JOB ROLE – AUTOMOTIVE SERVICE TECHNICIAN

Sector: Automotive
(Qualification Pack Code : ASC/Q1401)

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Unit – 5 : Innovation and Development

Session 1: Innovation and Development

Content

Session Objectives

1. In this Unit, Able to understand innovation and recall new innovations in automobiles.

Introduction

You must have seen new innovations and developments taking place day by day. New models of four and two wheeler are coming in the market with new design. You may think why it is happening and how these developments takes place. There are many reasons for the developments of innovations, One reason is fierce marketplace competition. Company R&D is a highly valuable intellectual property and so engineers work under top-secret security as the first company to come to market with a new technology can gain market share. Now let us try to observe and understand how innovation happens in the auto industry.

The automobile has very high quality control standards compared to other high tech industries.

- The useful life of consumer electronics is typically 3-5 years, compared to 15+ years for autos.
- Microprocessors in autos must withstand temperature swings from -40 degrees to 130 degrees--double the temperature specs for consumer electronics.

Meeting the test of time is a huge challenge. Your car performs multiple complex tasks in less than the blink of any eye, but researchers must spend years making a vehicle able to operate within seconds.

- When it comes to safety, speed is critical. Autos operate in "milliseconds," or thousands of seconds. Front airbags have about 30 milliseconds to sense an impact, analyze incoming data (from brakes or the steering wheel), decide whether to deploy the airbags - and at what level - and inflate in time to shield occupants. Side airbags deploy three times faster.

- Every few milliseconds, the engine control computer must decide how much fuel to inject into the engine and when to ignite the spark plug in order to optimize fuel economy and minimize emissions, and all this occurs while the driver is directing the vehicle to perform in different ways, such as accelerating onto a highway.

Top 10 Innovations

1. Antilock brakes

- Time frame: While there were some electronic braking systems as far back as the 1960s, Mercedes-Benz was reportedly the first to install ABS on production cars, in '78.
- The innovation: They help maintain control while stopping, as well as throw the door open to stability control and roll mitigation technologies. What we did before: Purists will say "stopped in less distance," but "plowed into objects when the steering locked up" is more accurate. Which cars have them: Most models offer ABS.
- 2. Airbag advancements

Top 10 Innovations

Time frame: The first cars with airbags debuted in the early '70s; Chrysler was the first to make them standard in cars, in 1988.

The innovation: Airbags have graduated from things that simply blast out of the dashboard to more advanced devices that protect you in a rollover, cushion your knee and adjust for smaller drivers. They can also determine the severity of the impact, your seat position and whether you're wearing a seat belt.

3. Key fobs

Top 10 Innovations

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The innovation: Airbags have graduated from things that simply blast out of the dashboard to more advanced devices that protect you in a rollover, cushion your knee and adjust for smaller drivers. They can also determine the severity of the impact, your seat position and whether you're wearing a seat belt. What we did before: Relied on seat belts, if we wore them, to protect us.

Which cars have them: All cars must have front airbags.

3. Key fobs

Top 10 Innovations

Time frame: Chevy's '93 Corvette featured General Motors' first Passive Keyless Entry system.

The innovation: Fobs now unlock doors, set off the horn and lights if you lose the car in the MegaMart parking lot and, in some cases, mean you don't have to use a key at all. The latest systems can be programmed to remember how you like your seat and mirror and adjust them accordingly. We should be driving jet cars by now. Failing that, not having to fumble with keys, seats and mirrors will have to do.

What we did before: Expended needless mental energy remembering where we parked and exhausted ourselves by unlocking doors manually.

Which cars have them: Most do.

5. Electronic stability systems

Time frame: BMW and Mercedes-Benz introduced them in '95 models.
The innovation: A computerized system that applies the car's brakes or cuts the throttle, or a little of both, to keep the car going where you want it to.
What we did before: Sometimes drove beyond our, or our car's, capabilities.
Which cars have them: Many models offer these systems.

Fig : Saturn View DVD screen

5. Electronic stability systems

Time frame: Honda and Saturn first offered them as options in 2002 models.
The innovation: They shrunk the DVD player and TV you had in the family room and stuck it in a vehicle. What's so innovative about that? If you have to ask, you must do not have kids.
What we did before: Hated life.
Which cars have them: Many minivans, wagons and SUVs have them as an option; some cars do as well.

7. Heated and cooled seats

Time frame: Heated seats have been around for a while, but cooled seats debuted in the mid-90s.
The innovation: Electric coils warm the seat, air circulates to cool it.
What we did before: Froze ourselves or walked around with sweaty, slimy grimy shirts plastered to our backs.
Which cars have them: Many cars offer heated seats. Cars with cooled seats include the Audi A8; BMW 760, 750 and M5; Bentley Continental Flying Spur; Buick Lucerne; Cadillac DTS, Escalade, STS, XLR and DTS; Ford Expedition and GT; Infiniti M35 and M45; Lexus ES, GS, IS and LS; Lincoln LS, Navigator and MKZ; Maserati Quattroporte; Maybach 57 and 62; Mercedes-Benz S, SL, CL, CLK, CLS, E and SLR; Mercury Monterey; Saab 9-5; Toyota Avalon; and VW Phaeton.

8. Tilt/telescoping steering wheels and adjustable pedals

Time frame: Tilt steering wheels have been around for a long time, but telescoping steering wheels and adjustable pedals only became common in the last 10 years.
The innovation: You need to sit at least 10 inches from airbags to avoid injury when they deploy, but shorter folks sometimes can't easily reach the car's controls if they do that.
What we did before: Sat too close to the airbag, hurt our backs with bad posture and generally were uncomfortable, and possibly unsafe, behind the wheel.
Which cars have them: Many offer them as an option

9. Navigation systems

Time frame: There are debates over who was first, but Honda claims the first nav system, in the 1990 Acura Legend.
The innovation: Going beyond paper maps, these systems can act as a co-pilot, telling you where to go and recalibrating themselves if you miss a turn.
What we did before: Refused to ask for directions.
Which cars have them: Many offer them as an option.

10. Hybrid drive trains

Time frame: While electric cars go back to the early days of the automobile, Honda's Insight was the first mass-produced hybrid sold in the U.S., in the 2000 model year.

The innovation: Hybrid drive trains combine gas engines with electric motors for power. While some systems are tuned to deliver more performance, the real news is in going farther on a gallon of gas ... and being able to drive a partially electric car without plugging it in.

What we did before: Plugged in our electric cars, or bought smaller, lighter vehicles to save gas.

Which cars have them: Many offer them as an option.

Top five best new innovations in cars safety technology:

1. Tyre pressure monitoring systems – Tyre pressure monitoring systems provide the latest and greatest technology for eliminating low tyre pressure on our cars, which can result in an accident or simply poor gas mileage. A tire pressure monitoring system can also alert us in seconds to a flat tyre, thereby reducing the chances of becoming involved in a car accident due to a flat tyre.
2. Blind-spot detection – Finally! There now is a system for alerting us if we attempt to make a turn and an object or car is in our blind spot. This technology responds as soon as the driver puts on the turn signal, thereby preventing a collision caused by the driver's blind spot.

3. Rollover prevention – Most of the newer SUVs are equipped with electronic stability control systems, but rollover prevention systems take the concept one step further. If you are making a turn too fast and the car senses a potential rollover, the rollover prevention system will apply the brakes and modulate the throttle as needed to help you maintain control of the vehicle. Ford calls it Roll Stability Control, while GM calls it Proactive Roll Avoidance.

4. Sensitive air bag systems – In older model cars, the airbag deploys when a front-end crash occurs. However, many of today's vehicles come equipped with more sensitive air bag systems, which sense the difference in the size and weight of the occupants and deploys the air bags accordingly.

5. Night vision assist – Properly operating a vehicle takes on a whole new meaning during the night time hours. Some of the newest vehicle technology allows drivers to seefurther down the road, courtesy thermal-imaging cameras, thereby allowing them to spot animals, pedestrians and other vehicles that they normally would not have seen.

These cutting-edge safety technologies will offer drivers not only added safety when behind the wheel, but may also offer them discounts on their car insurance.

Summary

In this session you have learnt a following , New models of four and two wheeler are coming in the market with new design. You may think why it is happening and how these developments takes place. There are many reasons for the developments of innovations, One reason is fierce marketplace competition. Company R&D is a highly valuable intellectual property and so engineers work under top-secret security as the first company to come to market with a new technology can gain market share.