Selection of appropriate technology for a certain application is carried out in cooperation with customers based on more detailed data on each individual application. Data necessary for the selection of appropriate technology are acquired through direct communication with potential customers.

Basic descriptions of various technologies:

C technology

C types of commutators produced at our company are available with diameters from 5 mm to 30mm.

Cu shells are produced of smooth copper strip. Shells are injection moulded with moulding compound and sawn to Cu bars thus separated by air insulation.

Commutators have hooks to attach rotor wires to them.

C commutators are used for electric motors in cars, for electric motors in household appliances and for less complex hand tools.

HB technology

HB types of commutators produced at our company are available with diameters from 8 mm to 35mm.

Cu shells are produced of cold formed copper strip. Shells are injection moulded with moulding compound and sawn to Cu bars thus separated by air insulation.

Commutators have hooks to attach rotor wires to them.

HB commutators are used for electric motors in cars, for electric motors in household appliances and for less and medium complex hand tools.

HBCK technology

HBCK types of commutators produced at our company are available with diameters from 15 mm to 40mm.

Cu shells are produced of cold formed copper strip. Besides standard anchoring of bars for HB technology, these shells include also additional C anchoring. Shells are injection moulded with moulding compound and sawn to Cu bars thus separated by air insulation.

Commutators have hooks to attach rotor wires to them.

HBCK commutators are used for medium loaded electric motors in household appliances and hand tools. In several versions they successfully substitute HK technology commutators.

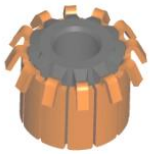
HPP technology

HPP types of commutators produced at our company are available with diameters from 10mm to 40mm.

Cu shells are produced of cold formed copper strip. Shells are moulded with moulding compound and sawn to Cu bars thus separated by air insulation.

Commutators have hooks to attach rotor wires to them. Their form is appropriate for automatic winding of rotor wires. With HPP type, bore can be reinforced with steel or brass bushing.

HPP commutators are used for electric motors in household appliances, for 12V electric motors in cars and for power hand tools.



HPL technology

HPL types of commutators produced at our company are available with diameters from 20mm to 55mm.

HPL commutators are produced from cold extruded Cu shells. Commutator shell is cut off from round Cu rod. It is formed through some successive operations and sawn to bars. Upon filling the shells with phenolic compound, outer form and bore are worked mechanically.

Commutators have hooks to attach rotor wires to them.

HPL commutators are used for fuel or air pumps.

HPG technology

HPG – graphite commutators produced at our company are available with diameters from 16mm to 30mm.

HPG commutators are produced from cold extruded or strip Cu shells. Metallised graphite representing brush track is soldered on copper basis. Upon filling the shells with phenolic compound they are sawn to bars, while outer form and bore are worked mechanically.

Commutators have hooks to attach rotor wires to them.

HPG commutators are used in motors of pumps for conventional or alternative fuels in cars. As graphite is more resistant to these fuels than copper, life time of pumps is much longer. Thanks to lower friction between brush and graphite surface, power efficiency is better, sparkling is reduced and radiofrequency interference is reduced.

HG technology

HG - graphite commutators produced at our company are available with 15mm diameter.

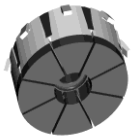
HG commutators are produced from cold extruded Cu shells. Commutator shells are cut off from round Cu rod. They are formed through some successive forming operations. Metallised graphite representing brush track is soldered on copper basis. Upon filling the shells with phenolic compound they are sawn to bars, while outer form and bore are worked mechanically.

Commutators have hooks to attach rotor wires to them.

HG commutators are used in motors of pumps for conventional or alternative fuels in cars. As graphite is more resistant to these fuels than copper, life time of pumps is much longer. Thanks to lower friction between brush and graphite surface, power efficiency is better, sparkling is reduced and radiofrequency interference is reduced.

HPLC technology

HPLC - graphite commutators produced at our company are available with diameters from 20mm to 30mm.



HPLC commutators are produced from cold extruded Cu shells. Copper shell is first moulded with phenolic compound, then metallised graphite representing brush track is soldered on appropriately prepared surface. Upon mounting the graphite plate, they are sawn to bars, while outer form and bore are worked mechanically.

Commutators have hooks to attach rotor wires to them.

HPLC commutators are used in motors of pumps for conventional or alternative fuels in cars. As graphite is more resistant to these fuels than copper, life time of pumps is much longer. Thanks to lower friction between brush and graphite surface, power efficiency is better, sparkling is reduced and radiofrequency interference is reduced.

PLIR technology

PLIR types of commutators produced at our company are available with diameters from 40 to 50mm.

PLIR commutators are produced from cold extruded Cu shells. Commutator bars are insulated between each other and commutator may be reinforced with insulation rings. Commutator shells are cut off from round Cu rod. They are formed through some successive forming operations. Upon filling the shells with phenolic compound, outer form and bore are worked mechanically. The most complex types of reinforced commutators are pre-stressed with insulation rings composed of glass fibres and binder or with combined rings composed of glass fibres, binder and steel ring (PLIRN).

Commutators have slots to attach rotor wires to them. Bore can be reinforced with full steel or spiral steel bushing.

PLIR commutators are used for low-power and medium-power car starters.

FIR; PKR technology

FIR types of commutators produced at our company are available with brush track diameters from 25 mm to 50 mm. Riser diameter on our FIR commutators is 2 to 20 mm bigger than brush track diameter.

Commutator is composed of separate Cu bars insulated between each other, and reinforced with insulation rings. FIR commutators are without insulation bars as they are insulated with moulding compound filling the commutator. FIR commutators are produced mainly with final air insulation. Upon customer's request, we produce also commutators without air insulation. The most complex types of FIR commutators are pre-stressed with insulation rings composed of glass fibres and binder.

Commutators have slots to attach rotor wires to them. Bore can be reinforced with full steel or spiral steel bushing.

FIR commutators are used with the highest mechanical and thermal loads. They are integrated into high-power starters for demanding applications. They are suitable for integration into starters for cars, heavy-duty vehicles and construction equipment.

FK; PK technology

FK types of commutators produced at our company are available with brush track diameters from 25 mm to 50 mm. Riser diameter on our FK commutators is 2 to 20 mm bigger than brush track diameter.

Commutator is composed of separate Cu bars insulated between each other. FK commutators are without insulation bars as they are insulated with moulding compound filling the commutator. FK commutators are produced mainly with final air insulation. Upon customer's request, we produce also commutators without air insulation.

Commutators have slots to attach rotor wires to them. Bore can be reinforced with full steel or spiral steel bushing.

FK commutators are used with high mechanical and thermal loads. They are integrated into starters for cars, heavy-duty vehicles and construction equipment.