

EGR*通路付きインテークマニホールドの短期開発への取り組み

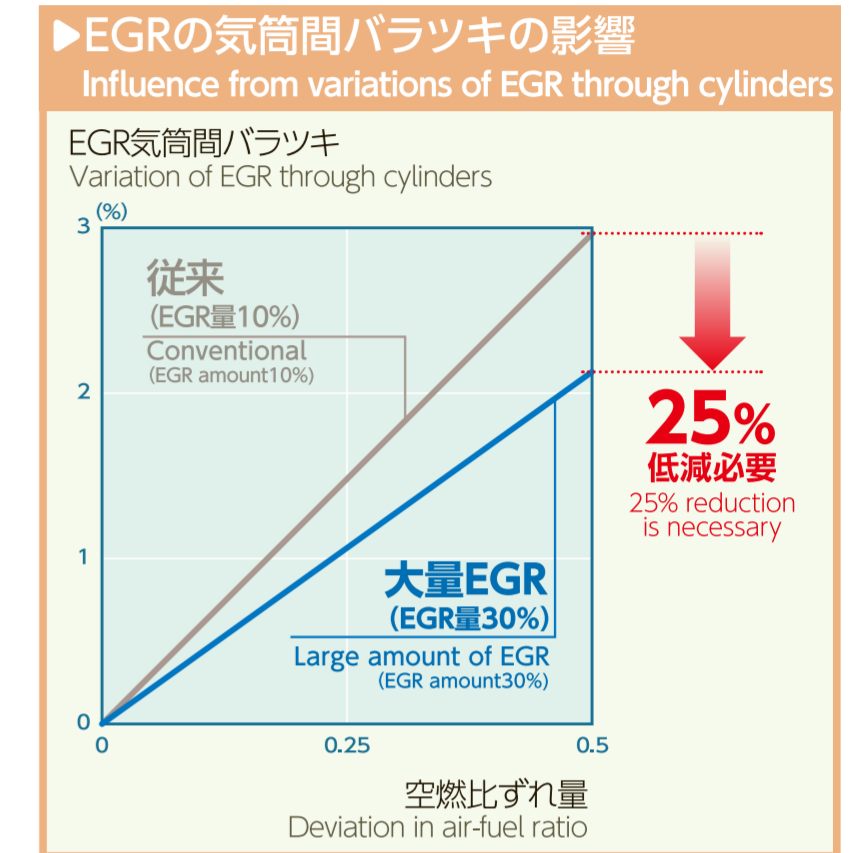
Activities for Short-term Development of Intake Manifold with an EGR* Passage

*EGR(Exhaust Gas Recirculation): 排ガス還流システム、ポンピングロス低減、燃焼温度低減に貢献

*EGR(Exhaust Gas Recirculation) : Contributes to the exhaust gas recirculation system, reduction of pumping loss and reduction of combustion temperature

燃費向上・NOx低減のため、大量EGRへの要求大。
CAE・単体評価等を用いることで、短期間でEGR量の気筒間バラツキを低減した製品が提案可能。

A large amount of EGR is required to improve fuel efficiency and reduce NOx. By using CAE and single part evaluation, we propose products which reduce variations of EGR volume through cylinders.



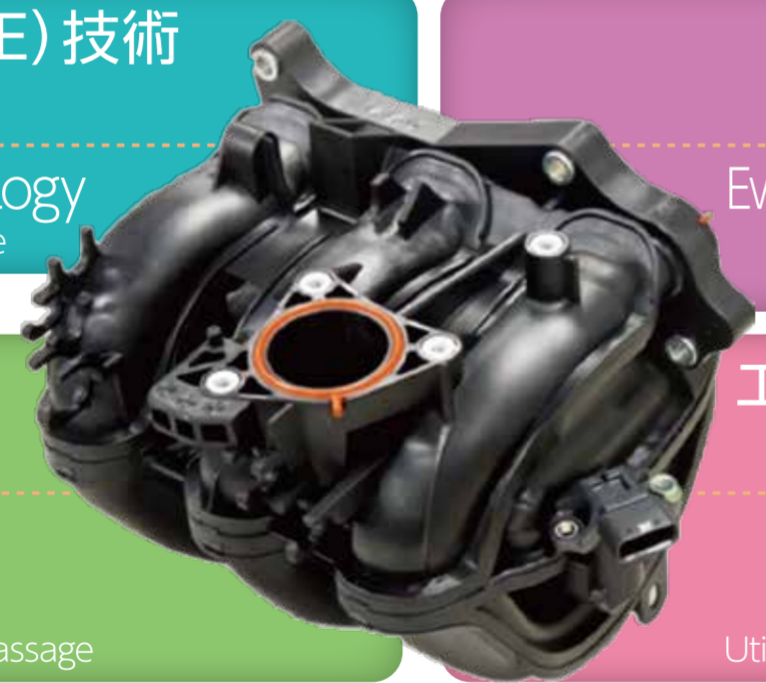
特長 FEATURE

シミュレーション (CAE) 技術
分配性能予測
Simulation (CAE) technology
Prediction of distribution performance

部品単体評価技術
分配性能評価手法開発
Evaluation technology for single parts
Development of evaluation method for distribution performance

樹脂成形・溶着技術
EGR通路を樹脂成形品で一体化
Resin molding and welding technology
Use resin molding to integrate EGR passage

エンジン評価・車両評価技術
エンジンベンチ、シャシダイナモを活用
Evaluation technology for engine and vehicles
Utilization of engine bench and chassis dynamo



例:シミュレーション技術
Example: Simulation technology
エンジンの脈動を考慮した性能予測が可能
Possible to predict performance while considering engine pulsation

各気筒のEGR率の時間変動
Hourly fluctuation of EGR ratio through cylinders
排ガス含有率 (Exhaust gas content rate)
クランクアングル (Crank angle)

EGRの気筒間バラツキの影響
Influence from variations of EGR through cylinders
排ガス含有率 (Exhaust gas content rate)
気筒間バラツキ少 (Variation through cylinders is small)

効果 RESULTS

1 開発日程短縮 (-30%)

- 試作回数削減 2回 → 1回
- エンジン評価回数削減 2回 → 1回

Shorten developing period (30% reduction)

- Reduced number of prototypes 2 times to 1 time
- Reduced number of engine evaluations 2 times to 1 time

