

# LVRSys – Data Center

Use Case



## Customer

Siemens Proprietary Limited  
South Africa

We focus on advancing technology, forging decarbonization pathways, and establishing circular, regenerative systems to drive meaningful transformation.

The cornerstone for energy transition must be laid now to ensure success by 2040. We can make it happen. Now is the time to act, and Siemens Africa is leading the way.

### Installation LVRSys:

Siemens Proprietary Limited  
South Africa, 300 Janadel Avenue,  
1685 Midrand, South Africa

07/2024  
Pilot-project in South Africa within  
the RES Programme

Author:  
Till Sybel 06/2024

## Application

### VOLTAGE STABILIZATION OF IMPORTANT INFRASTRUCTURE – Data Center

Standards EN 50160 and NRS048 define, among other criteria, the voltage range within which the mains voltage must remain. The permissible tolerance limits are  $\pm 10\%$  based on the nominal voltage UNU\_NUN (400 V line-to-line), resulting in an allowable voltage band around UNU\_NUN of 80 V.

Machines, drives, and lighting equipment operate most efficiently when the applied voltage is at the optimal operating point, which is generally the nominal voltage of the network. When the voltage deviates from this point, both the efficiency and the service life of drive equipment decrease. In particular, lighting devices such as LEDs experience a significant reduction in lifespan as the voltage increases. For industrial applications, voltage controllers can be configured with response times of less than 30 milliseconds to address these issues.

In industrial settings, systems and machines are typically powered by a three-phase connection. These systems operate most efficiently at the nominal voltage UNU\_NUN (e.g., 230 V line-to-neutral), leading to potential energy savings. Three-phase motors, in particular, are adversely affected by unbalanced phase voltages. The asymmetry between phases L1/L2/L3 is significantly reduced by voltage control, resulting in enhanced efficiency and extended service life (e.g., longer alternating cycles for motor brushes).



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## Technical Solution A. Eberle

### LVRSys:

250kVA  $\pm 10\%$   
(180.1000.4019  
355A  $\pm 10\%$ )

