

**General Motors
at**

expo'74[®]

World's Fair

Spokane, USA May 4 - Nov 3, 1974





NEWS

FROM ... PUBLIC RELATIONS

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Area code 313

FOR RELEASE -- IMMEDIATELY

SPOKANE, WASH. -- A slow motion simulation of what happens when a car equipped with an air cushion restraint system is involved in a frontal-type crash is being given visitors to the General Motors exhibit at Spokane's Expo '74.

Designed and built by Fisher Body Division, the demonstration unit is installed in a 1974 Oldsmobile 98. Two separate air cushions are inflated simultaneously after three volunteers sit down in the front seat. Although the simulation is some 50 times slower than a fully operative air cushion system, it nevertheless provides a sensation that fascinates visitors each time the specially-outfitted car is demonstrated.

It takes a relatively serious collision to trigger a fully operative air cushion system, but the demonstration car's air bags are set off by the push of a button. The demonstration car's air bags are repacked and used over and over, while the cushions and some of the other components in the real system must be replaced if the system is ever deployed in an accident.

The air cushions in the demonstration car resembles those now offered by General Motors as an option on full-size 1974 Oldsmobile, Buick and Cadillac passenger cars, except station wagons and convertibles. The driver's cushion is mounted in the hub of the steering wheel while the larger cushion for the two front seat passengers is installed in the lower portion of the instrument panel.

(more)

The fully operative system includes two sensing devices capable of recognizing an accident situation, one located behind the front bumper and the other under the instrument panel. If a severe enough crash occurs, either or both of these sensors can send a signal to the inflation mechanisms. The system is designed to be activated by an impact equivalent to at least 11 miles-per-hour into a solid barrier, or about 22 miles-per-hour into a parked car.

The inflation devices fill the two air cushions in one-sixteenth of a second after the impact -- about the time it takes to blink an eye. There are separate inflation systems for the driver and passenger cushions, both using gas generating devices.

Actually, there are two bags in the passenger system. A "knee bag" is inflated inside the larger "torso" bag to prevent passengers from submarining under the dashboard. The outer bag is porous enough to begin releasing the harmless gas as the weight of the occupants press against it. This permits the passengers to "ride down" a collision instead of bouncing off the bag.

After extensive laboratory and Proving Ground testing for three years, GM installed air cushion systems in 1,000 Chevrolets in early 1973 and placed them in the hands of high-mileage drivers in public and business fleets.



GENERAL MOTORS CORPORATION

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WORLD'S FAIR -- General Motors exhibit at the Expo '74 Spokane World's Fair highlights those scientific and engineering advances that have created "Mobility In Harmony With Our Environment."

Throughout the colorful 20,000-square-foot exhibit, 40 individual displays tell how GM is keeping its products and plants compatible with the environment. A 30-foot high identification tower visible at most points on the fair site marks the entrance to the GM exhibit.

Visitors to the blue and white, four leaf clover cluster of domed pavilions will see the latest GM experimental and production vehicles, a live science stage show and a unique mass transit "people mover." A host of animated exhibits -- many of them visitor operated -- include emission controls, ecology, pollution control and vehicle safety.

An array of alternative power sources being studied by GM engineers are shown through a series of cut-away models. Among them are gasoline, gas turbine, diesel, steam, Stirling, battery and fuel cell, stratified charge and rotary engines.

In a unique preview of mass transit development, GM will highlight two special purpose vehicles designed for possible urban transportation needs of the future. One is a small two-passenger car, code named XP-883, which is a special purpose commuter vehicle designed to accommodate a hybrid gasoline-electric powerplant.

The experimental "people mover" offers a four-to-six passenger capsule which would be computer programmed and electrically powered to deliver people nonstop to their destination with the push of a button. Designed on GM's modular construction concept, the five-foot long vehicle sections can be mass produced to be used as the building blocks for many different mass transit vehicles.

GM passenger car and truck divisions will preview the latest ideas in recreational vehicle travel with displays shown in natural settings on the well-landscaped surrounding area.

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Individual display highlights of the exhibit include:

Automotive Emission Control Components -- including the catalytic converter, which will be used on almost all GM's 1975 model cars to meet the more stringent emission limits which become effective this year. Major reductions have already been made in automotive-related pollutants in the atmosphere, and progress will continue as more new cars with effective control systems replace older uncontrolled models.

Fuel Economy Meter -- Devices to help drivers obtain better gas mileage include experimental fuel economy indicators code named GM's Sigma System. These are electronic devices which, while the car is running, continually calculate the miles-per-gallon the car is achieving and shows the number to the driver on a digital display on the instrument panel.

SO₂ Clean Coal Power -- GM's double alkali scrubber system, now coming into operation at a GM manufacturing plant, shows potential for removing sulfur dioxide from the exhaust gases of a plant's powerhouse. This system may help to make coal -- America's most plentiful energy resource -- more widely usable as an environmentally acceptable fuel for industrial power requirements.

Four Rotor Corvette -- a one-of-a-kind experimental Corvette boasting the latest state of the art in mid-engine sports car design. The unit has a traverse rotary engine power train and a highly advanced aerodynamic shape with bifold doors which open vertically for unobstructed entry.

Previews of Progress -- a daily feature at Expo '74 will be presentations of the two-man GM science show which has appeared before 30 million students and adults in the U.S. since 1946. The newest version has nine action sequences showing how science contributes to family living, pollution control, safety and mobility.

Basic Transportation Vehicle (BTV) -- a durable, low-cost general-purpose vehicle designed to fill the needs for economical, dependable motor transportation in developing nations around the globe. Simply engineered, it is now being assembled in developing nations on several continents, providing local employment as well as basic transportation.

Experimental XP-898 "Idea" Car -- built with a frameless, fiberglass foam sandwich body and chassis, it highlights alternate engineering approaches to future techniques in design and manufacturing being studied by GM. The construction of a sleek idea car offers improved crash worthiness plus a body virtually free of squeaks, rattles and vibrations.

Among anti-pollution progress to be demonstrated will be the new GM emission controls planned for 1975 cars, control of vehicle noise and a comparison of nationwide emissions from vehicles vs other sources. Also dealing with ecology will be an exhibit on noise and a new Terex Composter for waste disposal.

Automotive safety progress is demonstrated by the new air cushion restraint system currently being offered as an option by GM on some 1974 cars. Installed on a 1974 Oldsmobile 98, the air cushion demonstration system uses slow motion simulation to show what happens when a car equipped with the system is involved in a frontal-type crash.

An experimental device to prevent alcohol or drug-impaired drivers from starting cars will test a driver's reaction. The exhibit involves a ten-second test which must be successfully performed by a driver before his car will start. When the ignition is turned on, a needle on an instrument panel dial begins to fluctuate. Its movement can be controlled by slight movements of the steering wheel, but if the driver's actions are impaired and he cannot keep it centered, the car will not start.

A GM biomedical science exhibit will show how researchers study tolerances of the human body in safety design of interiors and vehicle structures. The biomedical display will highlight the current generation of sophisticated dummies that can closely imitate what happens to a human in a crash situation. The extensive developments of chest, neck and limb impact studies are used in measuring the performance of occupant restraint systems.

For motorists interested in how their cars operate, a special cutaway Vega station wagon will show inner workings of engine, suspension, drive train and other components.

Frigidaire Division will present a special home environment display of a futuristic "new look" kitchen which features computerized cooking equipment, a refrigerator that talks back or plays favorite tunes and microwave ovens that cook food in seconds.

In addition to the GM passenger car and truck divisions, there are displays by AC Spark Plug, Detroit Diesel Allison, Fisher Body, GM Overseas, Saginaw Steering Gear and United Delco.

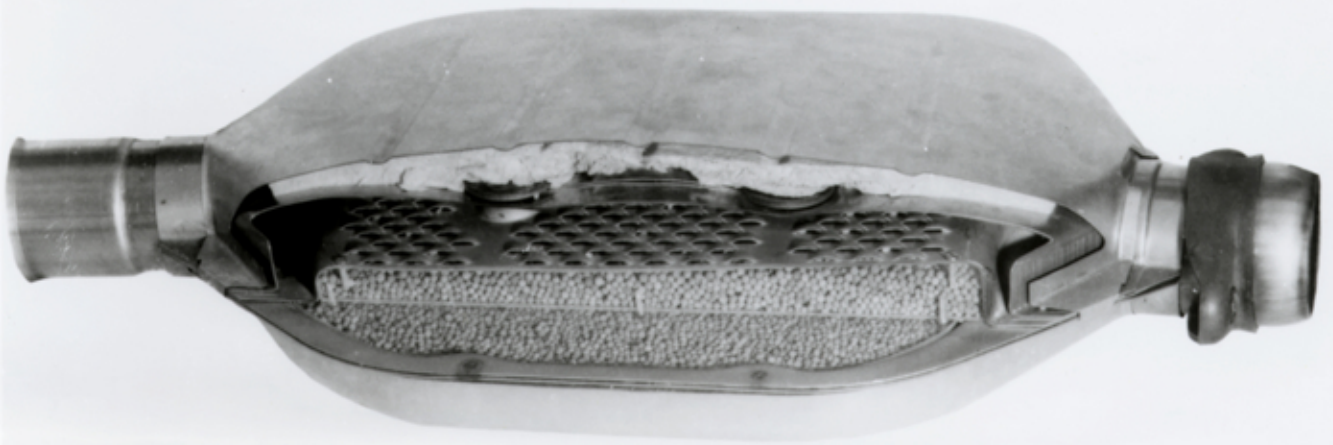
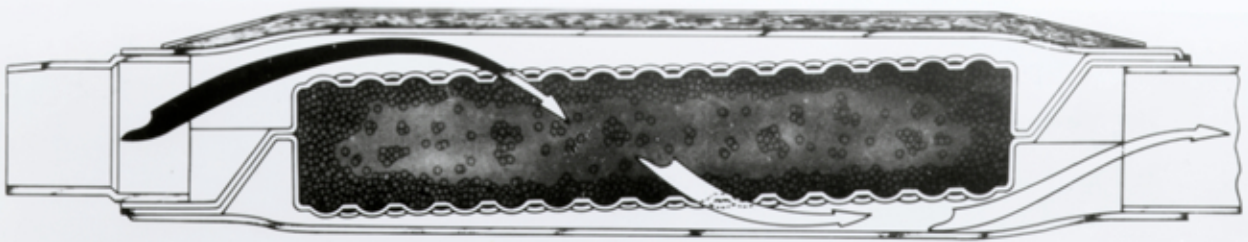
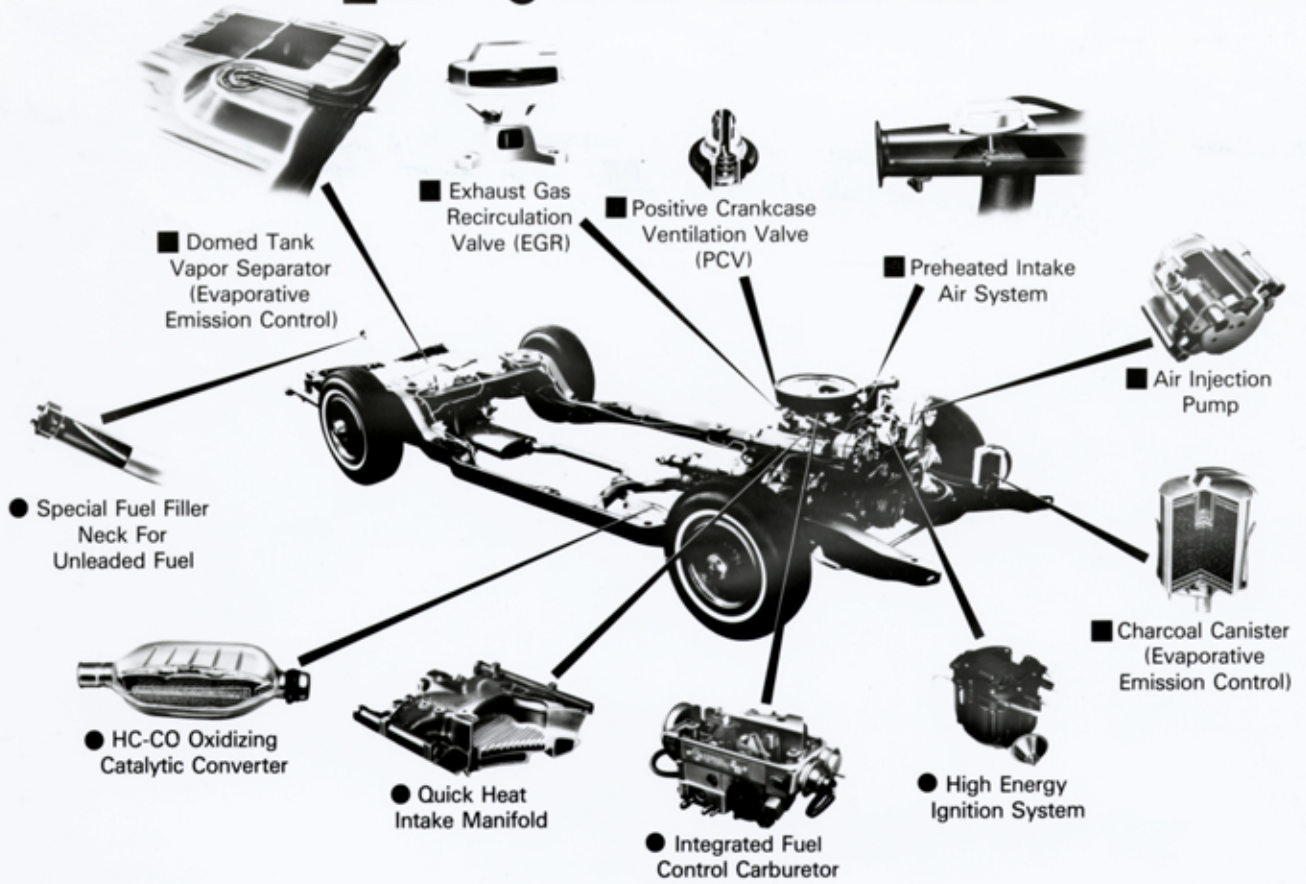
The GM site is located at Trent Avenue and Post Street in the southwest corner of the grounds near the Gate of the Fountains and the Energy Pavilion of the States.

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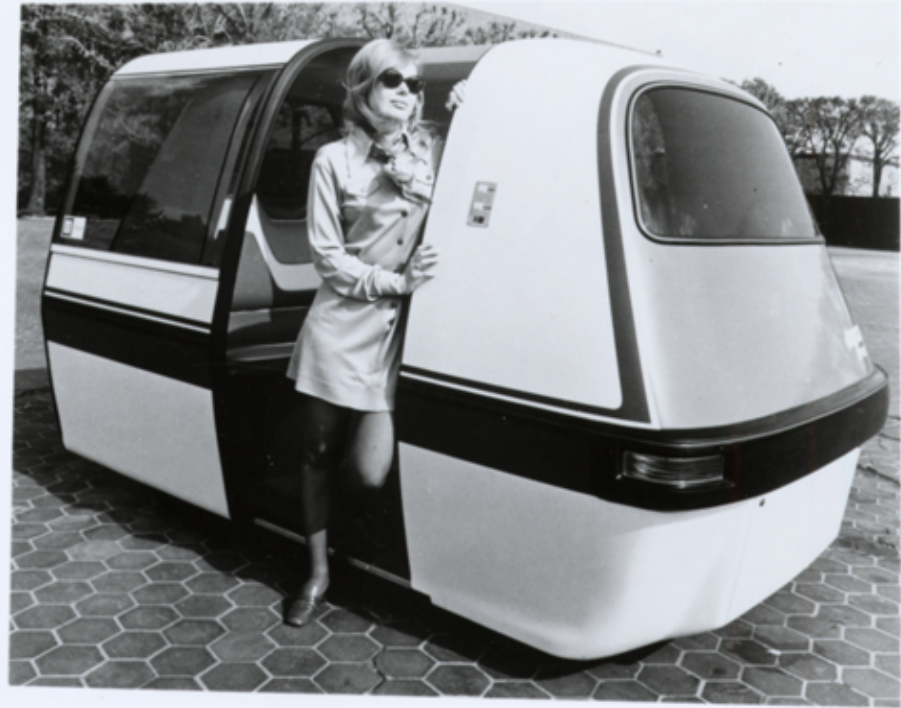
May, 1974

Automotive Emission Control Systems

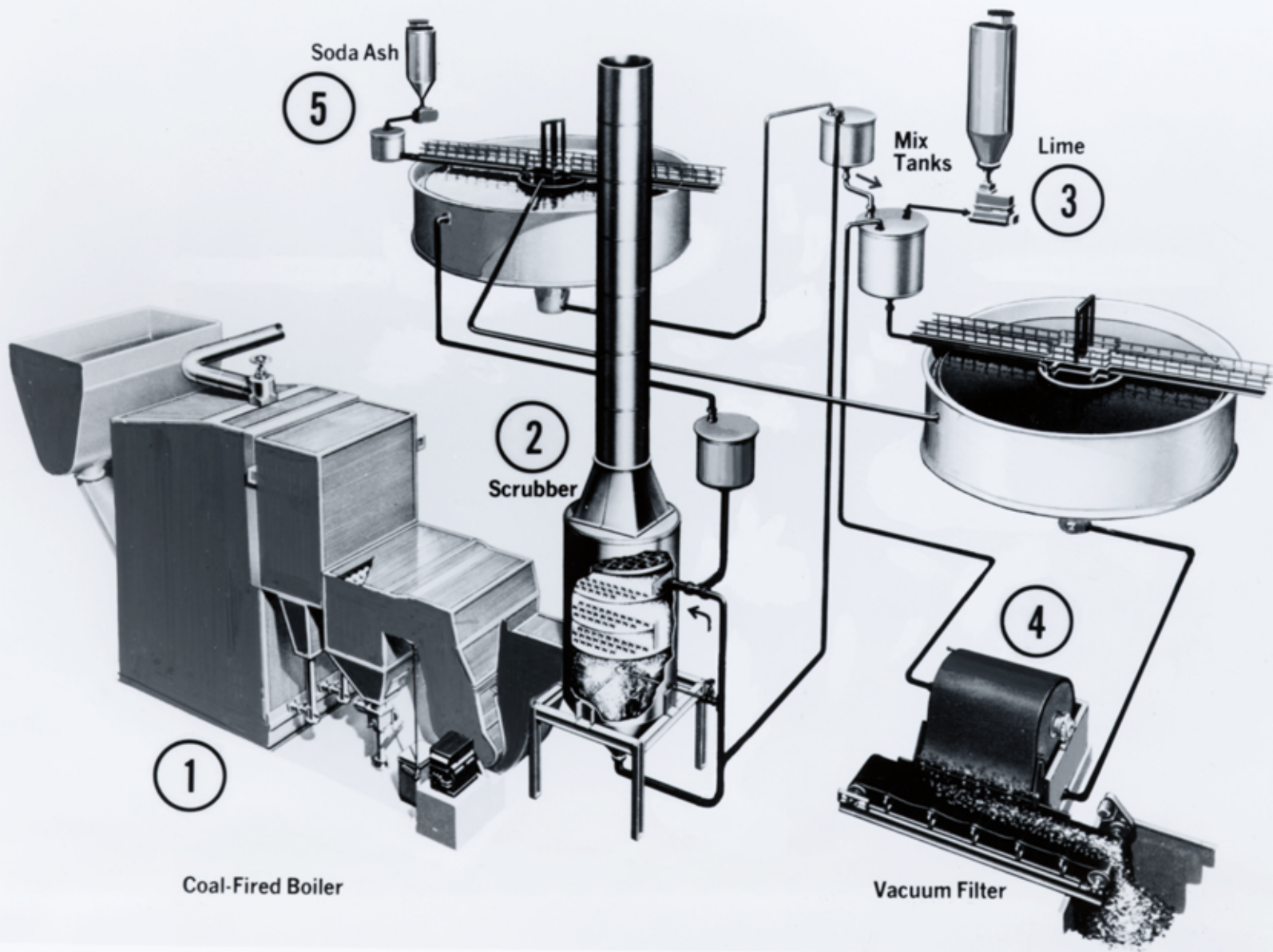
■ 1974 ● PLANNED FOR 1975 MODELS



'75 EMISSION CONTROL SYSTEMS AT EXPO—GM's display will include a special 1975 model chassis showing how the automaker will meet applicable federal emission limits. Using engine and exhaust systems tailored for individual models, GM will use oxidizing catalytic converters on most, if not all, 1975 cars which will cause hydrocarbons and carbon monoxide to be chemically converted to harmless water vapor and carbon dioxide as exhaust gasses flow through them. One converter unit, designed to be mounted under the passenger compartment in the exhaust system, is shown at the bottom of this photo. By using the catalytic converter to clean up pollutants in the exhaust stream, GM will be able to modify and retune engines to achieve improved fuel economy and driveability and still meet emission goals. Based on extensive research and engineering effort, GM believes the catalytic converter system is the best choice of available alternatives for meeting 1975 requirements, from standpoints of emission control, fuel economy, driveability, durability, low maintenance and cost to the consumer. The 1975 emission control systems will assure further reductions in atmospheric levels of automotive-related pollutants, which have been decreasing nationwide since about 1968. At the 1975 federal emission limits, GM's 1975 cars will achieve reductions from the emission levels of uncontrolled cars in the early 1960's of about 90 percent for hydrocarbons, 83 percent for carbon monoxide, and 38 percent for oxides of nitrogen.



GM EXPERIMENTAL "PEOPLE-MOVER" AT EXPO '74 — This General Motors experimental Personal Rapid Transit vehicle (PRT) is one of the key displays in the GM exhibit at Expo '74 in Spokane, Washington. The four-to-six passenger capsule would be electrically powered and could be guided electronically through buried cable or by a concrete or rail guideway. Operating as a "horizontal elevator," GM envisions that this small people-mover would first find use in central business districts, shopping centers and air terminals. The vehicle would be computer-programmed to deliver people non-stop to their desired destination at the push of a button. The PRT is the smallest people-mover in a family of vehicles designed with General Motors' modular construction concept. Using the modular concept, five-foot long vehicle sections — modules — can be mass-produced to be used as the building blocks for many different mass transit vehicles. A single module, fitted with front and back sections, builds a PRT, such as the one pictured above. Welded together in series, the modules can form buses or railcars. The length of these modular vehicles can be varied by adding modules. Interchangeability of module side and roof panels and windows simplifies manufacturing and maintenance. The modular concept offers transportation planners flexibility in designing transit systems because an array of different sized modules could be made available virtually as on-the-shelf hardware. This is one of several studies on future mobility to be displayed in the 20,000 square foot GM exhibit at the Spokane World's Fair which runs from May 4 through November 3, 1974.



GM'S NEW POLLUTION CONTROL UNIT — will show Expo '74 fairgoers how GM is able to burn coal cleanly through its new pollution control system. The system, which uses a double-alkali scrubber, has been installed at the Chevrolet Motor Division's Parma, Ohio, plant near Cleveland and permits the burning of coal in plant boilers without polluting. In removing more than 90 percent of the sulfur oxides from the flue gas coming from plant boilers, the gas (1) bubbles up through a solution of caustic soda inside the scrubber (2) which absorbs the sulfur dioxide. Calcium carbonate and lime are added to the solution (3) to settle-out the sulfur into a cake-like substance (4) which can be disposed of safely in a landfill. The liquid solution produced then is treated by soda ash (5) to make it suitable for re-use in the scrubber. The GM system is being made available throughout industry at no charge to interested parties. The Environmental Protection Agency has joined GM in a joint study of the new system.



"SIGMA" FUEL ECONOMY SYSTEMS AT EXPO '74 — will highlight GM's extensive development work aimed at providing drivers with information to help them maximize their fuel economy. There are four Sigma systems on display. Sigma I, a prototype of the current fuel economy meters being offered on several 1974 GM passenger cars, accurately measures fuel usage and accurately displays miles per gallon feedback for drivers in a numerical format. Sigma II combines the miles per gallon reading with an electronic digital clock system while Sigma III and IV expand the digital instrumentation to new features like average speed, trip miles per gallon, destination mileage, and estimated arrival time.

The visitor operated display shows the drivers at a glance how quick starts, passing and speed affect fuel economy. Drivers will also be able to better appreciate the impact on fuel economy of increased loads represented by such things as trailer hauling and hill climbing. In addition, should the miles-per-gallon performance of his car decline, as observed through the digital display, the driver will be alerted to the fact that vehicle maintenance probably is needed.