

# Georgia Pacific Gypsum San Leandro, California

## PAPER MILL

A complete electrical retrofit of the mill's traditional steam-turbine-driven paper machine with 13 ABB Direct Torque Control ACS 600 VFDs (including a Multi-Drive configuration) and AC motors has provided "improved safety and more precise operability of the machine - and increased throughput, reliability, control, and reduced downtime," according to plant manager Fred Curcio. Replacement of the 1950s technology, completed in stages on the forming section and finishing end, was designed to increase capacity from 750 to 1,000 fpm. Installed on a turnkey basis by ABB systems integrator Intec Solutions, the retrofit pioneered a first for G-P and the paper industry: encoder-less operation of all the new sectionalized drive system.

San Leandro is one of four G-P Gypsum paper mills integrated into the company's vertical operation; the mill sources all of its own corrugated and flyleaf wastepaper, and supplies 8-ply face-and back-side paper to G-P Gypsum board plants. Benefits of the ABB electrical retrofit include:

- **Tighter Draws** - addition of ABB 100 and 150 horsepower drives and motors, respectively, to the second and third presses, and a second-phase addition of a 350 HP drive and a helper drive to the main press, initially freed up horsepower to the steam turbine so the whole paper machine could speed up. The drives also provided much more precise draw control, giving the mill the ability to run tighter draws with fewer paper breaks - improving run-ability and product quality.
- **Use Dryers' Regenerated Energy Via MultiDrive** - seven ABB AC motor drives, ranging from 40-125 horsepower and all connected to a common 700-volt DC bus supply, are built in a multi-drive configuration to make it easy for the high-inertia dryers close to the calendar stack to share/return their regenerated energy within the true common DC bus system back to those dryers near the presses. The installed cost of the multi-drive (which eliminates hardware and shares a power feed) is on par with that of stand-alone drives.
- **Encoder-less Operation** - ABB's ACS 600 series' open-loop DTC technology eliminated the need for installing encoders on G-P's finishing end equipment - and led to the subsequent removal of encoders from the forming end. DTC drives also create a mini multi-drive between the second and third press.
- **Touch Screen Control** - a master SAF programmable linear controller utilizes a processor with input cards and, via fiber optic connection, talks directly to the drives; via SAF, all controls for the paper machine are easily understandable via touch screens.

The retrofit, according to G-P, has enabled the mill to increase tonnage from 175 to 225 tons per day. The machine runs with very little delay - "two percent many months," said Curcio - a full five percent below the industry average.

