on driving performance or pleasure.

The second fundamental component of the Group’s growth strategy is the concept of “intuitive driving”, which encompasses all innovative systems and technologies that make cars more intuitive, as well as safer, easier to drive and more fuel efficient.

Valeo’s four Business Groups

The Powertrain Systems Business Group covers all activities related to the vehicle’s powertrain, from optimization of internal combustion engines and Stop-Start technologies to electric vehicles.

The Thermal Systems Business Group develops and manufactures systems, modules and components to manage engine and gearbox cooling systems, and to enable optimal individual passenger climate control, at every phase of vehicle use. The Business Group also helps reduce CO₂ emissions and other pollutants and harmful particles from vehicles equipped with internal combustion engines.

The Comfort & Driving Assistance Systems Business Group develops innovative and intuitive driver-vehicle-environment interface systems to support the emergence of tomorrow’s more automated and connected cars.

The Visibility Systems Business Group develops and produces innovative lighting and wiper systems that support the driver and passengers in all weather, day and night, and in their various on-board activities.
V. Toolbox

1. Videos

Valeo SCALA: [https://www.youtube.com/watch?v=4B2D8NCtjS8](https://www.youtube.com/watch?v=4B2D8NCtjS8)

Valeo Innovation Challenge: [https://www.youtube.com/watch?v=YDiT5fBAabc](https://www.youtube.com/watch?v=YDiT5fBAabc)

2. Group websites

[http://www.valeo.com](http://www.valeo.com)

[valeoinnovationchallenge.valeo.com](http://valeoinnovationchallenge.valeo.com)

3. Social media

Twitter: [https://twitter.com/Valeo_Group](https://twitter.com/Valeo_Group)


LinkedIn: [https://www.linkedin.com/company/valeo/](https://www.linkedin.com/company/valeo/)

YouTube: [https://www.youtube.com/user/ValeoGroup](https://www.youtube.com/user/ValeoGroup)

4. Useful contacts

For interviews, visuals or further information, please contact:

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