TAVRIDA ELECTRIC

Excellence in Engineering

Fast Transfer Switch (FTS)

Fast transfer switch based on Tavrida Electric's Vacuum circuit breakers.

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LOSS OF POWER SUPPLY

Uninterruptable power supply is crucial to Industrial and Petroleum companies that operate continuous production lines or processes.

Even a short loss of power supply leads to negative consequences:

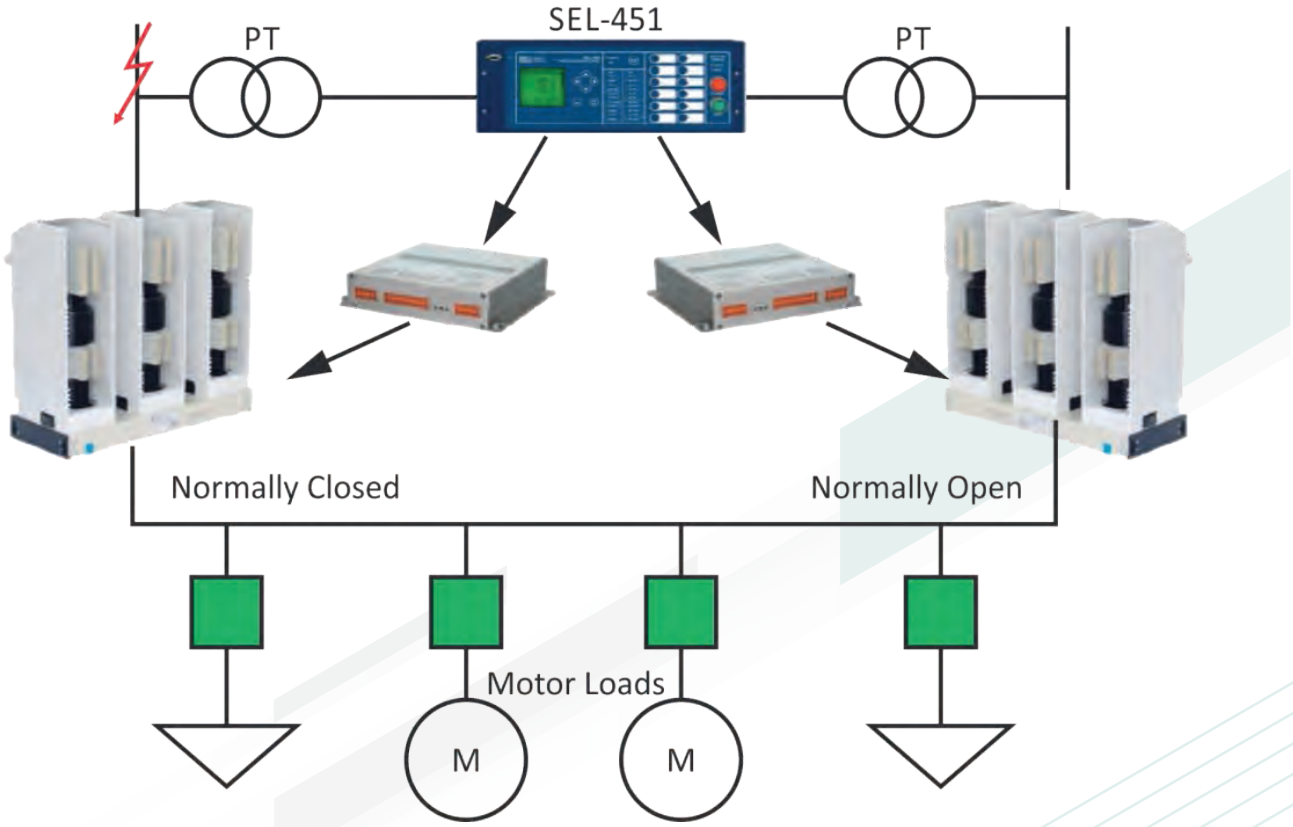
- Costly downtimes
- Damage to production
- Stressful equipment restart
- Magnetic contactors tripping
- Loss of motor control
- Loss of computer control
- Loss of information on computers

That result in SIGNIFICANT FINANCIAL LOSSES

In 2009, Rosneft reported a loss of 198 tons of crude oil due to the use of Conventional Transfer Systems in the power supply. The losses amounted to the sum of $164,391.00 USD.

US refiner HollyFrontier reported a loss of $98 million for Q1 2013 because of power outages resulting in lost production and excessive repair costs.

MAIN SOURCE **TRANSFER TIME < 2 CYCLES** **BACKUP SOURCE**



FTS ensures reliable power supply and eliminates negative consequences of power supply losses.

FAST TRANSFER SWITCH BASED ON TEL VCB

In case of a fault in the primary power source, the system switches over to a backup source within ~32 ms (less than 2 cycles)!

- SEL* controller response time (7 - 10 ms)
- Control module response time (4 ms)
- Opening time - 8 ms
- Closing time - 20 ms

Reliable power supply:

- A continuous and reliable power supply eliminates costly downtimes and improves the plant load factor.

Reduced production equipment stress:

- The highest security for key production equipment prolongs its service lifetime and minimizes O&M costs.

Low upfront cost and quick return on investment:

- Quick return on investment due to minimized financial losses caused by power outages and production equipment O&M.

Long life and high reliability of VCBs:

- 30 000 close-open cycles.
- Life expectancy of at least 30 years.

Most Compact dimensions, lightest weight, any spatial orientation:

- Optimum usage of space guaranteed.
- Impress customers with unique switchgear designs.
- Applicable for retrofit or brand-new installations.

Easy installation & maintenance free VCB:

- Completely maintenance free VCB over a total life expectancy of at least 30 years.
- Low power consumption of control module.
- Minimum VCB O&M costs.
- Easy installation and integration in OEM solutions.

Higher level of automatization:

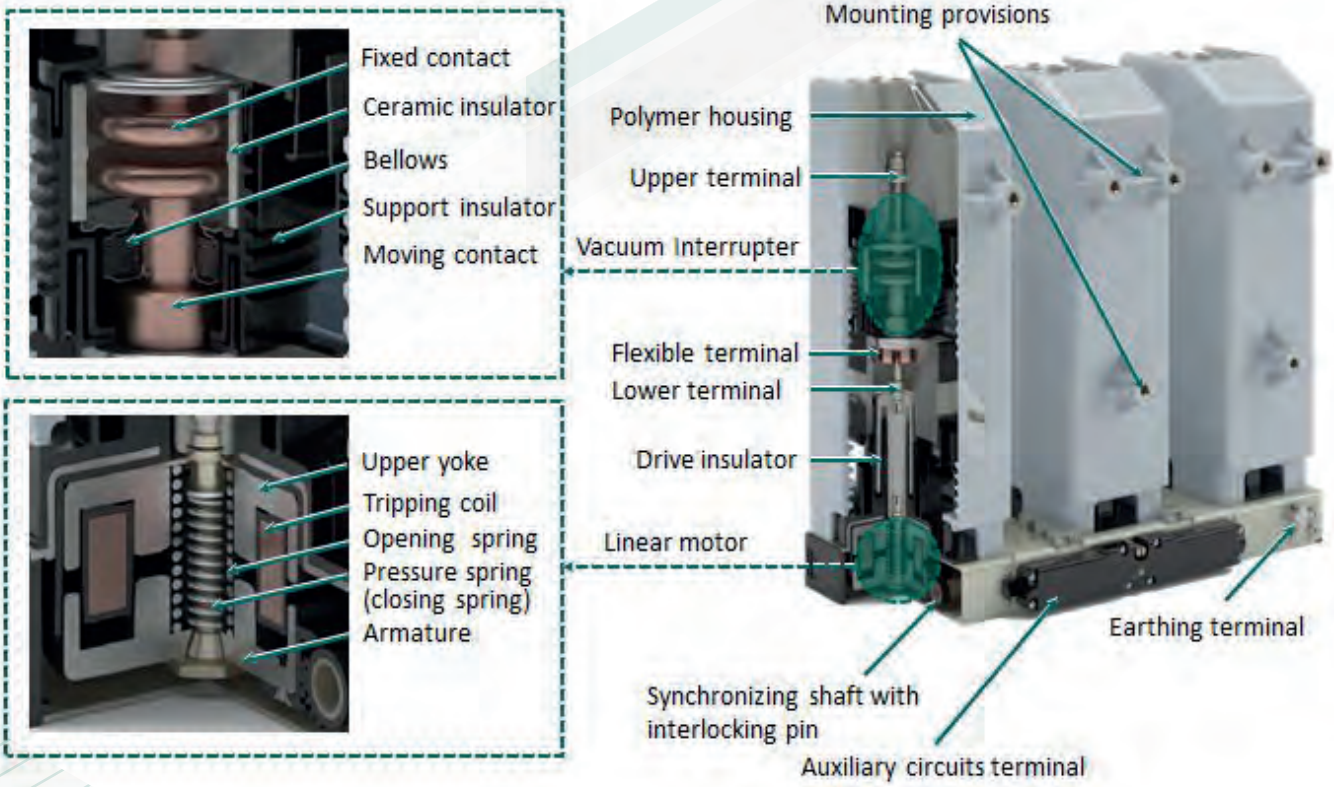
- Local and SCADA control, event log and oscillography as well as advanced user software.
- Continuous self-supervision of the whole trip and close circuit.

Environmentally friendly:

- SF6-free vacuum circuit breakers.
- FTS decreases the risk of environmental disasters.

BENEFITS & TECH PARAMETERS

- Eliminate costly downtime caused by power supply outages.
- Protect your production equipment and lower your demands for repairs.
- Lower your costs by using reliable and maintenance free VCB equipment.
- Use reliable, compact, low cost and easy to integrate in switchgear VCB.
- Low upfront cost and quick return of investment.



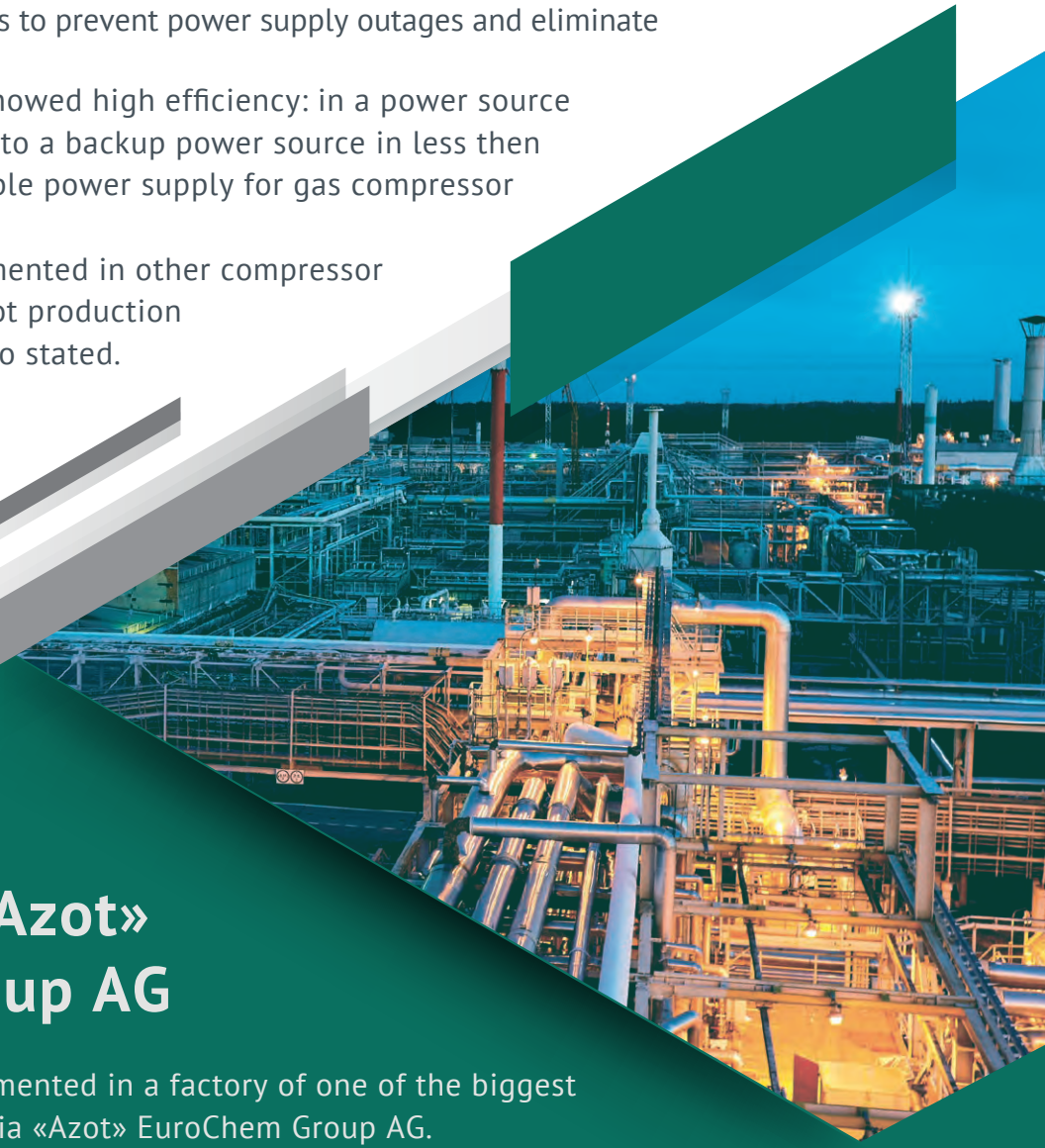
Rated voltage (Ur)	17.5 kV
Rated normal current	<=2000 A
Rated power frequency withstand voltage (Ud)	38 kV
Rated lightning impulse withstand voltage	95 kV
Rated short-circuit breaking current (Isc)	<=31.5 kV
Rated peak withstand current (Ip)	<=82 kA
Rated frequency (fr)	50/60 Hz
Mechanical life (CO-cycles)	30 000
Operating cycles (rated breaking current)	50
Closing time	20 ms
Opening time	8 ms
Resistance of main circuit	<= 18 mOhm
Weight	51 kG
L/W/H	445/247/560 mm

July 2017 «Gazprom Energo»

FTS based on TEL VCBs was successfully tested on the «Uzhno-Balikinskaya» compressor station. The main purpose was to prevent power supply outages and eliminate downtimes caused by them.

During these tests, FTS showed high efficiency: in a power source fault scenario FTS switched to a backup power source in less then 40 ms and guaranteed reliable power supply for gas compressor station equipment.

«More FTS will be implemented in other compressor stations after successful pilot production operation» - Gazprom Energo stated.



March 2017 «Azot» EuroChem Group AG

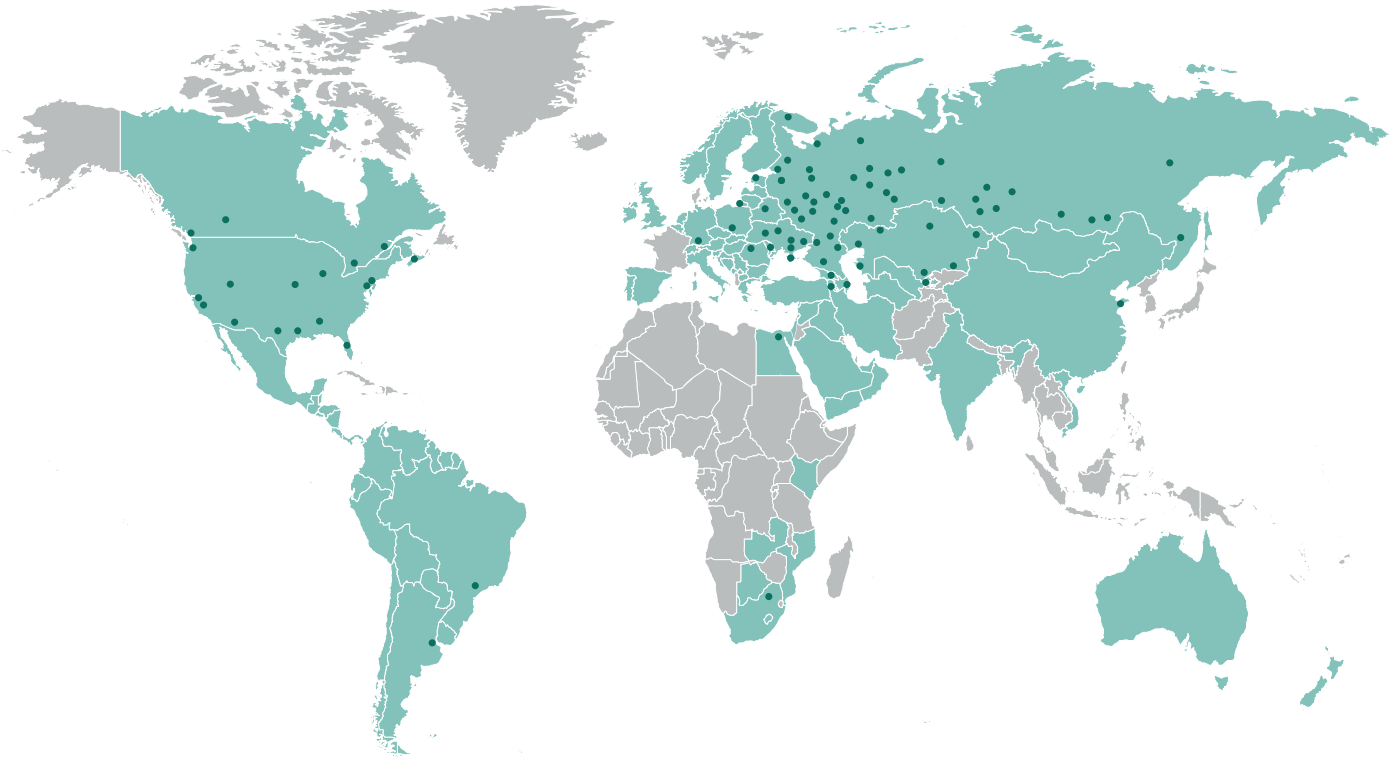
FTS is successfully implemented in a factory of one of the biggest chemical companies in Russia «Azot» EuroChem Group AG.

During operation, it was proven that negative consequences of unplanned power supply outages resulted in:

- Chemical waste pollution
- Loss of motor control
- Disruption of production
- Environmental disasters

Which were avoided due to extremely fast operation of FTS in case of the main feeder fault.

FTS performed 30 ms switching time guaranteeing even the most sensitive motors stable operation in case of power source fault.



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