

# IAV - Alternative Fuels

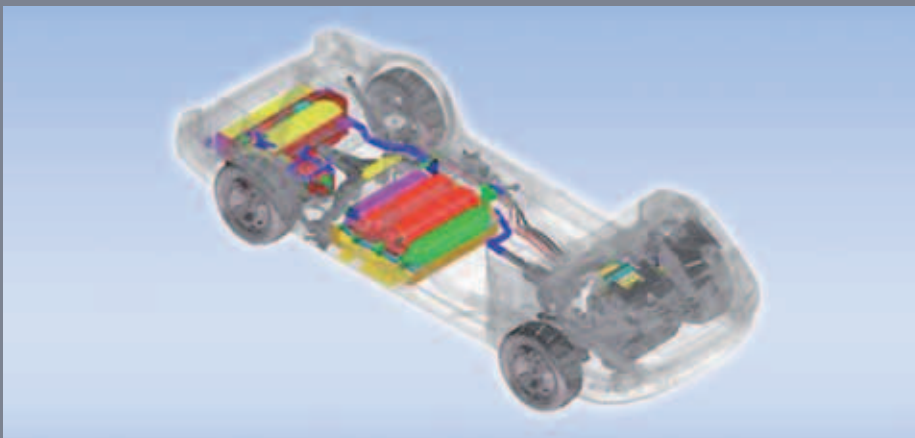


## Moving ahead with IAV

Alternative fuels, including ethanol, biodiesel, biomass-to-liquids (BTL), CNG, LPG and hydrogen (H<sub>2</sub>), constitute a valuable resource in that they reduce environmental pollutants and eliminate dependency on crude oil. Notwithstanding these benefits, there remains much to be done in the way of engine development; the vapor pressure anomaly of ethanol mixtures, the chemical properties of biodiesel and the additional safety regulations for H<sub>2</sub> must all be considered. Additional demands weigh on engine hardware and software developers with the introduction of bivalent vehicle drives or engines compatible with a fuel blend. Whether tribology, the combustion process or algorithm development, IAV possesses not only theoretical expertise in alternative fuels, but also practical experience. From the outset, IAV has been developing bivalent and monovalent CNG drives for mass production and converting vehicles for CNG operation using an internally designed injection system. Making use of CNG, LPG, biodiesel and ethanol engine test benches, IAV ensures that the engines of tomorrow are running today.

## Henry Ford:

*"The fuel of the future is going to come from fruit like that sumach out by the road, or from apples, weeds, sawdust - almost anything."*

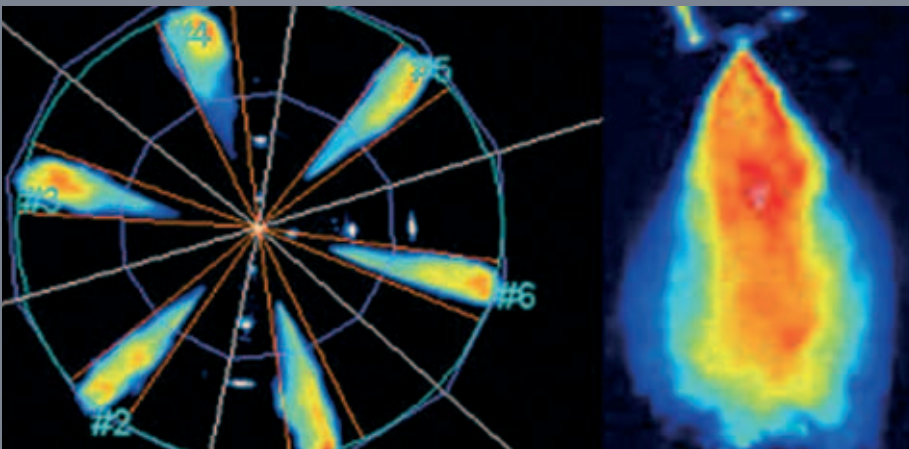




Powertrain mechatronics



Alternative fuels in mass production



Spray analysis

IAV conducts analyses in an effort to determine the viability of alternative fuels for mass production.

#### Engine test benches

- ▶ 5 LPG test benches
- ▶ 7 CNG test benches
- ▶ 1 hydrogen test bench
- ▶ Various test benches for 100% ethanol
- ▶ Various test benches for 100% biodiesel

#### Test benches for injection systems

- ▶ Suitable for ethanol and biodiesel
- ▶ Rapidly convertible to gaseous fuels

Though the majority of alternative fuels prove to be ecologically sound, there exist other factors which contribute to the feasibility of their use. Among these are the extent to which they are efficient, as well as the manner in which the client's demands are realized.