

Employing an electrical engineer to design an electrical installation is important for many reasons. The first and foremost reason being that allowing the electrician to both design and install the installation is akin to "leaving the cat to guard the milk". An electrical installation that serves the needs of the users, does not necessarily offer the path of least resistance for the installer. The shortcomings of the installed system will become evident only after the electrician has finished and been paid. Another aspect of the issue is the knowledge base from which the engineer designs as opposed to that available to the electrician. An electrician is trained to design and install electrical installations to code. The engineer does this in the framework of an academic understanding of the code with knowledge of the physical interactions between elements of the building and its surrounding that is far beyond the scope of course material taught to electricians.

The design engineer should be offering the following services to the customer:

1. Clarification of end-user requirements for the installation regarding the appliances to be installed and the usage patterns of those who will be living in the house, or using the installation, including load calculations for circuit distribution and to ascertain the most efficient service to order from the Electric Company.
2. Design and drafting of the electrical installation on the architects pre-drawn files .
3. Design and drafting of all electrical panels, the service lines and the connections between them.
4. Design and drafting of the grounding system and equi-potential bonding.
5. Design of all low voltage installations including: telephone, TV, LAN, etc.
6. Advice and design of back up power alternatives on a system wide scale, if such is desired.
7. Inherent power quality engineering and lightning protection.
8. Informing the owner of the available digital (smart) house options, cost of installation, ROI, and helping the owner decide if such an option is worthwhile in whole or in part.
9. Advice regarding the purchase of electrical appliances or light fixtures from overseas and engineering solutions where necessary.
10. Integration with air conditioning systems, under-floor heating and any other system requiring electricity.
11. Preparation of final plans, specifications and documentation for issuing a tender to contractors, and assisting in choosing the electrical contractor for the job.
12. On-site inspections to ensure adherence to plans and code by the electrical contractor.