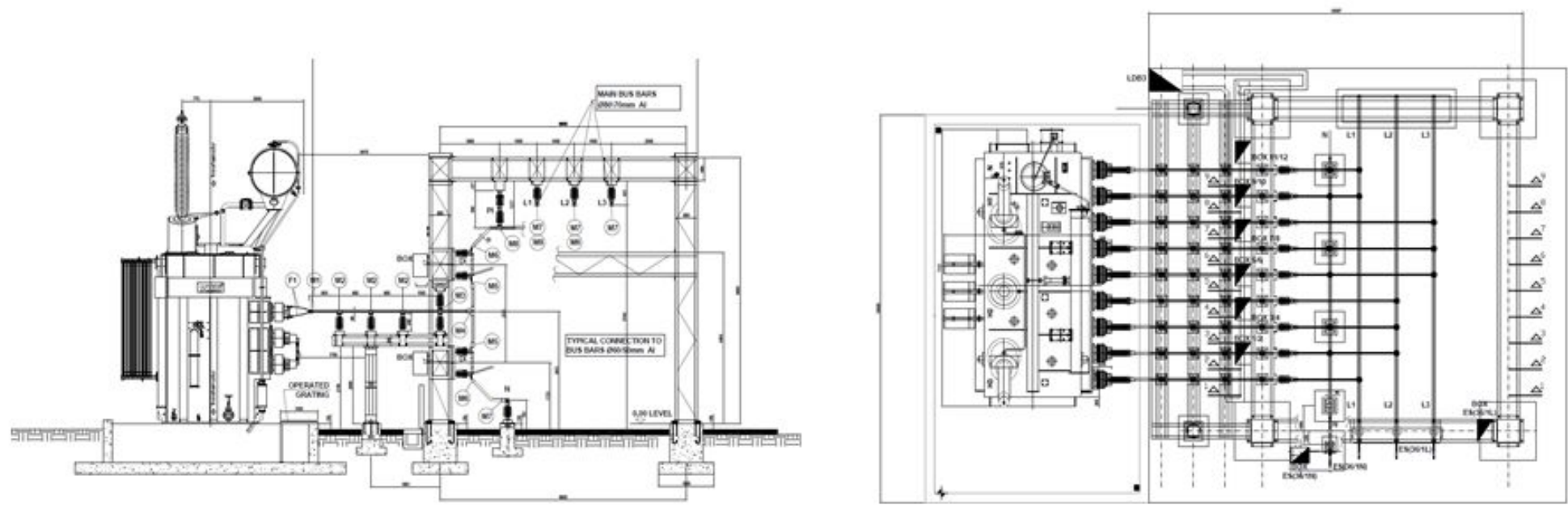


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| TECNALIA, Bilbao, Spain | Engineering services for the construction of a new High Power Laboratory | 2011-2012 | * |
| Testing Facilities and maximum ratings of equipment to be tested | | | |
| <p>The Laboratory, located in the Parque Tecnológico Bizcaia, includes the following Testing Facilities:</p> <ul style="list-style-type: none"> ● High Power Medium Voltage & Internal Arc laboratory whose short-circuit power is supplied by a 235 kV substation through a 300 MVA 3-phase HV/MV Transformer with test voltages from 3 kV up to 40,5 kV and max short-circuit test current 40 kArms, 1 s, frequency 50 Hz, ● Low Voltage High Current laboratory supplied by the 300 MVA HV/MV Short-circuit Transformer and a 100 MVA 3-phase MV/LV Transformer with test voltages from 200 V up to 1000 V and max short-circuit test current 130 kArms, 1 s, frequency 50 Hz. | | | |
| Tasks performed: | | | |
| <ul style="list-style-type: none"> ● Assessment of Laboratory requirement, ● Single line diagram, ● List of main testing equipment and relevant main ratings, including ratio changer connected to the secondary side of the HV/MV Short-circuit Transformer, ● Earthing system, ● Technical Specification of: <ul style="list-style-type: none"> ○ Disconnectors and Earthing Switches, ○ MV Circuit-breakers and Making Switch, ○ MV reactors banks, ○ Bus-bar system (component and location) and Cables, ○ Control, monitoring and protection systems, ○ Measuring system, ○ Requirement for the civil works. | | | |



* as CESI subcontractor