

ANNEX 9

**ELECTRICAL WORK
REGULATIONS**

1. Additional conditions relating to electrical work

- 1.1 The floor of the halls contain ducts and boxes for all technical system connections. The location of these connections is shown on the event floor plan by means of small circles.
- 1.2 The work of connecting stands to the mains power supply of the Convention Centre (voltage: 230/400V with neutral cable at fifty (50) Hz) is entrusted by RAI exclusively to Mansveld Expotech (the Supplier at determination of this document), a recognised electrical contractor.
- 1.3 Standholders are not permitted to lay on their own power supply, for example by means of generators.
- 1.4 All stand installations should comply with the regulations in accordance with the latest edition of the following standards: NEN 8020-20, NEN-1010, NEN-3111, NEN-EN 50110 and NEN-3140. Regardless of which electrical contractor has been called in, all installations must always be approved by the Supplier (i.e. the RAI's recognised electrical contractor). If desired, the latter can also fit the entire stand electrical system.
- 1.5 For technical reasons it may be necessary to connect two or more stands to a single switch box or to place a switch box in an adjacent stand. If this unfortunately proves necessary, the participant will not be allowed to switch the power supply to the adjacent stand on or off. However, the basic criterion is that there should always be one mains connection per stand, in order to limit the nuisance in the event of power failures etc. at one of the mains connections.
- 1.6 The participant should notify the recognised electrical contractor, through Exhibitor Services, of the capacity required and any facilities no later than twenty-eight (28) days before the first build-up day of the event; it should also supply a plan of the stand showing the location of the stand and the positions of the mains connections. A charge will be made for mains connections that are not notified in time.
- 1.7 Day-rate electricity is switched on from half an hour ($\frac{1}{2}$ hour) before until half an hour ($\frac{1}{2}$ hour) after the opening hours of the event in the case of consumer exhibitions and from one (1) hour before until one (1) hour after the opening hours in the case of trade shows. Where a refrigerator and/or computer and security equipment is used in the stands, it is recommended that night-rate electricity be requested. Stand lighting may not be connected to the night-rate electricity mains. For safety reasons the mains supply is shut off on the last day **immediately after the close** of the event.
- 1.8 If, in the opinion of the Supplier, the participant's electrical system is defective or otherwise unsound, the Supplier is entitled to refuse to connect the participant to the mains supply.

2. General remarks about electrical installations in the stands:

- 2.1. Stand installations should be fitted with sheathed cable having a cross sectional area of not less than 2.5mm² or equivalent. The use of thinner wiring for the power supply to wall sockets is strictly forbidden.
- 2.2. An exception is made for lighting circuits, which may have a 1.5mm² cross sectional area provided that they do not carry more than 2kW and the final circuits are fitted with an appropriate protective device. Under-floor cables should have a minimum cross sectional area of 2.5mm² and may not be jointed.
- 2.3. The electrical system should have sufficient circuits and be divided equally among the phases. Each group should have the correct fuses and final circuits should be individually protected with a 30mA earth leakage circuit breaker.
- 2.4. In the case of mains connections with a capacity in excess of 10kW you yourself should arrange for the correct capacity division and earth leakage circuit breaker(s). Joints may be welded by means of conductor splices and industrial terminal connections and must have extra protection in the form of an insulated junction box. Concealing welded joints behind walls, under floors or in ceilings is NOT PERMITTED.
- 2.5. Electrical wiring must be laid at a sufficient distance from steam, water and gas pipes. Wiring that is exposed to potential damage must be properly protected. Metal parts which could potentially conduct electricity in the event of an electrical fault should be properly earthed. Electrical cabling and materials must be firmly attached using the appropriate industrial fittings.
- 2.6. Electric motors must be fitted with a thermal control and safety switch. Motors with a capacity in excess of 3kW should also be fitted with a starter that limits the starting current to three times the nominal current, up to a maximum of 180 Amps.
- 2.7. The electrical stand installation must therefore be designed in such a way that interference as a consequence of higher harmonics has no influence on the electricity grid within the RAI building. The following limiting values apply:
 - harmonic deformations (THD) <5%
 - ratio of the third harmonic to the first <3%
 - cosine pi >0.9

Points for attention in connection with electrical systems

- Truss stands and hanging truss must be effectively earthed.
- Suspended trusses must be earthed if they are within arm's reach (<2.5m from the floor, <1.5m from platform or stairs)
- Depending on the situation, suspended trusses that are out of arm's reach may still need to be earthed.
- Aluminium system-built stands must be earthed.
- Maximum of four aluminium system-built stands per earthing (possibly five, depending on the situation).
- Steel structures must be earthed if any current-carrying material or equipment (light fitting, wall socket, cable etc.) is present in their immediate vicinity (i.e. attached to or on, below or through the structure).

Continuation of points for attention in connection with electrical systems

- Earthing must be arranged by means of a separate wire connected as closely as possible to or at the earthing point of the switch and distribution box (or, depending on the situation, by a 'plug in wall socket' if no better solution is available).
- Earth leakage circuit breakers should be class A.
- Splitters are not permitted.
- Every final circuit should be fitted with a 30mA earth leakage circuit breaker.
- An outgoing >32A circuit connected to a switch and distribution box need not be fitted with an earth leakage circuit breaker, but the previous point for attention remains fully applicable to the system connected to it.
- Earth leakage circuit breakers of class AC are not permitted.
- Every switch and distribution box must have a mains on/off switch.
- Plugging and unplugging a switch and distribution box using a > 3kW plug is not an adequate way of switching the box on and off.
- Stand electrical systems should have sheathed cables.
- Wiring for <2kW lighting must have a cross-sectional area of not less than 1.5mm² (except for factory-fitted/original wiring in light fittings with a cross-sectional area of 1mm²).
- Cables under raised floors must be jointless.
- Cables under raised floors must have a cross-sectional area of not less than 3 x 2.5mm² (or, depending on the situation, a cross-sectional area of not less than 3 x 1.5mm² in combination with 10A circuit breaker, if no better solution is available).
- Lighting can be fitted using illumination cables provided they are installed correctly and the light bulbs are undamaged.
- No more than one year may elapse between two successive NEN 3140 inspections of a switch and distribution box. This frequency follows from Appendix T (electrical appliances) of NEN 3140: A1(10) + B2(10) + C2(10) + D2(10) = 40 points.
- If the frequency of use is low (<5 x per year), the maximum time between two successive inspections of a switch and distribution box is two years (for practical reasons often 1 year).
- A switch and distribution box must bear a sticker showing who has performed the NEN 3140 inspection and the date on which the approval expires/ceases to be valid.
- The stand electrical system must be inspected in accordance with NEN 1010-6 before being put into operation. The result must be explicitly shown on the relevant completion report.
- In the case of smaller (shell) stands the stand electrical system may be divided over several stands (depending on the switch and distribution box).
- Cabling, distribution blocks etc. will be inspected by means of random checks.
- Proof must be provided that power cables (often >6mm²) have been inspected.