

# HARMONIC ANALYSIS

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## INPUT REQUIREMENT CHECKLIST

COMPILED BY

**PIER ENGINEERING SOLUTIONS**

AHMEDABAD, GUJARAT (INDIA)

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## Disclaimer:

This checklist is a guidance tool compiled from common electrical design practices and widely accepted industry standards. It outlines typical information required for electrical studies. Actual project requirements may vary based on the nature and scope of work.

## REQUIRED INPUT LIST

<b>Sr. No</b>	<b>Documents/Data</b>	<b>Known/ Available</b>	<b>Unknown/ Unavailable</b>
1.	Key Single Line Diagram	<input type="checkbox"/>	<input type="checkbox"/>
2.	Metering & Protection Diagram	<input type="checkbox"/>	<input type="checkbox"/>
3.	Plant Operating Philosophy (Normal / Critical / DG Mode)	<input type="checkbox"/>	<input type="checkbox"/>
4.	NGR Detail	<input type="checkbox"/>	<input type="checkbox"/>
5.	Utility Supply Parameters (Voltage, Cable/Line)	<input type="checkbox"/>	<input type="checkbox"/>
6.	Minimum & Maximum fault current with X/R ratio	<input type="checkbox"/>	<input type="checkbox"/>
7.	Circuit Breaker Min & Max Operating time Tolerance (Vendor Manual/Catalogue)	<input type="checkbox"/>	<input type="checkbox"/>
8.	<b><u>Power Transformer:</u></b> MVA/kVA Rating, Rated Voltage, Percent Positive, Negative and Zero Sequence Impedance and X/R Ratio, 3-Ph Connection, and grounding type.	<input type="checkbox"/>	<input type="checkbox"/>
9.	Transformer Tap Position	<input type="checkbox"/>	<input type="checkbox"/>
10.	<b><u>Generator:</u></b> Rated MVA/kVA, Negative reactance at fundamental frequency, resistance, Operating Mode (Swing, Voltage control, var control ), winding connection and grounding type. If any harmonic spectrum available for generator	<input type="checkbox"/>	<input type="checkbox"/>
11.	<b><u>Bus duct or current limiting reactor:</u></b> Positive, Negative & Zero Sequence resistance, reactance and frequency characteristic of resistance and reactance.	<input type="checkbox"/>	<input type="checkbox"/>
12.	UPS / Inverter Vendor Datasheet	<input type="checkbox"/>	<input type="checkbox"/>
13.	APFC Vendor Documents	<input type="checkbox"/>	<input type="checkbox"/>
14.	<b><u>Harmonic filter (if Installed):</u></b> Harmonic filter type and structure, resistance, reactance and capacitance for all elements, maximum voltage for capacitors, and maximum current for inductor	<input type="checkbox"/>	<input type="checkbox"/>

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<i>Sr. No</i>	<i>Documents/Data</i>	<i>Known/ Available</i>	<i>Unknown/ Unavailable</i>
15.	<b><u>Motors:</u></b> Rated kW/HP, Negative reactance at fundamental frequency, resistance, winding connection and grounding type and loading of motors	<input type="checkbox"/>	<input type="checkbox"/>
16.	Circuit breaker / Switchgear ratings such as fault current carrying capacity, normal current capacity, and thermal withstand opening time of CBs of LV and HV.	<input type="checkbox"/>	<input type="checkbox"/>
17.	Electrical Load List	<input type="checkbox"/>	<input type="checkbox"/>
18.	Voltage & Current harmonic distortion limit for both total harmonic & Individual harmonic (if any)	<input type="checkbox"/>	<input type="checkbox"/>
19.	Existing harmonic spectrum of the utility (external to the system being modelled)	<input type="checkbox"/>	<input type="checkbox"/>
20.	<b><u>Shunt Capacitor and Shunt reactor:</u></b> Three Phase connection, kVAR, and Unit kV	<input type="checkbox"/>	<input type="checkbox"/>
21.	<b><u>Converter:</u></b> Nameplate rating, number of phases, pulses, and converter connections. Actual manufacturer test sheet on each converter (if available)	<input type="checkbox"/>	<input type="checkbox"/>
22.	<b><u>Arc furnace:</u></b> Secondary lead impedance (from transformer to electrodes) plus a loading cycle to include arc megawatt, Secondary voltage, secondary current, furnace transformer taps, and transformer connections.	<input type="checkbox"/>	<input type="checkbox"/>
23.	Any other data relevant for the study	<input type="checkbox"/>	<input type="checkbox"/>
24.	Electrical Cable Schedule	<input type="checkbox"/>	<input type="checkbox"/>
25.	<b><u>Transmission lines &amp; Cables:</u></b> Length, Positive, Negative & Zero Sequence resistance, reactance & Admittance of unit length, and any special characteristic of resistive, inductive and capacitive impedance, rated voltage of the circuit.	<input type="checkbox"/>	<input type="checkbox"/>
26.	Template for Reports (Native File)	<input type="checkbox"/>	<input type="checkbox"/>

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If any required data is not available, we will coordinate with your team to obtain it. In cases where information remains unknown, it will **not** be ignored. Instead, we will incorporate it using **conservative assumptions** grounded in **sound engineering judgement**, and clearly highlight these in our documentation wherever relevant.