

## Development of Environmentally Conscious Products

### Other Environmentally Conscious Products

Toyota Industries is working to introduce LCA, manage and reduce the use of substances of concern, and improve the recyclability of our products. In addition, in accordance with the Third Environmental Action Plan, we are implementing a variety of other steps to develop and supply environmentally conscious products. This section introduces three examples of our endeavors.

#### Development of the 1HD-FTE Low-Emission Diesel Engine

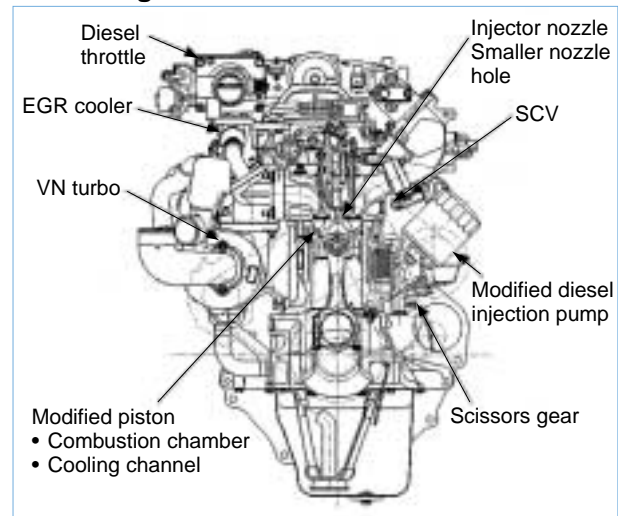
Owing to high thermal efficiency and low fuel consumption, diesel engines are superior from the standpoint of preventing global warming. However, in recent years, regulations on diesel engine emissions have grown strict. As a result, the quest to create a clean diesel engine has become an important development theme over the years.

The Toyota 1HD-FTE direct-injection diesel engine was developed in 2001, a top-of-the-line SUV engine for the 21st century.

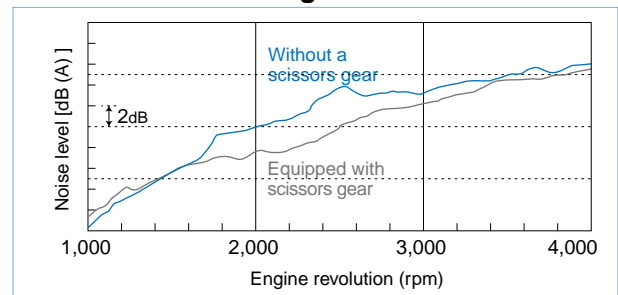
The diesel engine is in compliance with the STEP III (EURO III) European exhaust emissions regulation. NOx and particulate matter (PM) were reduced using a swirl control valve (SCV), a Toyota first, a diesel throttle, and EGR gas electronic control with an EGR cooler.

Over recent years, demand has increased for a quieter diesel engine. We have reduced suction noise by adopting a resonator placed on the intake system and curbed gear noise with the use of scissors gears.

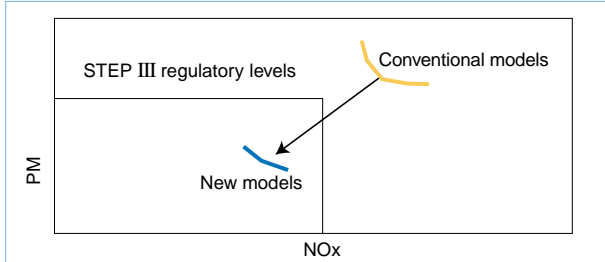
#### Diesel Engine 1HD-FTE



#### Noise Reduction Using Scissors Gear



#### Diesel Engine 1HD-FTE with Lower Air Pollutants



#### Energy Efficient Water-Jet Loom

Over its product life cycle, textile machinery consumes an extremely large amount of electric power during use. Consequently, we are continuously striving to find ways to conserve energy in the design and development of our products.

In 2001, we developed a drum without a turbo blower for use in our mass-produced water-jet looms. Owing to this, we achieved overall energy reduction of 25%. For 100 units operating simultaneously, the CO<sub>2</sub> reduction is 250 t-CO<sub>2</sub> per year.

#### Launching of our North American Compressor Remanufacturer, ACTIS

ACTIS Manufacturing, Ltd. LLC (ACTIS) is a remanufacturer of car air-conditioning compressors in North America jointly established by Toyota Industries, DENSO, and Toyota Tsusho. Operations started up on March 18, 2002 in Grapevine, Texas (U.S.).

ACTIS was established to fulfill environmental needs in North America through the effective use of resources, namely the recycling of automobile parts. In North America there is a growing demand for remanufactured compressors. ACTIS strives to make a contribution to the trend of remanufacturing automobile parts.

#### Corporate Summary

Established: 2001  
 Capital: \$2 million  
 Business activities:  
 Remanufacturing of car air-conditioning compressors  
 Location: Texas, U.S.

