

Abstract Electrical Safety ver. 1.0

“building the safest residential electrical systems on earth”

Besides the overwhelming positive impact on our life, electricity also has some less attractive properties. Electrocution, fire due to defective contacts and or surges due to lightning impacts are just some out of many examples. That is why Van Welleman Villas takes extraordinary measures to build the very best residential electrical systems. Through the use of industrial and/or military-grade components we are able to provide our customers with the safest electrical systems available.

The goal of Van Welleman Villas® is to provide our customers with the very best houses available. As such, this includes building the very best electrical systems, and this is much more than just an other cheap marketing slogan.

The examples covered in this “Abstract” only cover the most important of the measures taken to build exceptionally safe electrical systems. Reading this document will show you why we state that Van Welleman Villas® provides the very best and safest electrical systems available, by far ...

Instead of using the traditional electrical circuitry, we opt for extremely robust and excessive over-dimensioned components with a proven track-record in industrial as well as military environments.

It goes without saying that these solutions do not come cheap, but when it comes to your personal safety we do not accept any compromise.

In order to ensure the highest possible standards in electrical safety we defined new electrical acceptance tests that normally are only used in avionics and laboratory environments. These tests include MilliOhm measurements, Closed-Loop measurements, Time Domain Reflectometry as well as thermal analysis of the electrical systems under exhaustive stress.

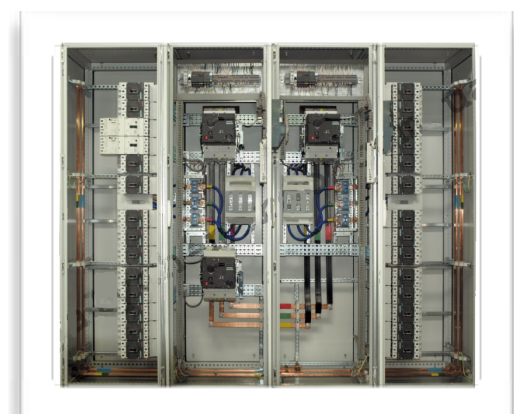
Should this “Abstract” trigger your hunger for more information then there are a multitude of “White-Papers” providing you with more detailed information on a variety of topics.

All of the above is done with one purpose only ... ensuring the very best and safe electrical systems for our customers.

The following page gives a brief overview of some of our most important features and solutions in our portfolio of measures to reach the highest possible degree in electrical safety.

Professional Power Racks

Super-safe electrical systems using heavy-duty metal racks are part of our “standard” proposal.



High-Power Diesel Aggregate

Uninterrupted massive (15KVA/600Kg) power is standard (>20KVA optional).



Industrial Surge Protection (Lightning)

Professional (non-destructive) protection for your electronic equipment (TV, Computer, ...).



What makes Van Welleman Villas® different ...

Advanced Electrical Tests

On top of the traditional electrical acceptance-tests we perform a series of unique additional tests (world-first). Our acceptance procedure includes Thermal Analysis of the main rack (detecting abnormal heat dissipation), Time Domain Reflectometry (detecting hidden cable damage), Closed-Loop MilliOhm measurements (detecting faulty contacts) and Residual Current testing (leakage protection).

High-Quality Cabling Systems (5mm² instead of traditional 2,5mm² per segment)

We use 2 x 2,5mm² (i.e. 5mm²) “star”-shape copper wiring per power segment (i.e. 8 outlets) instead of the regular 1 x 2,5mm² “bus”-shape copper wiring per power segment. The outcome is a lower circuit resistance, better mechanical contact strength as well as an additional power redundancy in case of in-house fire.

Ultra-sensitive Residual Current Protection (30mA instead of traditional 100mA and 300mA)

All of our power outlets are backed by an ultra-sensitive 30mA residual current protection (typically reserved for wet and damp areas). This is three times more sensitive than the traditional 100mA for residential environments (e.g. living room, garage, kitchen, ...). On top of this we add state of the art arcing fault detection modules enabling to detect defective electrical systems (e.g. due to bad electrical contacts) before they can cause short-circuits or fire.

Industry-grade Automatic Fuse (4,5kA - 15kA instead of traditional 3kA)

Traditional “automates” (i.e. automatic electrical fuse of 10Amp, 16Amp, 20Amp etc.) withstand 3KA peak current surges before their contacts “glue” and thus no longer operate safely. Our automates endure minimal 4,5KA “downstream” (i.e. close to the in-house outlets) and 15KA “upstream” (i.e. close to source) current surge, creating a significant additional safety margin. On top of these -already-exceptional- safety measures we provide additional industrial NEOZED fuses ensuring a fail-safe operation, even with defective automates.

Industrial Automation (Redundant PLCs instead of Residential Domotics)

At Van Welleman Villas, Programmable Logic Control (i.e. PLC) is used for home automation instead of the traditional KNX-based domotics. PLC automation is traditionally used in the industry for automation purposes (e.g. robots in the car-manufactory). Although KNX is a worldwide standard for home automation we opted for far more reliable (unfortunately also much more expensive) PLC-based system. As such we bypass the “SPOF” vulnerability (i.e. Single Point Of Failure) which is typical for bus-based systems. Short-circuits on the bus due to moisture, corrosion, water infiltration, defective devices ... but also the “taser-attacks” of burglars and bandits do not jeopardize the failsafe operation of our PLC-based home automation systems.

Professional Power Racks (300A instead of traditional 30A)

Instead of plastic DIN-rail electrical enclosures (typical for 30Amp and 60Amp applications) we use professional racks equipped with heavy-duty industrial and/or military-grade components. Instead of cheap cabling we use industrial bus-bars and rails for power distribution. Where mono-phase 60Amp is exceptional in traditional houses, we provide massive 3-phase 300Amp distribution rails (standard).

Uninterrupted Power Provisioning (15KVA - 100KVA)

Industrial Diesel Power Aggregates are used for continuous power provisioning and/or Power Boost when public power provisioning should fail or lack the capacity to follow your peak power demands. Our portfolio ranges from 15KVA (standard) up to 100KVA (optional).

Industrial Surge Protection against Lightning Impacts (140kA - 200KA non-destructive)

Protection against direct lightning impacts are part of our standard offer. We use industrial surge protection systems preventing successive electrical surges from causing damage to your electronic equipments.

Clean Power Segments for your sensitive electronics

We include -by default- Clean Power Segments based upon an Uninterruptible Power Supply (battery-based) electronically generating clean electricity for your most sensitive electronics (PC, TV, Alarm, HiFi, ...).

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Van Welleman Villas®

Tremelobaan 111
B-3140 Keerbergen
Belgium