

A Sound Investment in our Environment

With the CarGate[®] System Solution



CarGate[®] Ultrasound Leak Detection System with CarScan[®]
A Sound Solution to the Automobile Quality Control Process

OUR GREEN PHILOSOPHY


GTI and the automobile industry have experienced a collaborative and successful relationship for more than 20 years. Based on the consulting history of GTI, it was evident that GTI could advance the automotive quality control process. GTI has now developed a solution for the auto industry's quality improvement process with the CarGate[®] Ultrasound Leak Detection System with CarScan[®].

The CarGate[®] System offers the benefit of reduced costs in a variety of areas including production, maintenance and R&D while also greatly diminishing the environmental impact of automotive manufacturing. GTI is committed to working with the auto industry to help our clients increase profits, efficiency, productivity and to save our planet's resources.

The technology currently employed by the automobile industry for quality control testing and measures is the Environmental Test Chamber (water booth method) which has been the industry standard for decades. Aside from the potential damage caused by water intrusion and deposits, the water booth method also has several distinct environmental disadvantages which include: the use of millions of gallons of treated public water reserve and the introduction of water treatment chemicals to the plant atmosphere and the environment. The global supply of fresh water resources is dwindling at an exponential rate. Some areas, even in the United States, could be without renewable water in as little as 5 years.

The water booth method also introduces chemicals through waste water and evaporation as the water must be treated, to prevent bacterial, fungal and algal growth. Due to the atomization of the water and chemical mixture, the water booth generates airborne particulates. The CarGate[®] System has no atmospheric impact.

By releasing these water treatment chemicals into our environment we reduce the availability of pure water globally and often the treated water cannot pass new regulatory standards to be put back into the ecosystem.



“The conservation of natural resources is the fundamental problem. Unless we solve that problem it will avail us little to solve all others”.

- Theodore Roosevelt

The CarGate[®] System utilizes ultrasound technology to detect leaks in automobile cabins and compartments.

The CarGate[®] System needs no water and therefore no chemicals to test for water and wind noise leak paths.

CarGate® Ultrasound Leak Detection System with CarScan®

The 2008 Innovation of the Year Award winning CarGate® System is designed to scan automobiles on a manufacturing production line during the quality control process, and to provide specific, repeatable and unbiased trend analysis for the manufacturer to improve vehicle quality.

The System assesses each car to accurately identify wind paths and water leaks, and stores the data from the test procedure for evaluation and trend analysis. This state-of-the-art, turn-key solution allows production control operators to monitor data and determine the results of each automobile. Since the CarGate® System pin-points the exact location of a leak; the vehicle can then be rerouted to the proper area for repair. This technology also provides the manufacturer with the qualitative data to pin-point the leak location for repair, design/build examination and preventative solutions. Vehicles are tracked by the vehicle identification number (VIN), allowing them to be retested and traced throughout the production and life cycle of the vehicle after the repair has been completed.

With the CarGate® System, GTI developed a user friendly software package, CarScan®, that operators will use to determine where a leak failure has occurred. Since the CarGate® System pin-points the area of failure, cars are easily sent for repair, and with our included hand held ultrasonic testing equipment (111R) the vehicle can be manually retested and released. The combination of technologically advanced hardware and software gives a complete turn-key package previously unavailable.

The CarGate® System collects and stores the data from the quality control test process allowing plant personnel to evaluate statistics, materials, and design elements that can improve the production process. This improvement will ultimately lead to higher quality and customer satisfaction ratings with their products. The stored data can also be retrieved for trend analysis and reporting which ultimately provides a window to the leak test results directly from the line in REAL TIME.

“We strive to cultivate technologies that are environmentally conscious, reliable and cost-effective...”

- GTi

The objective at GTI is to provide proactive management with these goals; an ability to balance GREEN technology implementation and the bottom line; to make GREEN Engineering an asset to the manufacturing process; to reach maximum productivity across the board and reduce warranty calls and dollars spent. The purchase of a CarGate® System will favorably and significantly affect infrastructure and labor costs within your operating budget in the first year.

The CarGate® System pin-points trouble spots for accurate and efficient repair.

The CarScan® software provides tools to operators that allow for tracking, reporting and appropriate follow through.

WATER BOOTH USAGE (Per Booth)

The empirical data supplied to GTI by an industry leader regarding the utilization of the water booth method is outlined in the table below. The data allows for water, chemical, and electricity usage as well as maintenance costs.

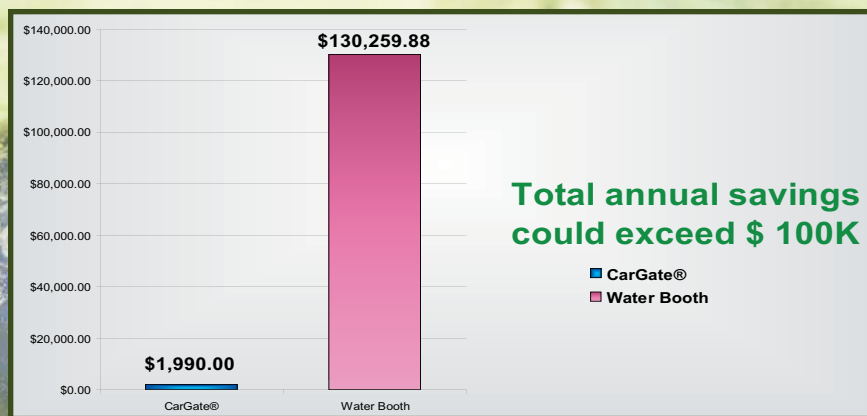
Item	Cost	Units	Qty Used	Frequency	Calculation Factor	Annual Usage		Annual Cost		Comments
	Each					± Water Booth	CarGate®	± Water Booth	CarGate®	
Water Usage**	\$ 0.0150	/ Gal	9000	Week	52	468,000	0	\$ 7,020.00	\$0.00	Estimate based on weekly booth cleaning and replacement of test water. Frequency wholly depends on water quality.
Water Loss**	\$ 0.0150	/ Gal	5062.5	Day***	250	1,265,625	0	\$ 18,984.38	\$0.00	Estimated loss of 2.5 gallons / vehicle due to carry off, overspray, evaporation and backflush. ‡‡
Electricity	\$ 0.069	/ KWH	1062	Day***	250	265,500	42,480	\$ 18,319.50	\$690.00	Water booth estimate based on hp ratings for motors @ 60 JPH, for 3 shifts, plus a nominal amount for lighting etc. CarGate® estimate based on electronic power consumption of I/O and PCs.
Water Treatment Chemicals*	\$ 1.900	/ Gal	120	Month	12	1,440	0	\$ 2,736.00	\$0.00	Estimate based on LDT Bleach usage for month of Jan. 2008.*
Maintenance Labor Costs*	\$ 100.000	/ Hour	16	Hrs / Week	52	832	13	\$ 83,200.00	\$1,300.00	Water booth estimate based on 2 men working 8 hours to clean, treat and maintain. CarGate® estimate based on 1 man cleaning the vehicle presence reflectors and sensors once weekly.
TOTAL COST †								\$ 130,259.88	\$1,990.00	The CarGate® Ultrasound Leak Detection System can save over \$100K for each water booth replaced.

*Special thanks to the automaker who provided this information to GTI
 ** \$0.015 per gallon is used as the default value based on US averages in 2008.
 *** 250 working days per year is used as the default value based on US averages.

‡ Estimated number of water booths in the US based on average number of 4 lines per automotive manufacturing plant.
 ‡‡ All estimated production numbers based on line speed of 30/ min - 90 Autos per hour - 3 (7.5 hr.) shifts per day.

Labor Costs to Locate Leaks	Plant Specific	\$0.00	It is impossible to determine the number of man hours used to chase down the intrusion point after a water leak. CarGate® pinpoints the exact location of the leak path, eliminating this cost factor. Damage expenses fluctuate drastically. Each plant, model, cycle will affect these costs. CarGate® will not cause damage to vehicles.
Damage Costs	Plant Specific	\$0.00	

CarGate® SYSTEM vs. WATER BOOTH METHOD



Based on the items outlined above, it is reasonable to anticipate a complete return on investment within the first year of operation.



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