SynerGEE® Electric

SynerGEE Motor Start

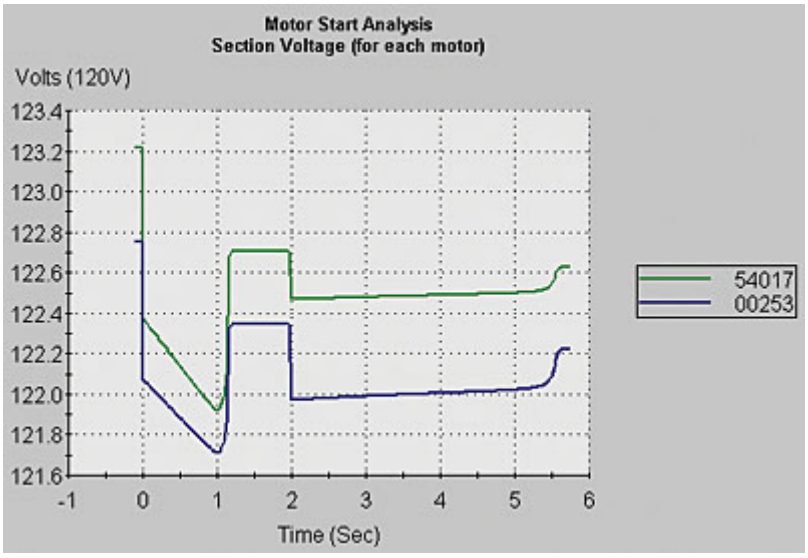
SynerGEE provides two dynamic analyses designed specifically to examine the effects of starting motors within your system. These analyses take advantage of a detailed motor model including torque characteristics, fully considered by load-flow calculations.

Motor start analysis

Motor start analysis allows a comprehensive view of all starting motors within your system, providing second-by-second data throughout their full starting cycles. Since starting a large motor can cause disturbances to customers throughout a feeder, motor start analysis allows you examine these effects and find solutions right from SynerGEE.

The analysis examines the full starting behavior of any number of motors, providing detailed charts for:

- Motor speed and torque vs. time
- Motor terminal voltage and current draw vs. time
- kW and kvar into service vs. time
- Service drop vs. time



Motor start analysis is particularly useful if you need to coordinate the starting sequence of multiple large motors. For example, you could use SynerGEE to determine the appropriate start delay interval for a series of motors.

With SynerGEE's detailed motor model, you can simulate a variety of different starting methods, in an effort to find the most effective means of reducing unwanted effects. Your options include simple settings such as a basic start delay, along with more complex starting methods such as capacitor and autotransformer starting. Using SynerGEE's friendly yet powerful editors, you can quickly run multiple analyses on various configurations to find which is best.

Locked Rotor Analysis

Locked Rotor Analysis evaluates the performance of an entire feeder under the stress of starting motors. It simulates motors in a locked rotor state when power is first applied, at the moment before the rotors begin to turn. As such, Locked Rotor analyzes at the instant when starting motors produce the most strain on the system.

Before / During / After Summary: New - Liberty

Section (or Device) Name	Before Volts (120V) Bal	During Volts (120V) Bal	During Pct Dip	During Amps Bal	After Volts (120V) Bal	After Amps Bal
Source: Z1 = (0.189 + j0.587) Ohms Z0 = (0.985 + j1.254) Ohms						
New - Liberty	124.0	122.0	1.6%	461	124.0	356
6593	123.4	120.9	2.0%	461	123.3	356
00002	123.4	120.9	2.0%	461	123.3	356
00057	123.3	120.8	2.0%	461	123.2	356
00324	123.3	120.8	2.0%	229	123.2	111
00325	123.3	120.7	2.1%	229	123.2	111
00138	123.3	120.6	2.2%	229	123.1	103

Locked Rotor Analysis provides before, during and after calculations for each section and device throughout the analyzed feeders. With this information, you can easily find the worst-case effects of starting motors, anywhere in your system.

And, you can be confident knowing that SynerGEE's robust load-flow engine is the workhorse behind the results, with full consideration of factors such as substations, source impedances and detailed line models.