

TRANSIENT STABILITY STUDIES

Unified Data Collection Checklist



What is this form?

This checklist captures the data our engineers need to perform Transient Stability Studies for your system. Provide as much as you can estimates are acceptable; mark them as 'approx.'

- Attach existing SLDs, generator data sheets, or relay settings.
- Partial data is always useful our engineer will identify gaps and follow up.
- All information is treated as strictly confidential.

Your Contact Details

Company / Organization: _____

Site Name & Address: _____

Your Name & Role : _____

Email Address : _____

Phone Number: _____

Date Completed: _____

A. SYSTEM OVERVIEW & NETWORK DATA

System Type <i>e.g. Industrial / Utility / Islanded microgrid / Renewable</i>	Applicable Standards <i>e.g. IEEE 1110, IEC 60909, IEC 61363, local utility guidelines</i>
Highest Voltage Level (kV) <i>e.g. 132 kV, 33 kV, 11 kV</i>	Lowest Voltage Level (V) <i>e.g. 415 V LV distribution</i>
Network Topology <i>e.g. Radial / Ring / Meshed / Islanded</i>	Grounding Method <i>e.g. Solid, resistance earthed, isolated neutral</i>
SLD Available? <i>Yes attach / Partial / No</i>	Total System Capacity (MVA / MW) <i>e.g. 50 MVA installed generation, 35 MW peak demand</i>
No. of Busbars / Voltage Levels <i>e.g. 4 buses: 132, 33, 11 kV, 415 V</i>	Operating Frequency (Hz) <i>e.g. 50 Hz / 60 Hz</i>
Utility / Grid Connection Point <i>e.g. 132 kV substation, PCC at 33 kV</i>	Grid Fault Level at PCC (MVA / kA) <i>e.g. 1500 MVA / 6.56 kA at 132 kV</i>

B. GENERATION & SOURCE DATA

Tag / Name	Type	MVA Rating	MW / PF	Voltage (kV)	Inertia H (s)	Excitation / AVR	Governor Type	Notes
<i>e.g. GEN-01</i>								

Operating Scenarios to Model <i>e.g. Full load, partial load (50%), islanded, peak demand</i>	Renewable Generation Present? <i>Yes PV / Wind / Storage; describe capacity & inverter type</i>
Renewable Fault Current Contribution <i>e.g. 1.1 pu from grid-following inverters / Not known</i>	Synchronous Condenser / STATCOM? <i>Yes rating / No</i>

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C. LOAD & MOTOR DATA	
Total Connected Load (kW / MVA) <i>e.g. 28 MW / 32 MVA at full production</i>	Normal Operating Load (kW) <i>e.g. 22 MW typical daytime load</i>
Load Composition <i>e.g. 60% motors, 25% process heaters, 15% lighting/misc</i>	Any Large Sudden Impact Loads? <i>Yes describe type, kW, frequency of switching events</i>

Motor Tag	Application	kW / HP	Voltage (V/kV)	Starting Method	Inertia (kg·m²)	Load Torque Type	Motor Type	Notes
e.g. M-01								
e.g. M-02								

Starting Method Key:
DOL = Direct On-Line | SS = Soft Starter | VFD = Variable Frequency Drive | SD = Star-Delta | ATL = Auto-Transformer

D. TRANSFORMER & FEEDER DATA (attach SLD if available)									
Tag	kVA/MVA	Pri. kV	Sec. V	Z% Imp.	X/R Ratio	Vector Group	Tap Setting	Grounding	Notes
e.g. TR-01									

Feeder / Cable Ref	From Bus	To Bus	Length (m)	Size (mm²) / Type	R (Ω/km)	X (Ω/km)	Notes
e.g. F-01							

Switching Device Ratings (breakers) <i>e.g. CB-01: 630 A, 25 kA fault rating</i>	Breaker Operating Times (ms) <i>e.g. CB-01: 60 ms trip + 20 ms arc</i>
OLTC (On-Load Tap Changers) Present? <i>Yes range & step size / No</i>	Overhead Line Data Available? <i>Yes attach / No (cable only)</i>

E. FAULT & DISTURBANCE SCENARIOS

Tick all fault types and switching events to be included in the study:

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<input type="checkbox"/> Three-phase bolted fault (3LG)	<input type="checkbox"/> Single line-to-ground fault (SLG)
<input type="checkbox"/> Line-to-line fault (LL)	<input type="checkbox"/> Double line-to-ground fault (DLG)
<input type="checkbox"/> Fault at main HV busbar	<input type="checkbox"/> Fault at feeder or transformer terminal
<input type="checkbox"/> Fault at motor terminal / MCC bus	<input type="checkbox"/> Fault on utility / grid side of PCC
<input type="checkbox"/> Capacitor bank energisation / switching	<input type="checkbox"/> Load shedding event (manual or automatic)
<input type="checkbox"/> DG / generator trip (loss of generation)	<input type="checkbox"/> DG / generator synchronisation event
<input type="checkbox"/> Large motor start (DOL / star-delta)	<input type="checkbox"/> Sudden large load connection or disconnection
<input type="checkbox"/> Loss of utility supply (islanding event)	<input type="checkbox"/> Reconnection to grid after islanded operation
<input type="checkbox"/> N-1 contingency (single outage)	<input type="checkbox"/> N-2 contingency (double outage critical bus)
<input type="checkbox"/> Process load step change (impact load)	<input type="checkbox"/> Other describe below

<p>Describe specific fault locations or events in detail Which buses, feeders, or equipment; sequence of events; clearance times...</p> <p>_____</p> <p>_____</p>	<p>Impact Load Size (kW / kVA) e.g. 2 x 1500 kW compressor starting simultaneously</p> <p>_____</p>	<p>Switching Frequency e.g. Daily / Every shift change / Random / Peak production</p> <p>_____</p>
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F. PROTECTION & CONTROL DATA

Device Tag	Type	Rating (A)	Trip Setting (A)	Trip Time (ms)	Manufacturer / Model	Relay Function (ANSI)	Notes
e.g. CB-01							
e.g. M-01 OL							

<p>Auto-Reclose Scheme Present? Yes reclose time & attempts / No</p> <p>_____</p>	<p>Under-Frequency Load Shedding (UFLS)? Yes stages, frequency thresholds, % load shed / No</p> <p>_____</p>
<p>AVR (Auto Voltage Regulator) Type e.g. IEEE Type AC4A, ST1A, manual / Not known</p> <p>_____</p>	<p>Governor / Speed Controller Type e.g. GGOV1, IEEEG1, droop setting / Not known</p> <p>_____</p>
<p>Load Controller / SCADA Response Time e.g. PLC response 200 ms, SCADA 2 s</p> <p>_____</p>	<p>Protection Coordination Study Available? Yes attach / No</p> <p>_____</p>
<p>Any Special Trip or Interlock Schemes? e.g. Motor bus transfer, fast bus transfer, ROCOF relay</p> <p>_____</p>	<p>Control System Affecting Transient Response? e.g. AVR, PSS (Power System Stabiliser), droop control</p> <p>_____</p>

G. PROBLEMS & SYMPTOMS OBSERVED

Tick all that apply even infrequent events help calibrate the study:

<input type="checkbox"/> Voltage dips / sags when large motors start	<input type="checkbox"/> Frequency excursions after generation loss
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<input type="checkbox"/> Motors failing to start under load	<input type="checkbox"/> Motor tripping on overload / stall protection
<input type="checkbox"/> Generator losing synchronism / pole slip	<input type="checkbox"/> AVR hunting or voltage oscillations
<input type="checkbox"/> System instability after switching event	<input type="checkbox"/> Capacitor bank causing transient overvoltages
<input type="checkbox"/> Flickering lights or sensitive equipment dropout	<input type="checkbox"/> PLC / control system tripping on voltage dip
<input type="checkbox"/> Production stoppage from electrical disturbance	<input type="checkbox"/> Utility has raised concerns or issued a notice
<input type="checkbox"/> Failed power quality or stability assessment	<input type="checkbox"/> Other describe below

<p>Describe problems in your own words <i>What happens, which equipment, how often, any production loss or damage...</i></p> <p>_____</p> <p>_____</p>	<p>When did problems start? <i>e.g. After new motor in 2023 / Always been an issue</i></p> <p>_____</p>
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H. EXISTING DATA & DOCUMENTS (tick what you can share)

Tick everything available. Even old or partial documents significantly reduce data-collection time:

<input type="checkbox"/> Single Line Diagram (SLD) any revision	<input type="checkbox"/> Generator technical datasheet / factory test report
<input type="checkbox"/> Generator excitation / AVR model data (IEEE format)	<input type="checkbox"/> Governor / turbine model data
<input type="checkbox"/> Motor datasheet (speed-torque, inertia, locked rotor)	<input type="checkbox"/> Motor starting study or report (prior)
<input type="checkbox"/> Transformer nameplate / test certificates	<input type="checkbox"/> Cable or overhead line impedance schedule
<input type="checkbox"/> Protection relay settings schedule	<input type="checkbox"/> Protection coordination study or TCC curves
<input type="checkbox"/> Fault level / short-circuit study report	<input type="checkbox"/> Load flow study (steady-state results)
<input type="checkbox"/> Power quality measurement data (voltage, THD, flicker)	<input type="checkbox"/> SCADA / DCS demand and event logs
<input type="checkbox"/> Previous transient / dynamic study report	<input type="checkbox"/> Utility interconnection agreement or requirements
<input type="checkbox"/> Capacitor bank or harmonic filter datasheet	<input type="checkbox"/> Solar / wind / BESS inverter technical data
<input type="checkbox"/> Photographs of switchrooms / generator set	<input type="checkbox"/> Other describe below

<p>Existing Measurement Data Available? <i>e.g. Voltage dip records, oscillography, SCADA trends</i></p> <p>_____</p>	<p>Simulation Software Used Previously? <i>e.g. PSCAD, PSS/E, ETAP, DlgSILENT / Not known</i></p> <p>_____</p>	<p>Last Electrical Study / Audit Date <i>e.g. Load flow study March 2021 attach report</i></p> <p>_____</p>
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I. STUDY OBJECTIVES & SIMULATION PARAMETERS

Tick your top priorities and specify simulation parameters below:

<input type="checkbox"/> Transient stability rotor angle & damping assessment	<input type="checkbox"/> Motor acceleration study starting time & voltage dip
<input type="checkbox"/> Impact load analysis voltage dip on motor start	<input type="checkbox"/> Frequency deviation analysis after generation loss
<input type="checkbox"/> System damping & inter-area oscillation study	<input type="checkbox"/> Islanded operation stability verification
<input type="checkbox"/> Generator synchronisation & reconnection study	<input type="checkbox"/> Capacitor bank / FACTS device switching transient
<input type="checkbox"/> N-1 / N-2 contingency stability assessment	<input type="checkbox"/> Voltage dip assessment for sensitive equipment
<input type="checkbox"/> Comply with utility / grid code dynamic requirements	<input type="checkbox"/> Renewable integration impact on system dynamics

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<input type="checkbox"/> Identify mitigation measures (PSS, SVC, STATCOM)	<input type="checkbox"/> Identify equipment protection setting recommendations
<input type="checkbox"/> Prepare for utility interconnection study / approval	<input type="checkbox"/> Other describe below

Desired Study Outputs <i>e.g. Rotor angles, bus voltages, frequency, motor speed/torque, voltage dip magnitude & duration, system damping ratio</i> _____	Simulation Time Horizon (s) <i>e.g. 10 s post-fault / 30 s for islanding</i> _____	Simulation Time Step (ms) <i>e.g. 1 ms EMT / 10 ms RMS / 50 ms stability</i> _____
Equipment Protection Limits <i>e.g. Voltage dip <15% for motor starting / frequency deviation ± 1 Hz / motor start time <15 s</i> _____	Deadline / Timeline? <i>e.g. Utility submission in 6 weeks / No fixed date</i> _____	

COMPANY NAME Full Name: _____ Signature: _____ Date: _____	What Happens Next Our engineer will review your form shortly and contact you.
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