

Redundancy provides reliability Increase efficiency and availability for plants and control systems





Non-redundant systems hold a greater risk of failure



6.21m EUR
Costs

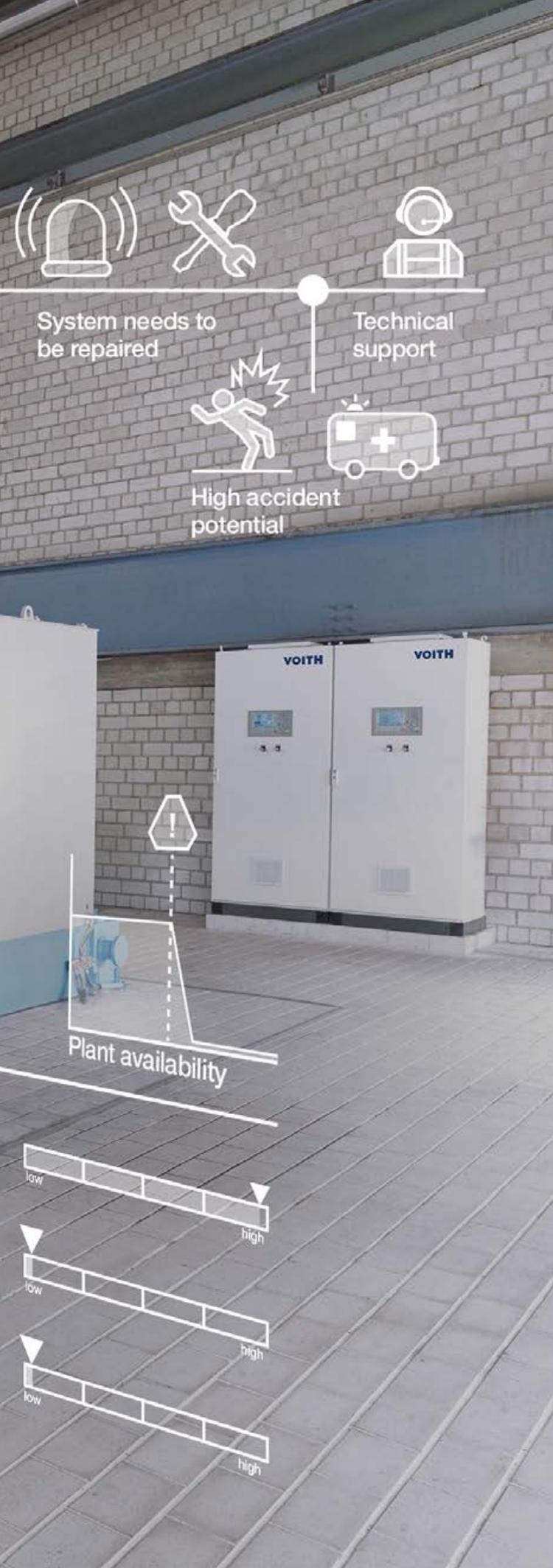


00 %
Time efficiency



00 rpm
Speed

The risk of shutdowns is higher in non-redundant systems than in redundant ones.



Escaping dioxins, burning refineries, leaking pipelines – malfunctions in the chemical, oil and gas industries may have fatal effects. In addition to these consequences that can be seen and felt by everyone, unscheduled shutdowns by the operators result in costs that quickly run into millions.

Plant malfunctions can often be traced back to inconspicuous components in process technology, for example, a control valve that leaks, a high-pressure valve that cannot be controlled temporarily or a solenoid-operated butterfly valve that does not switch. The consequences for people and the environment turn out unequally disastrous – fires, explosions or toxic material leakage. Malfunctions in plant processes also directly affect the profitability of the plants and the quality of the products. As a result, outages are often accompanied by costly downtimes, high restart costs and the loss of data or materials.

Process safety via redundancy

Anyone who wants to guarantee the availability of his machines and the reliability of his processes at a high level has to use redundant systems. Within such a system, a component malfunction has no effect on the safety behavior of the system because a second component immediately starts performing the tasks of the failed one. In this manner, operators with redundant products from Voith minimize the complexity of their systems and increase operational safety.



The product-specific properties of chemical products require special safety-relevant measures.

Where process safety is particularly important

Chemical and petrochemical plants, just like oil and gas systems, are among the most important infrastructure elements globally. From pharmaceuticals and chemical products in the household and in everyday use to energy supply and mobility – the products of these branches touch the lives of billions of humans worldwide. The requirements for availability of these plants is correspondingly high.

Reliable and primarily safe production processes form the basis for high-grade products of perfect quality. This applies to all branches. The special characteris-

tic of the chemical, petrochemical, oil and gas industries is that they all operate with materials which are highly flammable, toxic and pollute the environment. Extracting, processing and storing such products represent a great potential risk to humans and the environment.

Fail-safe protective measures

To increase operational safety and thus to reduce the risk to a tolerable amount, redundant, fail-safe control and drive systems are in demand. Voith actuators, protective equipment and control systems have a proven track record for these application areas.



A malfunction in a factory processing oil or gas may have fatal consequences. This renders process safety an elementary ingredient of this branch.

The installation of a redundant system comes with predictable extra costs. However, these are in no relation to the costs caused by possible downtimes.

Maximum availability, maximum protection

The installation of a fail-safe system or redundant control technology comes with extra costs for the plant operator. These costs are manageable and they can be estimated in advance. They must also be viewed in relation to the costs resulting from any possible downtimes. A fail-safe backup system, in contrast, increases the availability of the machinery and in addition provides safe and reliable operation.

Hot redundancy

In the overall system, several sub-systems perform the same function in parallel. Usually, two units operating in parallel are used. If one of the two units fails, the other unit can perform all of the tasks alone. The components can also be replaced during operation.

Cold redundancy

In the overall system, the same function is available in parallel thanks to several subsystems. However, only one unit operates at any time and is constantly monitored. If this unit fails, a switch is made to one of the parallel units. The defective components cannot be replaced during operation.

Overview of redundant Voith products

Tandem way valve
(cold redundancy)



The tandem way valve is equipped with two control magnets connected in series forming a redundant unit.

Way valve module
(hot redundancy)



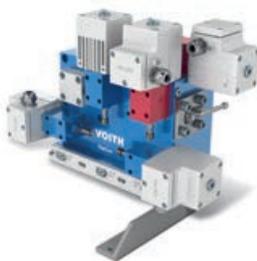
A way valve module consisting of two way valves connected in parallel is a completely redundant system.

I/H converter module
(hot redundancy)



An I/H converter module is a completely redundant system with two I/H converters connected in parallel.

TripCon trip block
(hot redundancy)



A TripCon is an electrohydraulic safety control unit. The actuator directly regulates the hydraulic cylinder that operates the trip valve.

TurCon D32/R32-CC customized controller
(hot redundancy)



Customized controllers are designed with standard industrial-proven hardware including redundancy that can be scaled.

You can find additional information on our website and in the product overview brochure.



Voith service experts keep plants productive and reliable.

Service by Voith provides safety

Voith stands beside its customers over the entire life cycle of their turbines or systems. This starts with planning and extends to commissioning and use, and includes the development of maintenance and repair concepts. The service experts of the global Voith service network have deep industry expertise and experience, and develop solutions customized to the client's specific problems. The same applies to retrofit and modernization actions.

Retrofit and modernization – old becomes new again

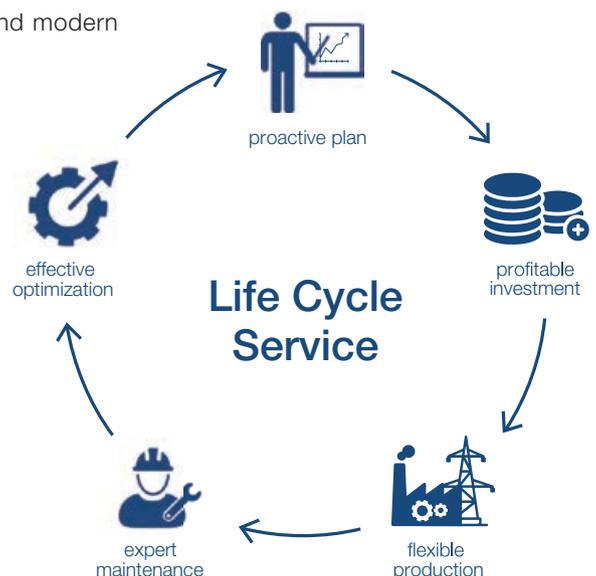
Existing machinery will be revised by our service employees and if requested or needed, retrofitted to operate reliably, efficiently and profitably again. Voith engineers and technicians analyze the technology used, list potential improvements, completely define the new components according to individualized requirements and make suggestions for

selecting optimal products and systems. In addition, they disassemble the obsolete components, assemble the new ones, perform commissioning, and train the operating and maintenance personnel.

Advantages and benefits

The services keep what they promise, as Voith knows its products best. Thanks to the control technology and modern

actuators, plant operators improve not only their process quality but also the energy efficiency of their machinery. Voith also offers assured spare-parts supply – at any time.



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