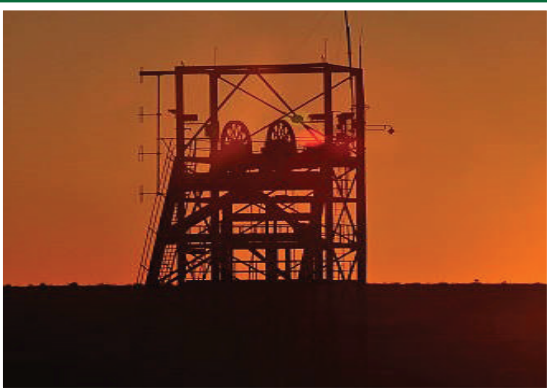




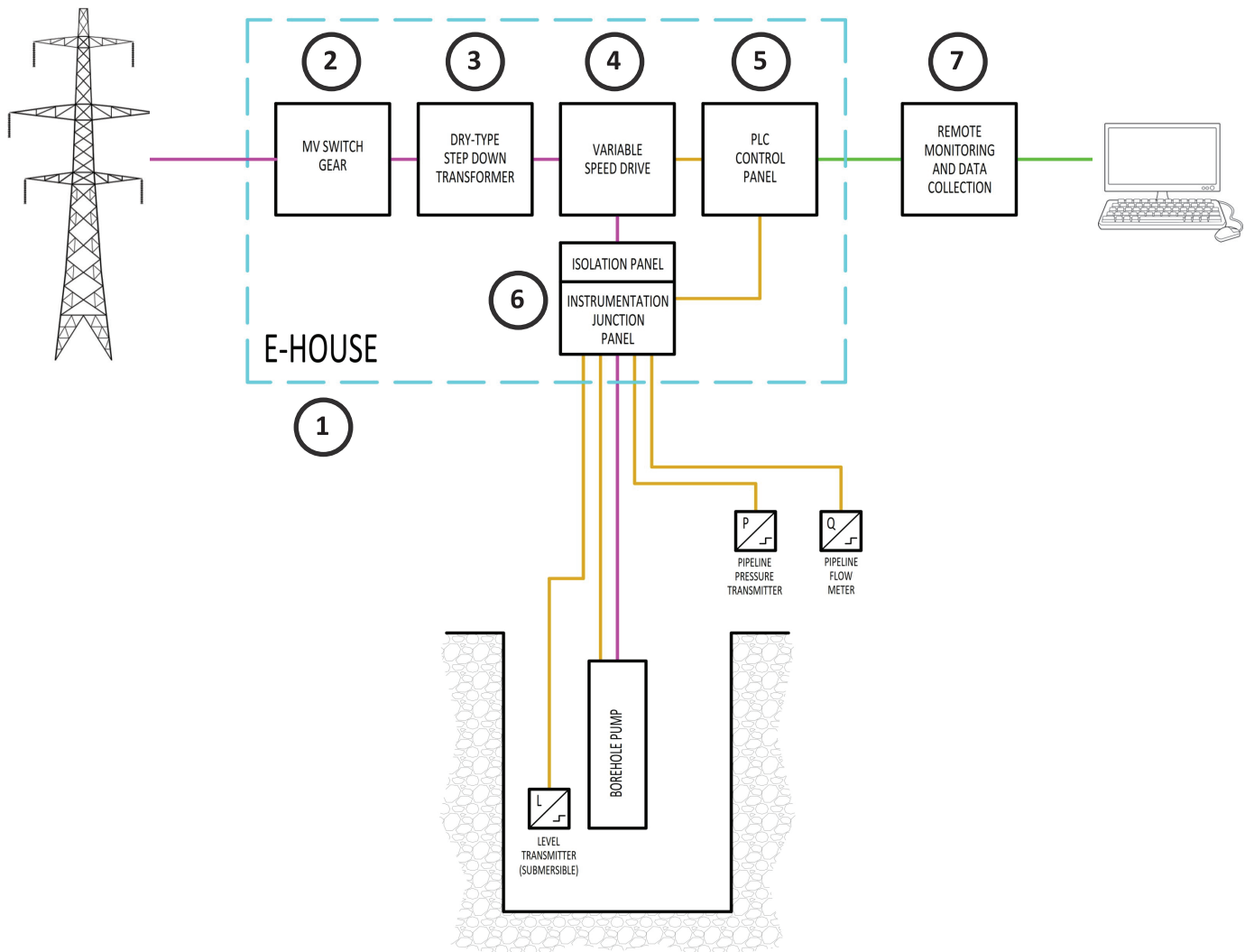
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ELECTRICAL DESIGN CONSIDERATIONS

TYPICAL BOREHOLE ELECTRICAL SCHEMATIC



TYPICAL ELECTRICAL PANEL DESIGN CRITERIA

Application will determine most practical starting combination tied in with cable selection based on starting current and voltage drop.

- Direct on line = Full load amps x 8
- Soft start = Full load amps x 3.5
- VSD = Full load amps x 1.

Maximum voltage drop at motor terminals during starting : 10%.

Electrical panel should have the following mandatory functionality








- Run hour meter.
- Volt meters all phases.
- Amp meters all phases.
- Instantaneous trip.
- Under / over current.
- Under / over voltage.
- Earth leakage.
- Reverse phase.
- Phase imbalance.
- Phase loss.
- Surge arrestors.
- History logger for all above.
- In VSD applications, automatic maintaining of delivery flow / pressure



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1	E-HOUSE		<ul style="list-style-type: none"> • The E-House comes completely assembled to site. • Minimal site construction required to install E-House module. • E-House complies to all safety regulations and to client specifications. • E-House fully tested before dispatched to site.
2	MV SWITCHGEAR		<ul style="list-style-type: none"> • Various Form-Factors available depending on Application. • Modular System to allow adaption to Application. • Various Protective Device Options available. • Communication Options available for monitoring/control.
3	DRY-TYPE STEPDOWN TRANSFORMER		<ul style="list-style-type: none"> • Dry-Type negates requirement for bund-walls. • Fully Enclosed with forced ventilation (size dependant). • Temperature monitoring included. • Manufactured to suite specific application.
4	VARIABLE SPEED DRIVE		<ul style="list-style-type: none"> • Low input and output harmonics. • Virtually unlimited motor cable distance. • No output filter required. • Low component count = Low complexity. • High reliability and availability.
5	PLC PANEL		<ul style="list-style-type: none"> • Communicates/Interfaces with all devices and equipment forming part of the application • All data displayed on a local HMI. • Data logged for display and download based on client requirements. • Generate alarms for action by relevant personnel. All alarms forms part of the logged dataset. • Ensures optimum operation of the pumping system by monitoring flow, pressure and reference values and adjusting operation to meet these requirements.
6	INSTRUMENTATION JUNCTION PANEL		<ul style="list-style-type: none"> • Provides a connection interface between pump and shaft instrumentation (such as winding temperature and water level in shaft) and the PLC Panel. • Monitors Field Isolator (if required) Status and relays status to the PLC Panel. • Reduces cabling from the field to the PLC Panel.
7	REMOTE MONITORING AND DATA COLLECTION		<ul style="list-style-type: none"> • Units interface with existing equipment. • Units can be programmed via WIFI / GSM. • Screen for viewing data on site. • Screens customized to client specifications. • Units can retain data. • Data stream can be setup to stream to 3rd party servers. • Hosting and reporting services available.



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Competence, experience, innovative thinking, modern manufacturing plants and motivated employees form the basis of our services.

With the flexibility of a modern, medium-sized company and the experience of our over 90-year history, we are well equipped to meet the requirements of the future.

The numerous certifications and technical approvals of course ensure that we serve our customers with the highest quality standards through the complete project phases.

Our product range focuses on water, waste water and power industries, tunnel construction and well sinking as well as open-pit and underground mining.

We as a competent partner ensure an added value for the specific customer needs: from the conceptual planning to professional production and punctual delivery.



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