INSTRUMENTATION AND CONTROLS

The operation of the Turbine Car is much the same as that of a car with a piston engine and an automatic transmission except that the normal "Neutral" position is replaced with an "Idle" position.

To Start - Place the transmission shift lever in the "Idle" location and push down to engage the "Park/Start" position. Turn the ignition key to the right and release it. Starting is automatic. Within a few seconds, the inlet temperature and tachometer gauges on the instrument panel will read about 1200° F (650° C) and 22,000 rpm, respectively, indicating that the engine has started and is at idle operation.

To Drive - Place the transmission in "Low", "Drive", or "Reverse" (as with a conventional car), release the parking brake, and the car is ready to drive.

To Park - Bring the car to a complete stop, place the transmission lever in the "Idle" location and push it down to engage the "Park/Start" position, apply the parking brake, and turn the ignition key to the "off" position.

The performance and economy of the Turbine Car as demonstrated in proving ground and highway tests were comparable to a conventional car powered by a standard V-8 engine. The engine operated satisfactorily on diesel fuel, kerosene, unleaded gasoline, JP-4 (jet fuel), and mixtures thereof. Even more interesting, it was possible to change from one of these fuels to another without any changes or adjustments to the engine. The turbine engine has other advantages, too (listed in the INTRODUCTION), and one of the objectives of the user evaluation program was to see just how much these advantages mean to the average motorist.

FORMER CHRYSLER BOARD CHAIRMAN LYNN TOWNSEND VIEWS THE FIRST TURBINE CAR ASSEMBLY LINE

The Chrysler Corporation Turbine Cars were built at a rate of one per week until the last of the 50 cars was completed in October 1964. The special facilities for building these limited production test cars were located at Chrysler Corporation's Engineering Research Laboratories in Detroit. At the assembly area, the Chrysler-designed car bodies, which were built by Ghia of Italy, were lowered onto the new engines and chassis components. The turbine engines were built and tested at Chrysler's Research Laboratories.

The objective of the user evaluation program was to test consumer and market reaction to turbine power and to obtain service data and driver experience with the turbine cars under a wide variety of conditions. Each selected user drove one of the cars for a period up to 3 months under a no-charge agreement. The cars were then reassigned to other users to provide a broad consumer sampling base. In total, the cars were distributed to 203 motorists on a rotating system over a 2-year period, from October 29, 1963, to October 28, 1965. The last user completed her 3-month use period on January 28, 1966.

By retaining ownership of the cars, Chrysler kept in close touch with their performance and with the service experience on the engines. Also, Chrysler engineers were able to incorporate advances and modifications resulting from Chrysler's continuing research program. A period of 3 months was selected because it was felt this would give each driver ample time to try our turbine power under a variety of conditions. Limiting each driver to this period made it possible to obtain the reactions of over 200 users in a short time.

Users of the turbine-powered passenger cars were selected by the accounting firm of Touche, Ross, Bailey, and Smart. Under the user selection procedure, Chrysler gave the accounting firm the date and metropolitan area location of each planned delivery, which was geared to the turbine production schedule. Random selection of user candidates for each location was then made by the accounting firm according to the selection and distribution criteria specified by Chrysler to meet market test objectives.

The basic qualifying requirements were that a candidate owned a car (or, be a member of a household in which a car was owned by the head of the household) and had a valid driver's license.

Turbine candidates were picked as follows:

- From Chrysler's letter inquiry file of 30,000 names. These applications were in the form of unsolicited letters from people in hundreds of cities in all 50 states (and 15 countries). Requests ranged from that of a 12-year-old boy asking that his father be given a car to that of an 83-year-old retiree.
- From 128 major population centers of the 48 contiguous states. Chrysler specified this to assure a high degree of market exposure to turbine-powered vehicles and to test the cars in a variety of geographic areas and in all kinds of weather and terrain. The number of trials in each population center was apportioned according to the number of cars owned in each area.
- In accordance with the make, price category, and age of the new and used cars owned by candidates at the time they wrote their letters to Chrysler. In this respect, the program intent was to select users whose car ownership pattern reflected the great variety of the types and ages of cars on the road today.

In return for the use of the turbine car, each user was asked to furnish Chrysler with the information needed for the market evaluation program. Chrysler handled the service, insurance, and other costs involved in the use of the turbine car. Each user bought the fuel for driving it. The user was also expected to maintain the physical appearance of the car, exercise reasonable care to protect it from damage, and supervise its use by others.

The world's first consumer delivery of a turbine car took place October 29, 1963, in Chicago. Mr. Lynn A. Townsend, former Board Chairman of Chrysler Corporation, presented the keys of the turbine car to Mr. & Mrs. Richard E. Vlaha of Broadview, a suburb of Chicago.

FIRST CONSUMER DELIVERY OF A TURBINE CAR

THE TURBINE CARS WERE EXPOSED TO A WIDE VARIETY OF CLIMATE IN THE PROGRAM

The experience of the user program indicated that the idea of turbine-powered passenger cars was capable of earning widespread consumer acceptance. Each user was interviewed within two weeks of the conclusion of his use period. Users generally were enthusiastic about the turbine car. Although it was expected that anyone who had free use of a new and unique automobile would have a favorable attitude toward it, interviewers were satisfied, after sufficient questioning, that it was the performance of the turbine engine itself that caused favorable reaction among users.

Many people expressed the conviction that gas turbine power plants would eventually replace conventional piston engines. Others, while enthusiastic about the car, said they thought that acceleration and fuel economy would have to be improved before turbine cars could be marketed successfully.

Three out of four singled out the smooth, vibrationless operation of the car as its principal advantage. They were impressed by this aspect of the turbine engine, and talked about a "gliding sensation" which was felt at all speeds, especially on long trips.

The second most important advantage was reduced maintenance. Although the users recognized that a 3-month test consisting of normal driving would not prove that an engine is exceptionally durable or maintenance-free, they generally assumed that the smaller number of moving parts would naturally lead to less need for periodic maintenance.

Another strong point of turbine engines, according to users, was starting ability. Regardless of the make and model year of the car each owned, users consistently considered the turbine car superior to others in providing fast, sure ignition.

ONE OF THE 22 WOMEN SELECTED IN THE USER'S PROGRAM

About one person in four expressed disappointment with fuel economy. This is attributed to the engine's inherently high idle fuel consumption and the fact that much fuel was used by frequent starts, stops, and idling while demonstrating the car for friends. Highway mileage, however, was excellent. Consequently, their over-all fuel consumption could not be considered a true measurement of the car's fuel mileage capability. In this area, Chrysler regarded its own proving ground and road test experience as more valid measurements of the turbine's actual fuel consumption potential.

In reacting to the sound of the turbine engine, users tended to contradict each other. For every person who complained about the noise level of the engine, there were three or four who liked the sound of turbine power. The car was described as immensely more quiet, especially at high speeds, than the conventional piston-powered automobile.

From an engineering standpoint, the program afforded an opportunity to observe and to judge the behavior of turbine engines under actual customer driving conditions -- the first time that automobile turbine engines were tested to such a wide extent under such circumstances. The turbine car user program provided an engineering record of over 1 million miles by 203 different drivers, men and women, old and young, in 48 states.

Chrysler was primarily interested in the life of engine parts and components, their performance and reliability, the degree and nature of maintenance required, and the amount of training desirable for service people.