SEE IT. CLEAR IT. ISOLATE IT. PROVE IT.

Four jobs on an 800 VDC bus, at four speeds. No single part does all four.

THE FOUR SPEEDS ON THE BUS

<110 µs SEE IT	**KNICK** Isolated V and I to the converter's controller.
µs to ms CLEAR IT	**BREAKER OR FUSE** A solid-state breaker or DC fuse clears the fault.
Tens of ms ISOLATE IT	**SCHALTBAU** Opens on command and reports that it did.
1 ms to 1 s PROVE IT	**SATEC** The trip stamped to the millisecond, on the record.

<110 µs

Knick high-voltage transducers, T90 response for voltage and current, isolated to 3,600 V working (Knick data)

1,500 V DC

Schaltbau C310 main contactor, 500 A, opens under load in either direction; C320 to 1,000 A

1 ms

SATEC PM180 fast inputs and sequence-of-events stamping: the trip lands on the record with its time

800 VDC is moving into the AI rack, and the bus carries the same physics rail traction and heavy industry have switched and measured for decades. **What is new is putting all four jobs on one drawing, sized for loads that step in milliseconds.**

01 WHERE THE POWER PATH HAS HOLES

- **No zero crossing.** DC gives a break nothing to help it, and there is no CT or PT to borrow a reading from. Ripple, pole unbalance and ground faults go unmetered unless something is put there to see them.
- **The load steps in milliseconds.** GPU clusters go from idle to full load as jobs synchronize. On the AC side of the converter that shows up as sags, swells and inrush the controller has to see as they happen.
- **The meter is the record, not the trip.** A power meter works in cycles and seconds. Asked to protect, it answers late.
- **The contactor isolates, it does not clear.** A mechanical contactor opens in tens of milliseconds: right for isolating on command, too slow to be the only thing between a fault and the bus.
- **The only reading is the converter's own.** Without an independent measurement on the bus, efficiency and energy are whatever the converter's firmware reports.

02 WHERE IT IS ALREADY SOLVED

- **KNICK Rail traction substations.** Transducers on 750 V to 3 kV DC busbars, kiloamp steps on every acceleration, qualified to EN 50124-1 rail insulation coordination.
- **KNICK STATCOM and arc furnaces.** Per-phase current to the trip in under 70 µs; tens of kiloamps through shunts at up to 4.8 kV.
- **SCHALTBAU Decades of rail and storage DC switching.** Open-air arc chute, bidirectional by design, mirror contacts that tell the controller the contactor really opened.
- **SATEC Grid storage at utility substations.** Frequency response for container battery systems, 20 ms sampling, setpoint inside one second.
- **PREMIUM PSU Conversion built to the spec since 1981.** Custom AC/DC and DC/DC from the rail and defense world, including the control power that has to stay up when the bus does not.

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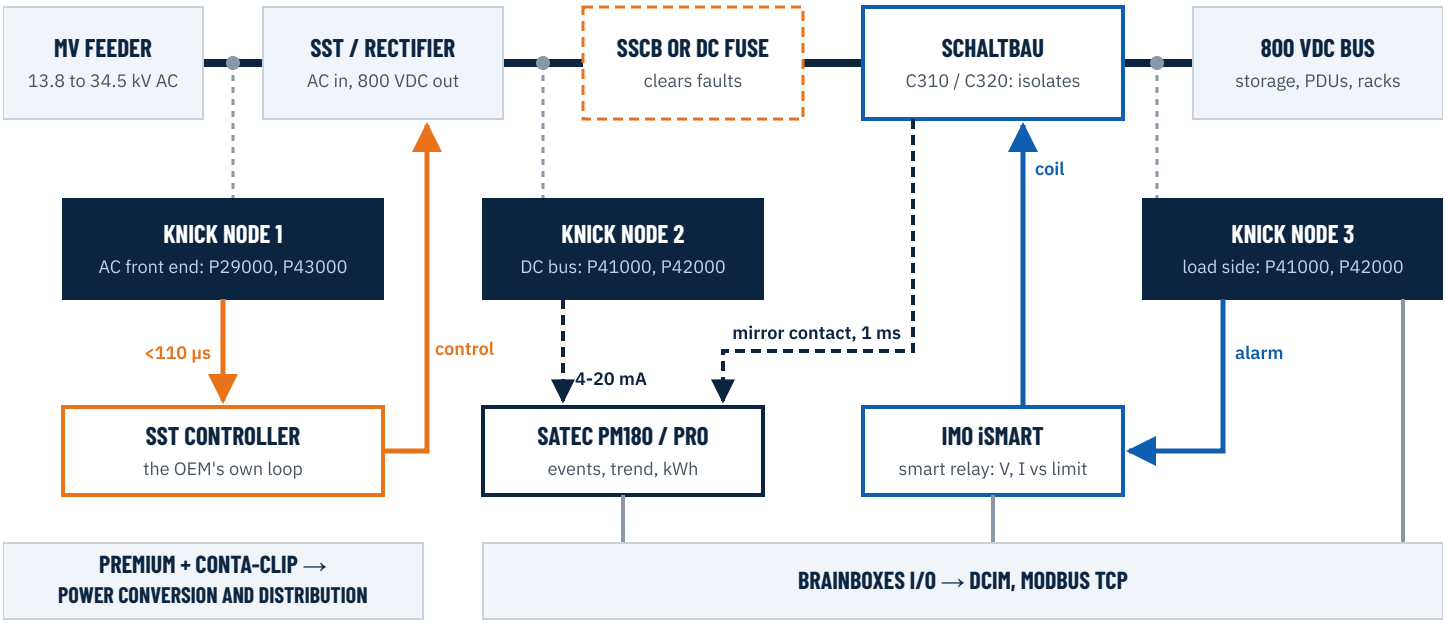
The path, one node, on reverse →

03 THE PATH: SENSE, CLEAR, ISOLATE, RECORD



04 WHO DOES WHICH JOB

JOB	SPEED	WHAT DOES IT	LINE
SEE IT, ISOLATED	<110 µs T90	VT, CT or shunt into an isolated transducer, 4 to 20 mA or ±10 V out; 3,600 V working isolation, 15 kV test, shunts to 20 kA (Knick data)	KNICK INTERFACE
CLEAR THE FAULT	µs to ms	Solid-state breaker or high-speed DC fuse in series, sized to the prospective fault current	COMING SOON
ALARM AND COMMAND	tens of ms	The Knick signal into an iSmart analog input, already isolated; a comparator block drops the contactor coil through a relay output, 15 ms max	IMO ISMART
ISOLATE, AND PROVE IT OPENED	tens of ms	Opens on command at rated current, either direction; 1,500 V DC, 500 A (C310), 1,000 A (C320); mirror contacts per IEC 60947-4-1 Annex F	SCHALTBAU
RECORD IT	1 ms to 1 s	Mirror contact on a fast input, stamped to 1 ms; kW, kWh and direction on the bus to 1,500 V DC; the Knick signal logged for trend	SATEC
CARRY IT	network	Every alarm, contact and reading onto the DCIM as Modbus TCP	BRAINBOXES
KEEP THE CONTROLS UP	always on	Control power and DC UPS for node and controller; terminals and shielded cable entry at the wall	PREMIUM PSU, CONTA-CLIP

05 BRING US THE PROBLEM. WE BRING THE PLAN.

- **You give us what you have:** the position on the path, the bus and the rating.
- **One managed BOM for the whole node,** quoted and supplied from one provider.
- **We come back with a plan:** the solution and a proposal to get it done.
- **The factories behind it:** parts, or a tested node from Knick Interface and its integration partners.

Challenge us: bring us the whole node, from the transducer to the control power. Figures are each manufacturer's published data.

DYNAMIC Measurement & Control Solutions, LLC

NEXT STEP: BRING US THE PROBLEM

Where it sits on the path, the bus voltage and current, what it has to report to. We take it on and come back with a plan and a proposal to get you there.
www.dynamicrep.com/data-center

POWER IT. CONTROL IT. PROVE IT.

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