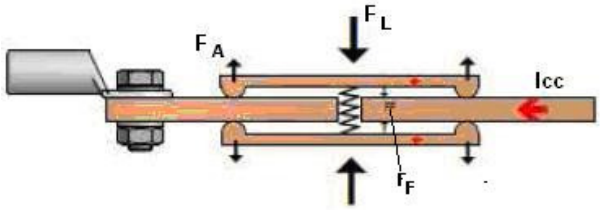
Competitive Features

Pluggable contacts in Power switchgears may cause extensive problems up to total breakdown of an electrical installation. For this purpose

1. Contacts have to carry thermal load subsequently to the allowed power of the following protection circuit.
2. The contacts shall handle the dynamic force from a short circuit current safely without loosing contact pressure.

Complex physical relations are described in point 2. Existing pluggable contactors are at there limits due to the arising dynamical forces in case of a short circuit. Please see in addition:

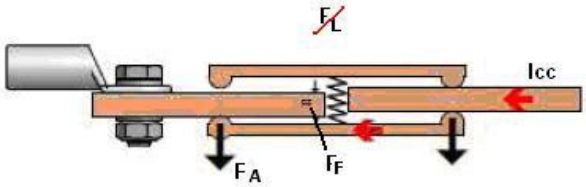


Picture 1 Schematic drawing with current flow in good condition on pluggable connector with resulting forces FA = Rejection force; FF = Feather force; FL = Lorenz force

The Practice

How can it be maintained that 2 parallel finger contacts, like in picture 1, carry an equal contact pressure on their opposite contacts? Because this will enforce equal current values on the contact finger in case of failure and an optimal contact pressure FL in the parallel blades. From this it follows that rejection force FA are eliminated.

Any influence changing the contact resistance on the parallel contact fingers will cause an unbalance in the relative strength and may result in loosing contact pressure.

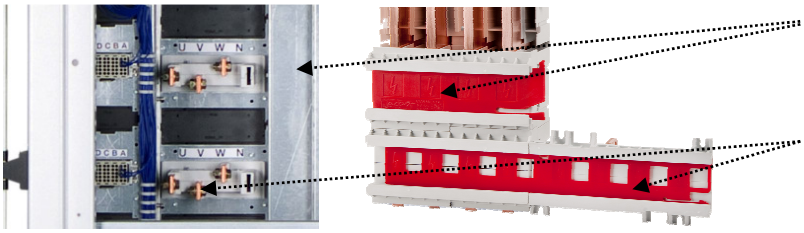


Picture 2 Schematic drawing: Partial interrupted contact because of tolerance failure or moving bus bars in case of short circuit. Partial contact load > Loosing Lorenz force FL > Rejection force FA open the contact. A contact fire will start.

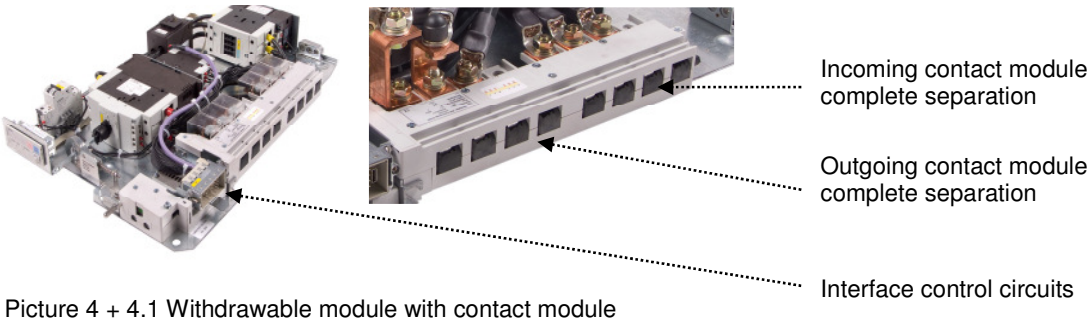
The Solution – The Smart Power Center High Light

The solution for an arc free design of the power contacts are given by the **Smart Power Center**.

1. An internal separation are provided by the vertical bus bar support. The bus bars are isolated one from each other. Therefore mechanical movement of the bus bar are reduced to a minimum in case of short circuit. [Bild 3; 3.1; 4; 4.1; 5].

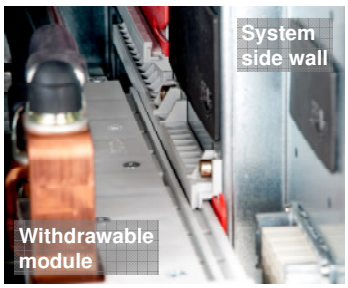


Picture 3 + 3.1 System side wall

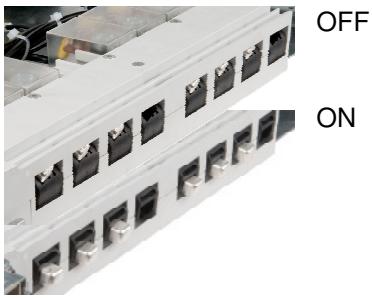


Picture 4 + 4.1 Withdrawable module with contact module

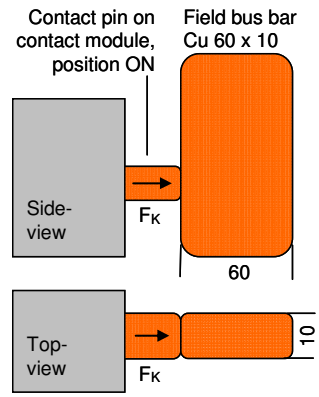
2. The specific design of contact module and field bus bars allow manufacturing tolerances smaller than 0,5 mm a safe current transmission are ensured. The contact used on Smart Power Center prevent the problems of parallel contacts [Picture 1 and 2]. The contact module switch uses the principle of a pressure contact. Electrodynamic forces appearing in case of an short circuit results in increasing contact pressure.The electrical connection is done to the endwise field bus bar. This principle is common at power contactors. [Picture 6 + 7].



Picture 5 Encapsulated slide



Picture 6 Contact pin on contact module



Picture 7 Contact;
FK contact force

Compact design and plastics encapsulated assembly of field busbar ensures an arc free electrical contact. When contact module is drawn automatic shutter cover the access to the field bus bars in the side wall. The degree of protection in the empty compartment is IP20.