Key Features
Safety, Comfort and Space

To emphasize the new Škoda Superb's position within the upper middle-market sedan segment, the new vehicle generation offers even more comfort and safety. In particular the high expectations toward relaxed and supreme long-distance travelling qualities served as a touchstone for this. That is why on top of additional passive occupant safety measures the list of novel functions also includes more systems that support the driver in his primary task.

1 Materials in the Interior

The interior of the Superb provides an impression of quality that is not usually seen even in much more expensive C class vehicles. The dashboard is all foam-filled from underneath, **Figure 1**. As a result, the dashboard surface is soft both in the upper and lower part. The occupants' knees touch only soft surfaces – if at all. Even the glove box cover on the front passenger side is soft to touch. As the dashboard surface, the glove box and the storage compartment on the driver's side are made of the same material, the overall appearance is very homogeneous and compact, with no differences in colour or shine levels.

The dashboard is available in one or two colours. In both cases the surface part is a single component that can be made in two colours using an innovative sprayed polyurethane technology. The gap between the two surfaces of different colours is only 1.5 mm wide. Top-class workmanship is apparent also in the transition between the dashboard and the door panels. Also made of sprayed polyurethane, their upper parts are pleasant to lean one's elbows against and make the transition between the two parts of the interior look perfectly compact.

Whatever one touches or handles in the new Superb gives an impression of high quality. Every control, every compartment that can be opened has been optimised in terms of the power required to open it as well as in terms of sounds. Nothing requires too much force or, on the other hand, nothing is loose to produce the impression of being rickety or feel cheap.

Like in the first generation, a large number of smart details were added to make the everyday use of the Superb a pleasure. Be it the large storage pockets in the doors, the big glove box on the front passenger side, the storage compartment on the driver side or a roomy jumbo-box between the front seats, the interior of the new Superb offers enough space for various objects. Also the new Superb continues the tradition of the handy and yet inconspicuous umbrella pocket: It is hidden in the rear door panel, **Figure 2**. Besides a rear roller sunblind, the vehicle is fitted with a side roller sunblind in the upper part of each door panel for greater comfort. These roller blinds are very easy to control with just one hand.

The seats of the new Superb have been designed to offer comfort without losing its side-to-side firmness. The upholstery has been dimensioned really generously to give enough legroom even to very tall people. The headrests have been designed and placed to provide excellent neck protection in the event of a rear impact.

2 Heating and Air Conditioning

A completely new approach was taken to comfort provided by the heating and air conditioning systems. The usual ventilation

Figure 1: Part of the Superb's quality-feel is the fully foam-filled dashboard with its soft surface

The Authors

Dipl.-Ing. Jens Rückert is Head of Vehicle/Body Development at Škoda Auto a.s. in Mladá Boleslav (Czech Republic).

Ing. Richard Valent is Head of Development Dashboard, HVAC and Steering Wheel at Škoda Auto a.s. in Mladá Boleslav.

Ing. Patrik Glenda is Head of Greenhouse, Restraint Systems and Door Trim at Škoda Auto a.s. in Mladá Boleslav.

Ing. Roman Minařík is Head of Seats and Side Airbags Development at Škoda Auto a.s. in Mladá Boleslav.

Dipl.-Ing. Sven Patuschka is Head of Electrics and Electronics Development at Škoda Auto a.s. in Mladá Boleslav.

Ing. Libor Stránský is Head of Lighting, Passive Safety Screen Wash/Wipe and Driver Assistance Systems Development at Škoda Auto a.s. in Mladá Boleslav.

Ing. Peter Kristl is Head of Electronic Systems and On-board Network Development at Škoda Auto a.s. in Mladá Boleslav.

Figure 2: True to the ‚simply-clever' slogan the Superb offers detail solutions to support everyday practicality. The rear passengers for instance can comfortably use the umbrella pocket and single-handedly operate the sunblind

ducts in the rear part of the vehicle coming from the central console did not seem to be the right solution, the reason being the big rear legroom. The routes are too long and their location in the knee area is not satisfactory. That is why it was decided to place air outlets in the B pillars, **Figure 3**, to provide higher air conditioning comfort in summertime and prevent steaming-up of the rear door windows in wintertime.

3 Additional Elements of Passive Safety

On top of the body-related safety measures (as portrayed under 2 of the vehicle section in this special) Škoda offers side airbags in the rear and a knee airbag for the Superb's driver for the first time, **Figure 4**. During a frontal crash the knee airbag prevents the driver's knees from hitting the tilt steering column and thus further minimise the risk of injury in this area. Optional rear airbags are an important safety aspect in a car like the Superb where the rear seats are definitely used more often than those in smaller vehicles. Together with the standard-fitted front, side and overhead airbags and belt pretensioners on the front seats and the outside rear seats, the Superb offers a full-scope occupant restraint package.

4 Comfort Electronics

4.1 Adaptive Front-Lighting System

The adaptive headlights (Adaptive Front-Lighting System, AFS) of the new Superb combine corner light with the new, adaptive bend lighting system. One of the priorities in developing the headlamps and fog lamps was to ensure that the traditional dynamic bend lighting is combined efficiently with the lighting modes of the AFS system (city lighting, basic lighting, motorway lighting) for optimum illumination in any situation, **Figure 5**. The basic AFS model has been designed together with Volkswagen AG. As the respective specifics have a considerable impact upon the functionality of the specific vehicle, the subsequent application to the Superb was done at Škoda in the Czech Republic.

Integrated in the fog lamps, the corner lighting system is primarily designed to illuminate the immediate surroundings in front of or beside the vehicle. The driver will appreciate the system benefits mainly in bends of small radius, when turning at junctions and leaving the road.

The dynamic bend lighting mechanism is designed to illuminate bends. Stepper motors in the main headlamps deviate the beam for optimum efficiency

4.1.1 Lighting Mode Country Road – Base

As the basic mode, the country road mode sets the lighting in front of the vehicle similarly to ordinary dimmed headlamps. At the speed ranges of 0 – 15 km/h and 50 - 90 km/h, this setting illuminates the road in front of the vehicle with maximum possible efficiency.

4.1.2 Lighting Mode City

The city mode is active at speeds ranging from 15 to 50 km/h. In this speed range the reach of the headlamp is not exploited, instead the light is purposefully dispersed to the sides. The objective is optimum lighting of junctions and pedestrians' movements.

4.1.3 Lighting Mode Motorway

The motorway mode is active at a speed of 90 km/h and higher. The reach of the headlamps is gradually extended to enable the driver to timely react to potential threats and obstacles. In this mode the beam is slightly wider to illuminate the left track as well but is set not to blind drivers going the opposite way.

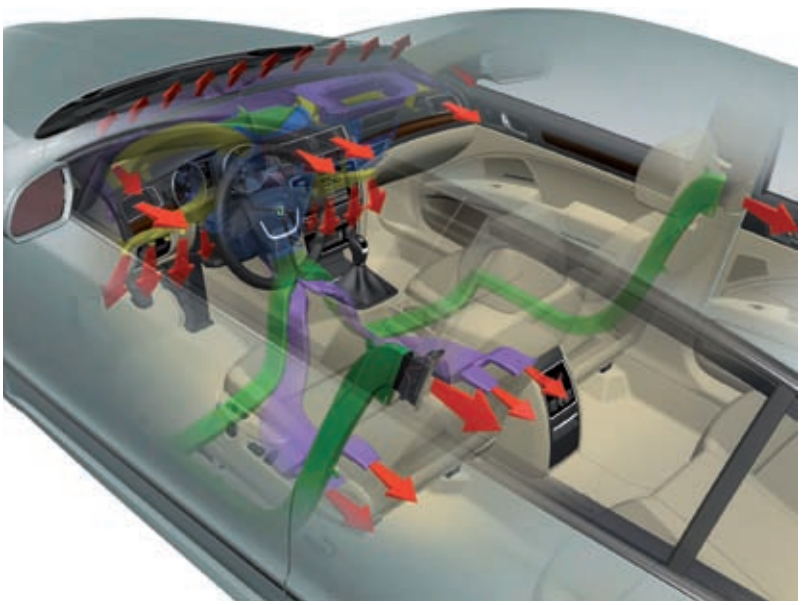

Figure 3: In the rear the air flow comes from air outlets in the B columns to avoid long flow paths from the center console

Figure 4: For the first time the Superb can be ordered with a driver knee airbag and rear side airbags

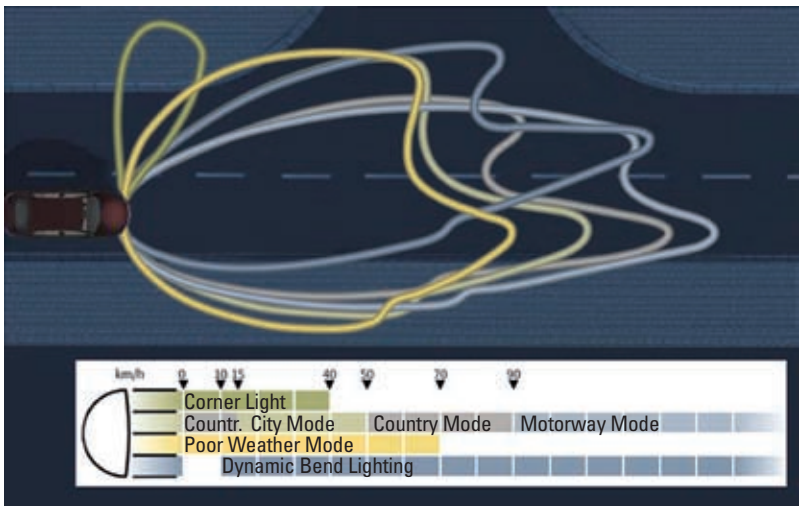

Figure 5: Lighting modes of the AFS system

Figure 6: In addition to the acoustic signal, the Optical Parking System (OPS), interfacing on the radio display, draws he driver's attention to obstacles

Figure 7: The components and functional parts of the semi-automatic Parking Navigation Assistant (PLA) are networkled according to the principle shown in the above figure

4.2 Parking Assistance Systems

Three levels of parking assistance systems are available as an extra with the new Škoda Superb. The lowest-level system measures the distances between the vehicle and obstacles behind it. The medium-level system also monitors the distances to obstacles in front of the vehicle. The functions of these two systems are known from the previous Škoda vehicles. The new Superb is fitted with a new optical system of obstacle distance signalling that is now going to be available in all audio and navigation systems. As a third level of parking assistance a parking navigation assistant is available.

4.2.1 Optical Signalling of Distances

If the vehicle is fitted with the original radio and the parking navigation assistant, it is possible to see an approaching obstacle (besides an acoustic signal) also on the display of the radio or navigation combined with the audio system. The system displays distances from 160 cm behind and from 120 cm in front of the vehicle, and from 60 cm in the corner areas, **Figure 6**. If a trailer is connected to the vehicle, a special symbol appears on the display of all audio systems and navigations combined with audio systems to show that the rear sensors have been deactivated.

4.2.2 Semi-autonomous Parking Navigation Assistant (PLA)

The parking navigation assistant is an innovation that, in a very user-friendly way, enables the driver to park the car into longitudinal gaps (alongside the curb) almost automatically. This system has been developed at Volkswagen and used by Škoda in the new Superb. **Figure 7** shows the system components. The functionality is:

- measuring the length and width of parking gaps while the car is in motion, **Figure 8**
- evaluating the size of the individual gap, Figure 8
- determining the appropriate position of the vehicle for parking, **Figure 9**
- calculating the vehicle's parking trajectory, Figure 9
- controlling the power steering unit, automatically displacing the front axle for the parking manoeuvre, **Figure 10** and **Figure 11**.

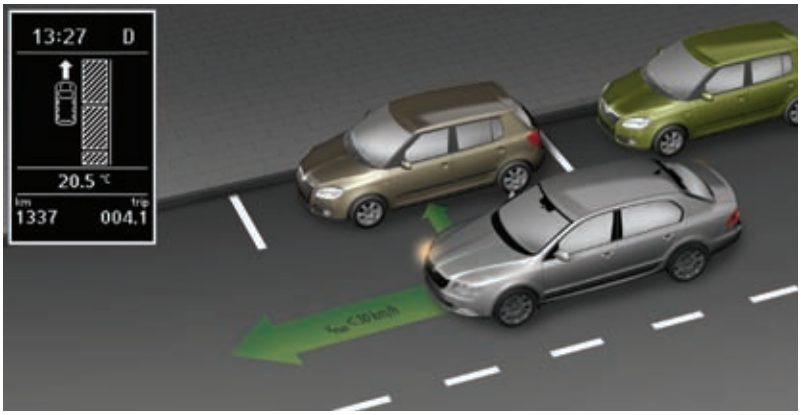

Figure 8: During a forward drive at up to 30 km/h of speed, parking vehicles are detected up to a lateral distance of 1.5 meters

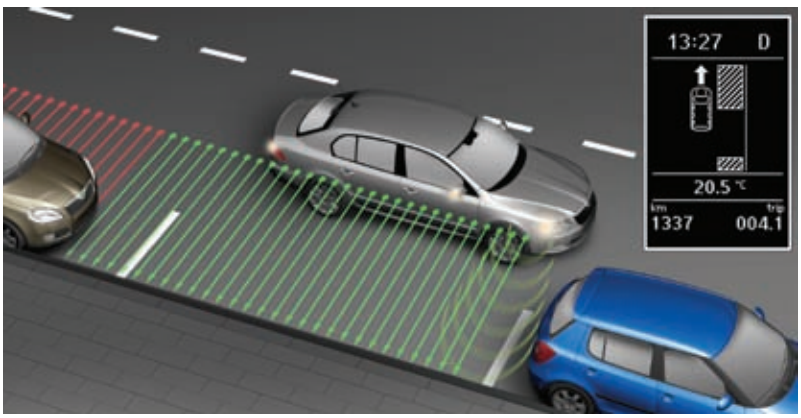

Figure 9: Using the travelling speed information from the wheel speed sensors, the PLA controller calculates the parking gap size and the instantaneous vehicle position

Having received all necessary data, the system commands the power steering unit to turn the front axle wheels. The responsibility for the vehicle's motion during the parking manoeuvre lies with the driver, because it is him or her who controls the accelerator, brake and clutch (manual transmissions only) pedals.

4.2.3 Spotting and Measuring a Parking Gap – Parking Manoeuvre

Basically, the parking navigation assistant is made up of two ultrasonic sensors in the bumpers and a control unit. Both ultrasonic sensors monitor the driver's and the front passenger's sides continuously up to 30 km/h, in both forward and backward motion. Parked vehicles and parking gaps are detected reliably up to a distance of 1.5 meters. By pushing the PLA button, the driver signals to the system that he or she would like to park the vehicle. Using an intuitive representation that appears on the multifunctional display of the cluster instrument, the PLA navigates the driver to the desired starting position. Along with the turning angle information (derived from electromechanical power steering data), the control unit gathers all data necessary for calculating the optimum parking trajectory, all that within a fraction of a second. Using the trajectory information provided by wheel speed sensors, the control unit precisely calculates the size of the parking gap and the current position of the vehicle.

Once the vehicle is in reverse gear, the PLA control unit activates the electromechanical power steering motor and independently navigates the vehicle into the parking gap. The driver takes his or her hands off the steering wheel and steps on the accelerator or brakes. To assure maximum possible safety, the assisted parking will be interrupted, if the driver intervenes in the steering or exceeds 7 km/h.■

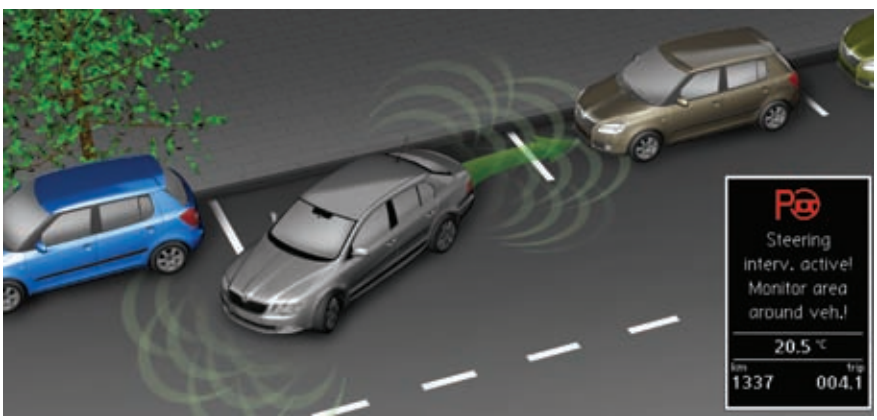

Figure 10: Once the reverse gear is engaged, the PLA controller activates the servo motor of the electromechanical power steering and autonomously steers the vehicle into the parking gap. The driver takes his hands off the wheel and accelerates or brakes the car

Figure 11: Autonomous steering wheel motion during the semi-automatic parking manoeuvre

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