

STATE OF LOUISIANA

COURT OF APPEAL

FIRST CIRCUIT

2004 CA 1311

STATE FARM MUTUAL AUTOMOBILE INSURANCE COMPANY

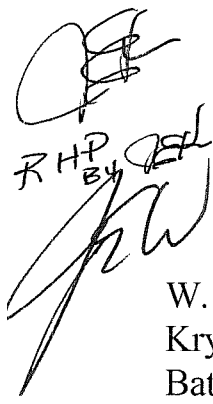
VERSUS

FORD MOTOR COMPANY

DATE OF JUDGMENT: JUN 15 2005

ON APPEAL FROM THE EIGHTEENTH JUDICIAL DISTRICT COURT
(NUMBER 54108, Div. D), PARISH OF IBERVILLE
STATE OF LOUISIANA

HONORABLE A. J. KLING, JR., JUDGE PRO TEM



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BEFORE: PARRO, KUHN, AND WELCH, JJ.

Disposition: AFFIRMED.

Kuhn, J.

In this products liability case involving a fire-damaged vehicle, defendant, Ford Motor Company ("Ford"), appeals a judgment in favor of plaintiff, State Farm Mutual Automobile Insurance Company ("State Farm"). The trial court found that a defectively designed and manufactured speed control deactivation switch, utilized in the vehicle's cruise control system, had caused the vehicle fire and resultant damage. We affirm on the basis that the switch was unreasonably dangerous in design.

I. FACTUAL AND PROCEDURAL BACKGROUND

During 1996, Emory R. Stephens purchased a used 1992 Lincoln Town Car with approximately 41,000 miles on its odometer from the Robinson Brothers Lincoln dealership in Baton Rouge, Louisiana. Over the next few years, Stephens brought his Town Car to the Robinson Brother's Baton Rouge dealership for routine maintenance. During September 1999, the Town Car's cruise control stopped working, and a brake light began intermittently illuminating on the dashboard. A few days after these problems developed, Stephens brought his Town Car to a local mechanic at an automobile repair shop near his home in Maringouin, Louisiana. Although the shop attendant advised Stephens that he did not think he would have the equipment in his shop needed to repair the vehicle, Stephens left the vehicle at the shop to be checked. Stephens and his wife went to a doctor's appointment, and upon their return about four hours later, an underhood fire had damaged the Town Car while it was parked in the repair shop parking lot. At the time of the fire, the Town Car's odometer registered approximately 91,000 miles.

Based on the expert testimony presented at trial, there were two possible causes of the fire: a defective speed control deactivation switch or an alarm system alleged by Ford to be an aftermarket product. Stephens testified that the Town Car was equipped with the alarm system when he purchased the car from the dealership. About two to three months after purchasing the Town Car, Stephens had someone disconnect the alarm system, explaining that he and his wife found it annoying. Although Stephens could not recall who had performed this service work, he testified that the alarm never sounded again and the dashboard light connected to the alarm system never illuminated again.

After the fire occurred, State Farm, Stephens' insurer, paid Stephens \$9,840.66 for the damages sustained to the Town Car. Stephens' insurance deductible was \$50.00. Pursuant to the State Farm policy, Stephens assigned his rights against Ford to State Farm, and State Farm filed suit against Ford. State Farm alleged the vehicle fire was caused by a defective speed control deactivation switch and that Ford, who designed, manufactured, assembled, and sold the Town Car, was liable for the resultant damages based on the Louisiana Products Liability Act, Louisiana Revised Statutes 9:2800.51 et. seq. State Farm further alleged Ford was aware that the switch could develop a resistive short in the electrical circuit and cause an underhood fire and had issued a recall in May 1999 applicable to the Town Car for replacement of the switch.¹

¹ Ford issued a recall notice to Stephens on May 20, 1999, that was mailed to 541 Maringouin Rd. W, Maringouin, Louisiana. However, Stephens' mailing address was P.O. Box 541, Maringouin, Louisiana. Stephens did not receive this notice or any other notice regarding the recall prior to the fire. After Stephens' Town Car fire was reported to Ford, Ford updated Stephens' address and mailed him a recall notification.

At the end of the trial after both parties had rested their cases, Ford filed a motion for involuntary dismissal.² The trial court denied Ford's motion and signed a judgment in State Farm's favor and against Ford in the amount of \$9,890.66, plus interest and costs. In its reasons for judgment, the trial court found that the switch in question was "defective in design and in manufacturing and that these defects caused the fire and damage to the vehicle." The trial court found: 1) Ford's "crimping procedure" in manufacturing the switch caused problems; 2) the speed control deactivation switch did not need to be continuously energized; and 3) State Farm established the requirement of an alternative design.

Ford appeals, seeking reversal of the trial court's judgment. Ford asserts the trial court erred by: 1) admitting evidence regarding Ford's response to the National Highway Traffic Safety Administration ("NHTSA") inquiry regarding engine compartment fires in certain Ford vehicles, Ford's service recall bulletin to its dealers addressing Safety Recall 99S15 (pertaining to the speed control deactivation switch used in 1992 Town Cars and other Ford vehicles), and Ford's safety recall notification to owners of the recalled vehicles; and 2) denying Ford's motion for involuntary dismissal on State Farm's design defect claim.³

² Because counsel for State Farm did not rest its case until after cross-examining Ford's expert witness, Ford reserved the right to file its motion for involuntary dismissal at the end of the case.

³ Our conclusion pretermits consideration of Ford's other assignments of error asserting that the trial court also erred in denying Ford's motion for involuntary dismissal on State Farm's defective construction or composition claim, and on its inadequate warning claim.

II. ANALYSIS

A. Standards of Review

Louisiana Code of Civil Procedure article 1672B provides, in pertinent part, "In an action tried by the court without a jury, after the plaintiff has completed the presentation of his evidence, any party . . . may move for a dismissal of the action as to him on the ground that upon the facts and law, the plaintiff has shown no right to relief." The applicable standard on a motion for involuntary dismissal is whether plaintiff has presented sufficient evidence to establish his case by a preponderance of the evidence. *CB & I Constructors, Inc. v. City of Thibodaux*, 04-1133, p. 3 (La. App. 1st Cir. 12/17/04), 897 So.2d 724, 725. An appellate court may not reverse a ruling on a motion for involuntary dismissal unless it is manifestly erroneous or clearly wrong. *Johnson v. EnviroBlast*, 01-0200, p. 4 (La. App. 1st Cir. 12/28/01), 804 So.2d 924, 926. Additionally, whether a product is unreasonably dangerous, and thereby defective, is a question of fact to be answered by the fact finder, subject to the manifest error standard of review. *Hines v. Remington Arms Co., Inc.*, 94-0455, p. 6 (La. 12/08/94), 648 So.2d 331, 335.

"[A] de novo review, without any deference to the fact finder, is only appropriate when there is legal error implicit in the fact finding process or when a mistake of law forecloses the fact-finding process, such as when the fact finder's decision has been tainted by an improper and prejudicial jury instruction or erroneously admitted prejudicial evidence." *Levy v. Bayou Indus. Maintenance Services, Inc.*, 03-0037, p. 7 (La. App. 1st Cir. 9/26/03), 855 So.2d 968, 974, *writs*

denied, 03-3161 + 03-3200 (La. 2/6/04), 865 So.2d 724 + 727, citing *Clement v. Frey*, 95-1119, p. 2 (La. 1/16/96), 666 So.2d 607, 612 (Lemmon, J. concurring).

B. Products Liability Law

Louisiana Revised Statutes 9:2800.54 provides, in pertinent part:

A. The manufacturer of a product shall be liable to a claimant for damage proximately caused by a characteristic of the product that renders the product unreasonably dangerous when such damage arose from a reasonably anticipated use of the product by the claimant or another person or entity.

B. A product is unreasonably dangerous if and only if:

(1) The product is unreasonably dangerous in construction or composition as provided in R.S. 9:2800.55;

(2) The product is unreasonably dangerous in design as provided in R.S. 9:2800.56; [or]

(3) The product is unreasonably dangerous because an adequate warning about the product has not been provided as provided in R.S. 9:2800.57;...

...

C. The characteristic of the product that renders it unreasonably dangerous under R.S. 9:2800.55 must exist at the time the product left the control of its manufacturer. The characteristic of the product that renders it unreasonably dangerous under R.S. 9:2800.56 or 9:2800.57 must exist at the time the product left the control of its manufacturer or result from a reasonably anticipated alteration or modification of the product.

Louisiana Revised Statutes 9:2800.56 states:

A product is unreasonably dangerous in design if, at the time the product left its manufacturer's control:

(1) There existed an alternative design for the product that was capable of preventing the claimant's damage; and

(2) The likelihood that the product's design would cause the claimant's damage and the gravity of that damage outweighed the burden on the manufacturer of adopting such alternative design and the adverse effect, if any, of such alternative design on the utility of

the product. An adequate warning about a product shall be considered in evaluating the likelihood of damage when the manufacturer has used reasonable care to provide the adequate warning to users and handlers of the product.

C. Evidentiary Issues Regarding the Recall and NHTSA Documents

Ford asserts the trial court erred in allowing the admission of evidence regarding Safety Recall 99S15, which pertained to speed control deactivation switches that had been installed in certain 1992 and 1993 Town Cars built between November 4, 1991, and November 30, 1992.⁴ At trial, Ford objected to the introduction of the following items of documentary evidence:

1) a May 1999 service recall bulletin issued to all Ford and Lincoln Mercury dealers addressing Safety Recall 99S15, which advised that "[s]ome Speed Control Deactivation Switches on the affected vehicles may develop a resistive short in the electrical circuit that may potentially result in an underhood fire." (Introduced as P-5). The bulletin further advised, "A fire is possible both when the vehicle is running and when the vehicle engine is off. Also, the short may disable the speed control system or cause a fuse to open." The recall bulletin directed that repair parts were not immediately available and that an interim repair, which involved disconnecting the electrical connector from the switch and disabling the speed control system, was to be performed immediately to eliminate the possibility of a fire. The permanent repair involved replacement of the existing switch with a new switch.

2) a May 1999 recall notice sent to owners of the affected vehicles stating, "[Ford] has decided that a defect which relates to motor vehicle safety exists in certain 1992 and 1993 Crown Victoria, Grand Marquis, and Lincoln Town Cars with Speed Control." (Introduced as P-6). This letter informed the owners of the safety defect presented by the speed control deactivation switches and advised that a "resistive short . . . may disable the speed control system or cause the brake light fuse to open." The letter also provided information regarding repair of the safety defect.

⁴ Other affected vehicles were certain 1992 and 1993 Crown Victoria and Grand Marquis vehicles built between February and November 1992.

3) a partial response from Ford to NHTSA responding to its inquiry regarding 21 reports of engine compartment fires on the driver's side. Ford's response indicates that its investigation indicates that the speed control deactivation switch may have been involved in some of these reports. (Introduced as P-4). Ford's response further states:

A root cause has not been conclusively identified. However, analyses have found that some speed control deactivation switches are susceptible to brake fluid leaks and corrosion that can create a conductive path in the switch resulting in overheating. ... Analysis performed on speed control deactivation switch field samples from Town Car ... vehicles ... suggests brake fluid may enter the switch cavities through cracks in distorted, localized brittle portions of the internal Kapton diaphragm and that or other contaminants may enter the cavity through the electrical connector seals.

Ford's response to the NHTSA inquiry further reveals that the increase in reported underhood fires coincided with a change in the manufacturing process of the switches:

In 1991, the Texas Instrument [manufacturer of the switches for Ford] manufacturing process using an auto-crimper was unable to produce parts capable of passing the required number of impulse test cycles. Texas Instruments was allowed to deliver parts made using a manual crimping operation, that met the specification. An automated crimping operation was certified for production in January of 1992. Parts from the automated process were shipped to Ford in February 1992. The increase in reported incidents coincides with this manufacturing process change at Texas Instrument....

Ford's response identified that the affected Town Car population was built between November 1991 and November 1992. It also indicated that based on a review of fire allegations potentially related to the speed control deactivation switch, the majority of vehicles had accrued mileage between 60,000 and 100,000.

Ford's response also assessed the effect of the switch on vehicle operation indicating, "Customers may experience inoperative speed control, difficulty shifting out of park (fuse #2 blown), dead battery, brake warning lamp ON, excessive brake pedal travel and/or smoke or fire on the left hand side of engine compartment."

On appeal, Ford asserts the challenged documentary evidence should not have been admitted at trial because it was not relevant and because it is hearsay. Ford does not contend on appeal that these documents are not authentic.

At trial, a party must make a timely objection to evidence that the party considers inadmissible *and* must state the specific ground for the objection. La. C.E. art. 103A(1); La. C.C.P. art. 1635. The reasons for the objection must be sufficiently brought to the attention of the trial court to allow it the opportunity to make the proper ruling and prevent or cure any error. *See Jeansonne v. Bosworth*, 601 So.2d 739, 744 (La. App. 1st Cir. 1992), *writ not considered*, 614 So.2d 75 (La. 1993). An appellate court will therefore not consider a ground for objection different from the grounds raised at trial. *Tutorship of Price v. Standard Life Ins. Co.*, 569 So.2d 261, 264 (La. App. 2d Cir. 1990), *writs denied*, 572 So.2d 91, 92 (La. 1991).

In the proceedings below, Ford objected to the introduction of its partial response to the NHTSA inquiry (Exhibit P-4) on the basis of lack of authentication and lack of foundation. Ford did not raise the objections of relevancy or hearsay, now raised on appeal, when Exhibit P-4 was introduced. Also during trial, when State Farm introduced the May 1999 recall notice sent to the owners of the affected vehicles (Exhibit P-6), Ford did not object on the grounds of relevancy or hearsay. Instead, Ford objected, stating that State Farm's expert witness, Ted Kaplon, "did not rely on that [letter] in giving his opinion." Because the record establishes the trial court was not afforded the opportunity to rule on the grounds of relevancy or hearsay, we will not consider these grounds in reference to Exhibits P-4 or P-6 raised only on appeal.

However, both in the proceedings below and on appeal, Ford objected to State Farm's introduction of the service recall bulletin (Exhibit P-5) on the grounds of relevance. Thus, we consider whether the trial court properly admitted this document despite Ford's relevancy objection.

Generally, all relevant evidence is admissible. La. C.E. art. 402. Relevant evidence is evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence. La. C.E. art. 401. However, Louisiana Code of Evidence art. 403 provides that relevant evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice or confusion of the issues. The use of the term “may” in this article emphasizes the discretionary contextual character of an article 403 determination. *Cooper v. United Southern Assur. Co.*, 97-0250, pp. 22-23 (La. App. 1st Cir. 9/9/98), 718 So.2d 1029, 1039. Thus, broad discretion should be afforded to the trial judge to effect this balancing test. Whether evidence is relevant is within the discretion of the trial court and an appellate court will not disturb that ruling in the absence of a clear abuse of discretion. *Id.*, 97-0250 at p. 23, 718 So.2d 1041.

If the service recall bulletin had dealt with a different model year or involved a different type of speed control deactivation switch, we would conclude the trial court erred in allowing the bulletin's admission. In this case, however, the recall campaign involves the same speed control deactivation switch and the same vehicle model as Stephens' vehicle. Additionally, the recall pertained to Stephens'

specific vehicle; he received a recall letter after the fire occurred.⁵ Because Ford denies that the speed control deactivation switch caused the fire, any evidence tending to establish that the switch was defective and could have caused the fire is relevant. Additionally, State Farm relies on the service recall bulletin in part to establish that the switch was unreasonably dangerous in design; the fact that this component may have been the cause of fires in other 1992 Town Cars is part of that proof. Accordingly, we find no abuse of discretion in the trial court's finding that the service recall bulletin was relevant and not unfairly prejudicial. Moreover, since the information contained in the service recall bulletin is largely the same as that included in the May 1999 recall notice sent to owners of the affected vehicles, the information contained in the service recall bulletin was cumulative and not prejudicial to Ford.

Ford also contends pursuant to this assignment of error that the trial court erred in allowing Kaplon to offer testimony about the recall documents that were beyond the scope of his expertise. Kaplon, who was accepted by the court as an expert in the field of electrical engineering and fire cause and origination, testified that an electrical failure inside the speed control deactivation switch caused the fire. Ford asserts, however, that Kaplon admitted he was unqualified to testify about the "contamination problem" mentioned in the recall documents and the specific mechanism within the switch that caused the failure. Kaplon explained, however, that he understood the nature of the failure mechanism that resulted in the Town Car fires and he was qualified to explain the electrical components of

⁵ The affected vehicles involved in the recall included "certain 1992 and 1993 Town Cars built at the Wixom Assembly plant from November 4, 1991 through November 30, 1992."

the switch and how they related to the fire. This indeed was the nature of his testimony, which will be discussed in greater detail below. We find no abuse of discretion in the trial court's decision to allow Kaplon to make general references to the recall documents to support his testimony.

D. Expert Testimony Regarding Causation of Fire

Following an examination of Stephens' Town Car, Kaplon concluded that an electrical failure within the speed control deactivation switch caused the fire. Kaplon testified that the origin of the fire was the driver's side rear portion of the engine compartment directly below the brake booster cylinder, where the speed control deactivation switch was located.

Kaplon, who was the first to investigate the cause of the fire, examined the vehicle about a week after the fire occurred. When he examined the damage under the hood, he found that the hood insulation blanket had come off of the hood and was lying on top of the engine. He described it as being intact, except at the driver's side rear portion of the engine compartment above the location of the switch. Although there were areas of the engine compartment that had been damaged by the fire other than the area directly above the switch, Kaplon explained that the vehicle's hood is a noncombustible barrier that prevents the fire from readily progressing upward and causes the fire to spread laterally. He posited that the fire's lowest vertical point was at the switch. Once the switch ignited, he explained, it burned upward like a candle, and eventually impacted the combustible brake fluid reservoir. Kaplon explained that once the brake fluid ignited, the fire would have progressed rapidly. Kaplon's theory was supported by his finding of the heaviest damage at the driver's side rear portion of the engine

compartment. Kaplon explained that as a general rule, the area of origin of a fire has the greatest fire damage. Besides assessing the damage, Kaplon considered other factors, such as fuel load, ventilation, air supply, and fire and fuel patterns in making his determination regarding the fire's cause.

Kaplon also testified that aluminum melts at a relatively low temperature, and the fact that the vehicle's aluminum hood was still intact after the fire indicated that the fire had been discovered and extinguished early. Additionally, the vehicle's passenger compartment sustained no fire damage.

Kaplon determined that the speed control deactivation switch presented a fire hazard, because it remained energized on a constant basis. He explained that when a vehicle's ignition is turned off, there are a few items that remain energized. If one of these items overheats, shorts, arcs, and causes a fire, the wiring reveals signs of electrical activity that is perceptible by feeling the wiring. Kaplon testified that he examined all of the vehicle's wiring and found no signs of electrical shorting therein except for within the switch.

Upon inspecting the switch that was removed from Stephens' Town Car after the fire, Kaplon found a localized destruction of one of the contacts in the switch interior. Kaplon opined that this damage revealed an internal electrical failure, which destroyed that portion of the switch and caused the switch to ignite. He explained that the only thing that can cause such damage is an internal electrical failure that generates intense, localized, internal heat.

In reference to the alarm system wiring, Kaplon explained that for a wire to overheat and cause a fire, the wire would have to be energized. He testified that the absence of any electrical activity in the alarm system wiring established that it

was not energized and could not have been a possible source of ignition for the fire. He explained that the insulation on the wiring was still intact and that the circuit board to which the wires attached was not even smoke damaged. He further testified that if the alarm system had still been connected to the vehicle wiring, it would not have been energized unless the alarm was actually sounding.⁶

Regarding the location of the alarm system, Kaplon explained that due to the fire damage, the alarm's precise original location was not ascertainable. The alarm appeared to have been on a plastic mounting bracket that was consumed by the fire. However, based on the length of the wiring connected to the alarm system, he determined it was probably mounted towards the front of the vehicle.

Mark Hoffman, Ford's expert who was accepted by the court as an expert in the field of electrical engineering and fire cause and origination, testified that the speed control deactivation switch did not cause the fire.⁷ Hoffman opined that if the switch had caused the fire, the dashboard panel, the wire connector over the engine, and the wiring in that general area would have been more heavily damaged than it was. Additionally, he found that the burn pattern on the side of the vehicle's engine was inconsistent with the fire starting in the switch. Hoffman's

⁶ Kaplon admitted during cross-examination that although he had initially examined the entire engine compartment to determine each mechanism's involvement in the fire, he had not specifically identified each vehicle part and denoted its specific function. He explained that he had eliminated a lot of components and wiring that he may not have been able to identify due to fire damage. He stated that he had examined the alarm system mechanism and ruled it out as a cause of the fire without specifically identifying its function during his initial investigation of the vehicle. Upon reexamination of the vehicle after Ford contended the alarm system was the cause of the fire, however, he verified that the alarm's siren and its wiring had nothing to do with causing the fire. Kaplon also testified that he had no way of determining whether the alarm system was part of the vehicle's original equipment.

⁷ Hoffman referred to the switch as a brake pressure switch, a synonymous name for the speed control deactivation switch.

investigation revealed that improper wiring of the vehicle's alarm system caused the fire. He determined the alarm system was an aftermarket installation, because the installation technique was not what he would have expected from a Ford dealership. Contrary to Kaplon's testimony, Hoffman found that the alarm system wiring was the most heavily damaged wiring in the engine compartment and that it revealed signs of internal heating. He also found that this damaged wiring had been energized. He theorized that the alarm system may have been disconnected to sufficiently deactivate the siren, but may not have been disconnected from its power source. Although he found no evidence of arcing in these wires, he found they revealed some short-circuiting.

Regarding the hydraulic/electrical switches used in the 1992 Town Cars, Hoffman testified that Ford discovered the manufacturing problem in late 1998 or early 1999. Hoffman testified that the recall team determined that the switches might fail in such a way that "they could actually short circuit and cause a fire." He explained that only some of the switches included in the recall population actually exhibited the problem for which the parts were recalled.

Hoffman testified that prior to examining Stephens' Town Car, he had investigated a number of vehicles involving switches that had allegedly caused fires. When he examined the Stephens' vehicle, he found the speed control deactivation switch revealed less damage than the other vehicles he had investigated. He further testified that when a switch fails, the switch housing and wire connectors are typically consumed in the fire. With respect to the Stephens' vehicle, his investigation revealed that the electrical connector and a good portion of the switch housing were charred but still intact. Otherwise, he found the

limited amount of damage to the vehicle indicated the cause of the fire did not implicate a fuel source. Hoffman acknowledged, however, that of the recalled switches involved in fires, those that failed involved a failure that started inside the switch.

On cross-examination, Hoffman also addressed a graph, which was attached to Ford's NHTSA response and depicted the incidents of Town Car underhood fire allegations according to the months in which the vehicles were built. He confirmed that this graph reflected that the "vehicle build month" with the highest number of reported underhood fires in 1992 Town Cars was April 1992, the month during which Stephens' vehicle was built. Hoffman also acknowledged that vehicles with 60,000 and 100,000 miles experienced the highest number of fires. Stephens' vehicle had 91,000 miles at the time of the fire.

Considering Stephens' testimony and the two permissible views in the testimony of the engineering experts, we find no manifest error in the trial court's conclusion that the speed deactivation switch failed and caused the fire. Stephens testified that his vehicle had displayed warning signs identified by Ford as problems that might affect the vehicle operation in the case of a defective switch. Stephens had noticed the illumination of his brake-warning lamp, and his speed control system had become inoperative prior to the fire. Although Kaplon and Hoffman presented contrary views regarding the cause of the fire, the trial court found that Kaplon's testimony was more consistent with the physical evidence than Hoffman's testimony. The trial court further stated that while Kaplon had convinced him "beyond any doubt" that the switch had caused the fire, Hoffman had not convinced him that the alarm system had "anything to do with [the] fire."

Where two permissible views of the evidence exist, the fact finder's choice between them cannot be manifestly erroneous or clearly wrong. *Stobart v. State through Dept. of Transp. and Development*, 617 So.2d 880, 883 (La. 1993). In the present case, we conclude that the trial court was presented with two permissible views concerning the cause of the fire. Thus, the trial court's finding that the switch, rather than the alarm system, caused the fire is not manifestly erroneous.

E. Defective Design

Ford urges the trial court was manifestly erroneous in finding that the switch was defectively designed. Additionally, Ford asserts that Kaplon's testimony regarding "alternate designs" amounts to nothing more than mere concepts that have not been proven to be superior to the design used.

A product is unreasonably dangerous in design if, at the time it left the manufacturer's control, there existed an alternative design that was capable of preventing the claimant's damage and the likelihood and gravity of that damage outweighed the burden on the manufacturer of adopting the alternative design and any adverse effect on the product's utility. La. R.S. 9:2800.56; *Ashley v. General Motors Corp.*, 27,851, pp. 9-10 (La. App. 2d Cir. 1/24/96), 666 So.2d 1320, 1322.

Kaplon testified that Ford had designed the electrical system in the 1992 Town Cars such that the vehicle's battery provided twelve volts of power to the speed control deactivation switch whether the ignition switch was turned "on" or "off." He explained that the Stephens' Town Car fire would not have occurred if the switch had not been energized, and that the switch could "most definitely" have been designed so that it did not remain constantly energized when not in use.

Kaplon described the speed control deactivation switch as an exemplar switch with two sides, one side being hydraulic and one side being electrical. He explained that Ford's investigation of the underhood fires revealed there was a crimping problem in the band that secured the two portions of the switch together. The design was susceptible to brake fluid leaking from the hydraulic side into the electrical side of the switch, which contaminated the electrical side of the switch and caused a corrosive ground fault and a conductive path within the switch. Kaplon explained that over a period of time, the switch generated sufficient heat to ignite the switch enclosure and the wiring harness surrounding it. Because the switch failure occurred over time, he explained that the mileage and age of the car were significant factors. Kaplon explained that the switch design was inherently dangerous due to its potential leakage problem and because it was constantly energized.⁸ He explained that the constant energization expedited the switch failure.

Kaplon further opined that a speed control deactivation switch should be designed such that it will last safely for the life of the vehicle. Alternatively, he stated that the switch should have been designed to fail in such a way that would not cause a fire. He further testified that a mechanical switch, used subsequently by Ford, presented a safer alternative. He explained that Ford's more recent design does not allow for brake fluid leakage; it is a mechanical switch activated by the brake pedal, which activates an electrical switch.

⁸ Kaplon did not offer an opinion about what part of the manufacturing process caused the leakage problem.

According to Hoffman, prior to using the hydraulic/electrical switch, Ford had used a vacuum-actuated speed control system in its Town Cars that preceded the 1992 model line. He explained that the speed deactivation in this previous system was accomplished by opening a valve, and the system did not involve electricity. He described it as being "very unlikely" to have caused a fire.

The record before us establishes that the constantly-energized hydraulic/electrical switch presented a risk of fire that Ford could have easily prevented. At the time Stephens' 1992 Town Car left Ford's control, there existed one or more safer, alternative designs for the speed control deactivation switch which were available and could have been implemented by Ford and which would have prevented the risk of fire. Hoffman, Ford's own expert, testified that a vacuum-actuated speed control system, which had been previously implemented in earlier model Town Cars, did not present a risk of fire. The danger of the risk of fire and the serious damages that might result clearly outweighed any benefit that may have resulted from the use of the constantly energized, hydraulic/electrical switch in the vehicle's speed control system. The evidence revealed no adverse effects that might have resulted from the use of an alternative design. Accordingly, we find that the trial court reasonably concluded that Ford should have employed an alternative design for the switch and that the switch was unreasonably dangerous in design.

Therefore, we find no manifest error in the trial court's conclusion that the switch was defective in design, and thus, we find the trial court did not err in denying Ford's motion for involuntary dismissal.

III. CONCLUSION

For these reasons, we find the trial court properly concluded that the switch utilized in Stephens' speed control deactivation system was defective in design and was the proximate cause of the vehicle fire and resultant damage. The trial court's judgment is affirmed. Appeal costs are assessed against Ford.

AFFIRMED.