

### Water Pumping System ZPW type with pneumatic, electric or hydraulic drive

The machine is designed for

- supplying the roadheader's spraying system (after-tool, internal/external) with pressure water,
- supplying hydro-fracturing units with pure, pressure water,

According customer's need it can be also placed in case.



### Water & Emulsion Pumping Systems ZPPW type with pneumatic, electric or hydraulic drive

- supplying the drilling installation with pressure water to wash the drilled hole from the rock residues and to cool the operational tool,
- supplying hydro-fracturing units with the pure, pressure water,
- supplying the water system and for spraying the coal machines,
- local supply of the water for power and emulsion hydraulic systems and small scale mechanical equipment,
- supplying the fresh pressure water to make the hydrostatic tests, e.g. during the drilling after the pipe casing (tightness tests).



### Pumping & Mixing Unit ZPM-H type

The machine is intended for mixing the mortars and ready-to-use mineral mixtures with water (cement-sand mixtures, lime, plasters, dusts, loams-cement, etc.) and to transfer the produced mortar/mixture through the hoses to the pump in continuous or step-by-step process.

In the underground mining industry the machine can be used for:

- transporting the mineral mortars/cements to the bags used in mechanical lining,
- excavation lifting, cracks and expansion joints filling in old mining goafs,
- low-pressure slurry cement injection (up to 30 bar),
- mixing and feeding the mortars in order to make the reinforced concrete formwork in the underground and tunnel constructions (for cross junction support),
- covering dams and ventilation bots, etc.
- by using the proper nozzle mounted on the pressure hose end the machine can be used for „wet” shotcreting.



### Mixing and Grouting System ZMI with hydraulic, electric or pneumatic drive

The machine can be used in underground mining to:

- mix and feed slurries based on Portland cement without aggregate (sand) in various types of work in underground construction carried out in stages (first mixing and then feeding),
- backfill the excavation, fill cracks and joints, goafs and old abandoned workings in the ground using a slurry cement,
- low pressure injection of a cement and water mixture (up to 30 bar/ 3,0MPa) or other similar materials.



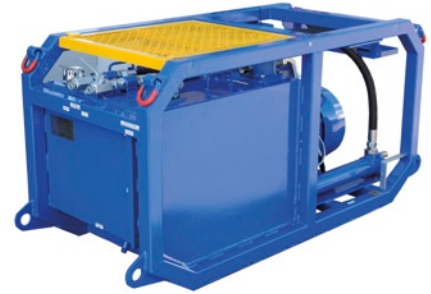
## Flushing/Cementing Pump System ZPPC

- supplying the drilling installation with pressure water to wash the drilled hole from the rock residues and cooling the operational tool,
- cementing the drilling holes with slurry cement along with maintaining the specially elaborated process technology and operating of the pumping system,
- supplying the pure pressure water to make the hydrostatic tests, e.g. during the drilling after the pipe casing (tightness tests).



## Mining Hydraulic Power Supply ZHG

- power supply of any mixing units with hydraulic drive,
- power supply of oil driving system for any mining machine by hydraulic oil up to 140 bar pressure at output up to 88 dm<sup>3</sup>/min,
- local power supply of oil hydraulics systems and emulsion hydraulic systems (cylinders, small-scale mechanical equipment etc.).



## Filters

The set of our filters gives complete water filtration system for underground mining roadheaders.

HE-FDR filter designed for filtration of water for cooling spray systems used in underground mines and filtration of oil-in-water emulsions HFA / HFA type used in hydraulic systems working pressure 100 bar/10MPa and more.

HE-FDP - can be used in water pipe systems between fire-control pipelines and water systems and mining machines spraying systems. Also on drain line from hydraulic systems of mechanized sections ahead of high pressure pump tanks (version with valve type by-pass).

Magneto-desludging installation HE-MO-500 for coarse filtration and water derusting. The device is used for filtration of water from fire-control pipelines, for following installations:

- Electrical engines cooling;
- Condensers cooling;
- After-tool spraying units for roadheaders and shearers;
- Oil in water injector mixers feeding;
- Water feeding for process tanks.

HE-NFS - return line oil filters reduces the hazard of tank interior contamination during filter cartridge replacement, supplied with an optical/electric indicator of filter cartridge contamination.

*Hydro Elektra company is also able to make other types of filters depending on client's needs (flow rate, mounting, size of the cartridge, connection etc.)*



## Temperature and level sensors

Intrinsically safe temperature sensors type ICZT are intended to supervise the temperature of devices components, as well as non-aggressive liquids: water, oils, oil-water emulsions etc. Temperature sensor is equipped with bimetallic bistable thermostat. Under the influence of temperature, opens or shorts the sensor contacts, as a result closes or cuts the control loop of a device, where the sensor was adopted. Thereby the automatic stop of a device is possible, in case the permissible temperature exceeds its limits.

Sensors type ICPiT-1. are intended to supervise level and temperature of device's fluids eg:

- hydraulic oil HLP/HLL 46 or 68
- diesel fuel for diesel engines
- oil-in-water emulsions HFA/HFAE,
- mine water (technological)
- water solution



*All products are designed for use in underground mines with a methane and coal dust explosion risk. Products have explosion-proof characteristics: Ex IM2 and are CE certified.*