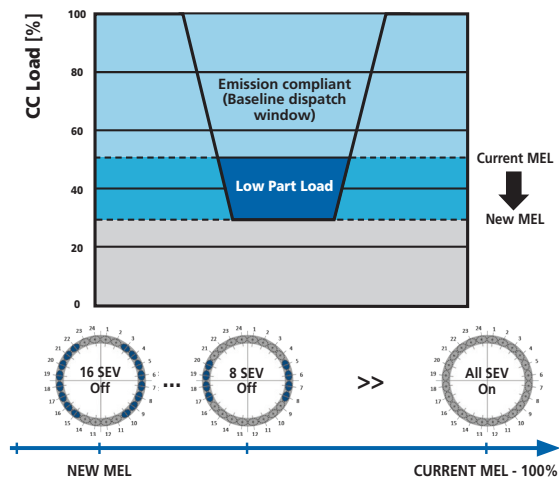




Ansaldo Energia's Low Part Load solution maximises the operational flexibility of the GT26 by increasing the emission compliant load range.

## Minimum Load Reduction with Low Part Load The concept at a glance



### Reducing Cost of Electricity

< 30% minimum environmental load achieved, reducing fuel cost

### Lowering Environmental Footprint

Low CO & CO<sub>2</sub> thanks to reduced minimum environmental load

### Increasing Flexibility & Reliability

70% load range achieved, maintaining emission and frequency response compliance

## How You Benefit

Customers' increasing need to widen plant operating ranges by turning down to lower loads led Ansaldo Energia to develop the Low Part Load, an emission compliant flexibility solution. "The flexibility of a greater load range"

### CUSTOMER BENEFITS

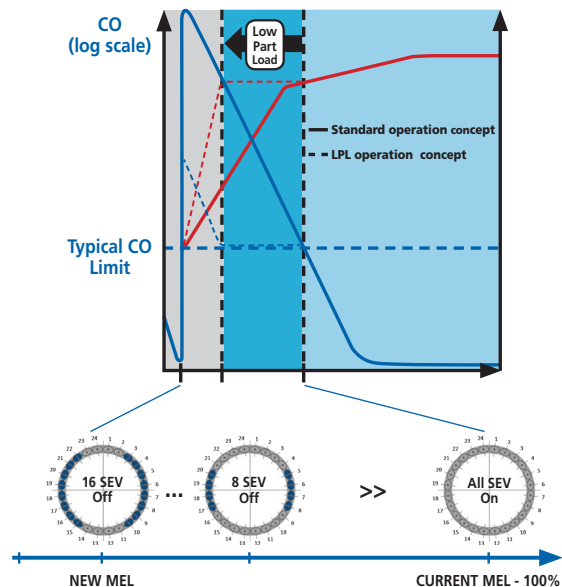
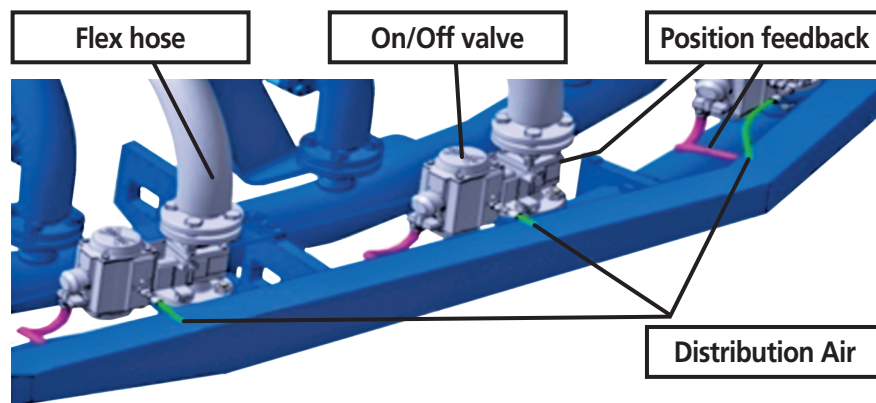
- Increased load flexibility
- Reduced fuel costs at minimum environmental load
- Larger spinning reserve
- Frequency response capability over the entire load range
- Full fuel flexibility
- Best-in-class turn-down while maintaining low emissions and high efficiency

### TECHNICAL FEATURES

- Low Part Load solution consists of sequential switch off of single SEV burners allowing the extension of the dispatch combined cycle load range GT26 from below 30% while maintaining an efficiency of 45% (LHV) thereby reducing fuel costs.
- The lower turn-down capability enables power producers to provide reliable and variable capacity with fast response time to the grid.

## Technical Specifications

Gas turbine load is conventionally controlled by temperature and massflow, flowing through the turbine. Normal operation foresees that both EV and SEV combustion chambers are turned on. GT26 can additionally benefit of its architecture and further adjust the load by controlling the number of SEV burners in operation. In the Low Part Load operating range, Individual SEV burners are switched-off while the remaining active burners are maintained at the optimum operation condition as the standard operation concept. This ensures low CO emissions are achieved and the plant's Minimum Environmental Load (MEL) can be reduced.



The control is fully integrated into the GT control system. Moreover, frequency response capability was evaluated over the entire load range.



The unique sequential combustion architecture of the GT26 offers two advantages for this concept:

- The gas temperature after the HP turbine entering the SEV combustor remains high since the EV combustor stays in operation. This ensures stable combustion in the SEV combustor and minimises the hot/cold mixing zones in the SEV combustor which would increase CO production.
- Sequential combustion also ensures high part-load efficiency when operating with the Low Part Load concept.

Widening the load range to 70% while remaining totally emission and grid response compliant allows Ansaldo Energia's plant to be fast-reacting to market changing conditions and varying load demands. The Low Part Load concept is a major asset to satisfy grid imbalances, aiming at higher positive economic spill overs in a timely manner.

It provides also savings by reducing the fuel consumption while operating at MEL and offers therefore a more flexible and competitive plant.

**SCOPE**

The implementation scope includes the installation of individual SEV burner shut-off valves at the fuel distribution system and their integration into the control air and gas turbine control system.



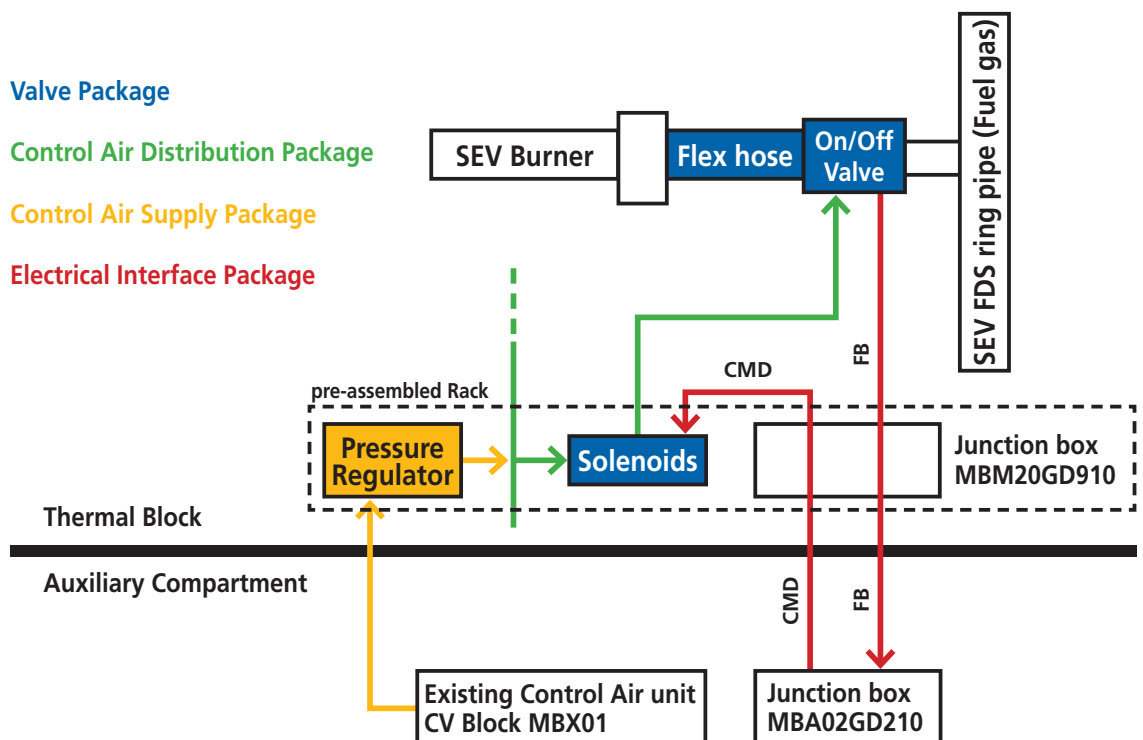
SEV fuel shut-off valves

**Valve Package**

**Control Air Distribution Package**

**Control Air Supply Package**

**Electrical Interface Package**



Low Part load can be implemented within a few days without opening of the GT. Package also includes an upgrade of the "GT core controller" and can therefore be scheduled concurrently with an extended A - or B - Inspection.



## Performance & References

The concept was first tested in Ansaldo Energia's power plant in Birr. In June 2013, Low Part Load was installed and tested on a customer plant. It went straight to commercial operation so the customer could immediately reap the economic benefits. In 2017, Ansaldo Energia executed the first implementation of the Low Part Load on a dual fuel GT26, allowing the customer benefitting of dual fuel operation and concurrently of Low Part Load flexibility. An increasing number of plants around the world are implementing this solution to meet challenging market expectations.



*First Dual Fuel Low Part Load implementation in GT26 fleet, Ireland*

*For more information and to reach our sales Team, please go to [www.ansaldoenergia.com](http://www.ansaldoenergia.com)*

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