

Remote Support

Using STA technology, Siemens is able to offer local advice, support and intervention, provided by specialist personnel in our engineering centers, based on fleet and technical knowledge as an OEM.

In line with our Service Agreements, our Competence Center will assist you with different kinds of technical issues and provide online troubleshooting with secured access to the control system.



Control center in the Duisburg Mega Test Center



Preparation of test run

Product Performance

Siemens Load-Sharing Control provides (amongst others)

- Optimized use with Siemens compressors
- Flexible location of the master Controller, "self-organizing" concept
- Efficiency maximization

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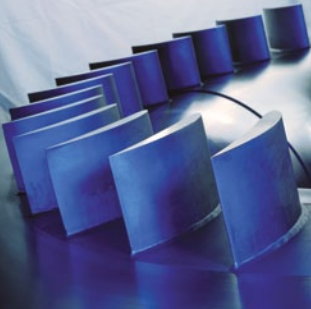
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general descriptions of the technical options
available, which may not apply in all cases.
The required technical options should therefore
be specified in the contract.



Load-Sharing Control Siemens Turbomachinery Applications

Life-cycle Enhancement for Your Rotating Equipment



Siemens is a world-leader in industrial compressors and turbines, steam and gas, for power generation and mechanical drive applications. The products from the entire range are used in petrochemical industries, air separation and Oil & Gas applications.

Over the years, Siemens has developed and enhanced several software control modules which perform specific tasks for rotating equipment. The modules are based on Simatic S7 technology and can be easily connected to perform the control required for each individual unit in accordance with customer needs.

These modules are called Siemens Turbomachinery Applications (STA).

STA does not only control your rotating units but can also provide information to help you achieve the maximum value from your equipment by data collection, analysis and report support.

As a new addition to its comprehensive portfolio of products, Siemens is pleased to offer its STA-Load-Sharing Control for compressors, to help you optimize the efficiency of your equipment.

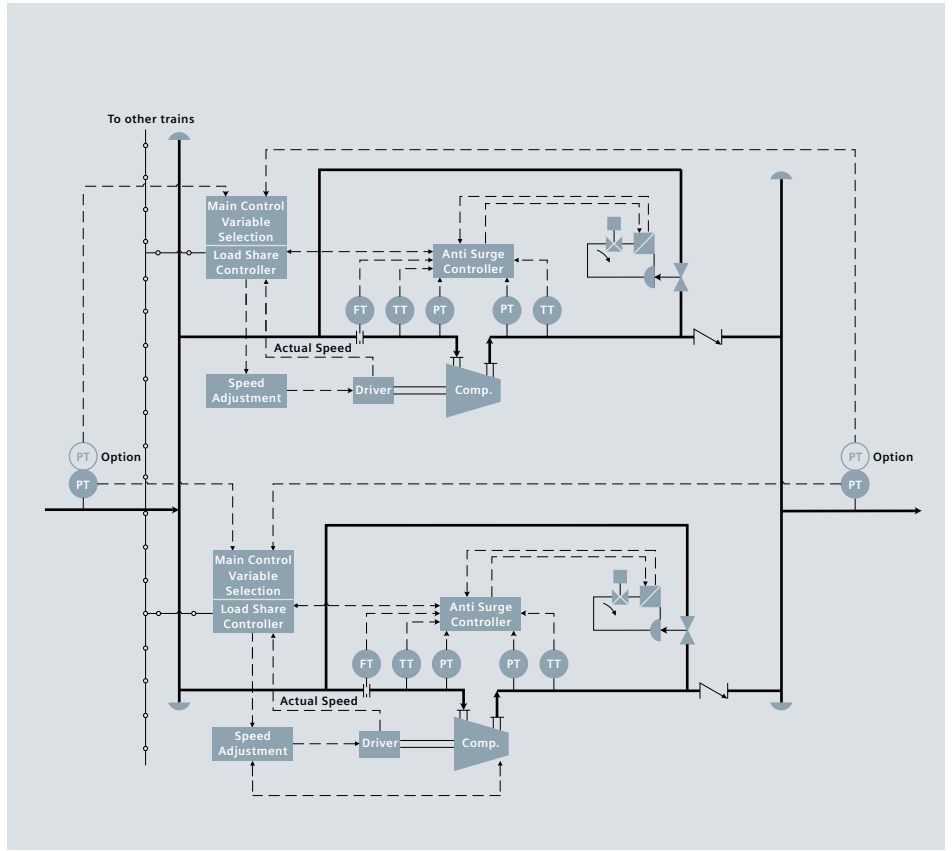


Compressor train for petrochemicals

Siemens Turbomachinery Applications (STA)

Answers for energy.

SIEMENS



General control schematic

Load-sharing

A compression process consists of one compressor or a network of multiple compressors. A controlled distribution of the transport capacities (load-sharing) is necessary for stable and efficient operation if multiple machines are working in parallel.

The principle of the STA Load Share Control is based on a sophisticated algorithm, using the given degree of freedom in order to optimize:

- distance to the performance limits (surge and choke)
- overall efficiency

for all participating machines.

The load-sharing controller is always part of the STA load-control system governing a primary control variable. This can be suction pressure, discharge pressure or overall flow.

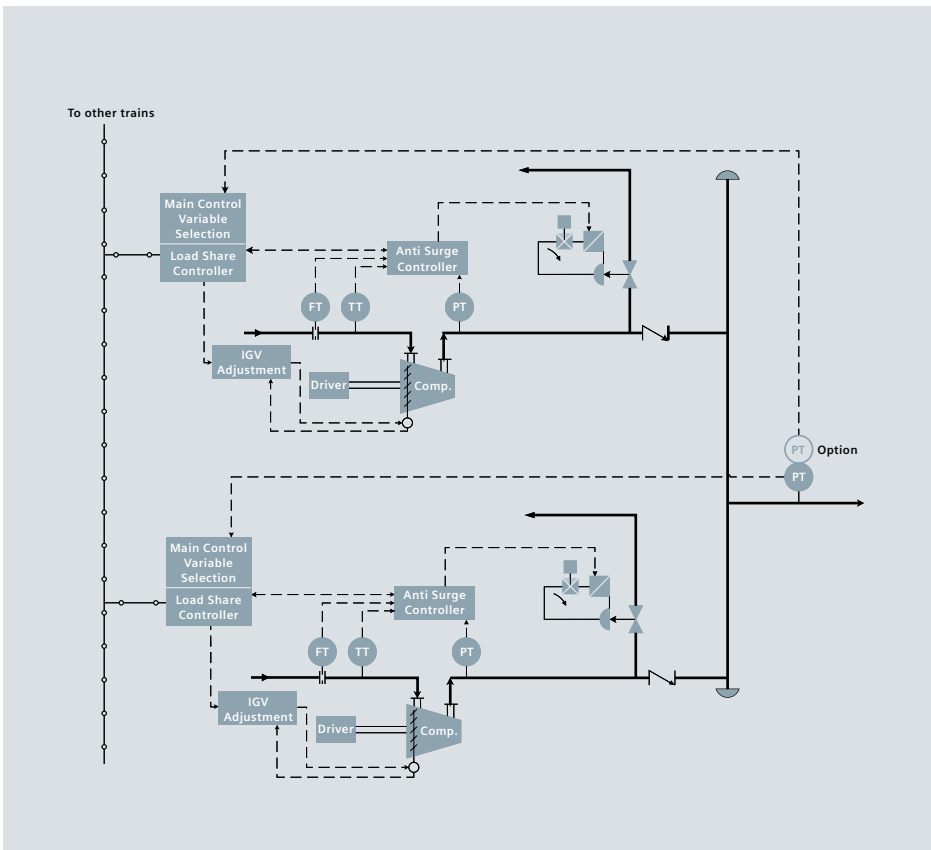
An unrestricted number of compressor machines can be coupled to share the ingoing (flow). All modules of the participating machines organize themselves as every module knows the set-point and actual value of the combination. This enables arbitrary choice of controller to take over the master role, ensuring maximum availability.

STA Load-Sharing Control is tailor-made to optimize the functionality of Siemens units, but can also be used with other compressors.

Features and Benefits

With STA Load-Sharing Control you benefit from the following advantages:

- Integration in the existing Simatic S7 compressor controller i.e. no additional hardware and space necessary
- Fast operation and seamless integration in the automation software
- Increased overall performance
- Maximum compressor availability and reliability
- Stable process control, limiting process upsets
- Fewer outages and higher production
- Different types of drive are possible: E-motor, gas turbine, variable speed hydraulic coupling, etc.



Control schematic with variable inlet guide vane (IGV)

- Reduction of overhaul costs
- Fast online help and advanced troubleshooting
- Automatic balancing to give an equal load share to each participating machine
- Fallback strategy for the loss of measurements
- Provisions for bringing a new machine into service or preparing the shutdown of a compressor without change to the overall delivery
- Generation of a value indicating the ratio of actual flow divided by maximum capacity at the given suction conditions and discharge pressure. This helps the operator to decide whether a machine can be shut down or a new one has to be started
- The Load-Sharing Controller contains a suction pressure, discharge pressure and flow controller in its master part. No speed set-point is needed from the process/distributed control system as this will be calculated in the controllers using external set-point(s)
- The controllers are configurable and it is possible either to use the minimum output value of the selected controllers (override) or to switch between the controllers during operation (bump-less)
- Individual limiting controls are considered (i.e. turbine-exhaust temperature, discharge pressure, suction pressure, motor current). If a compressor driver reaches this limit, the load-sharing controller reacts adequately to avoid wind-up
- Data exchange between individual compressor controllers is designed to be via bus (Industrial Ethernet) with high bandwidth and fast transfer; redundant architecture is possible.
- Each controller may be taken to manual mode, not taking part in load-sharing, without influencing the general load-sharing function of the others