



ARGO-HYTOS Protech

Hydraulic systems for rubber and plastic industry

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(ISO 16016:2002)

We produce fluid power **solutions**

Customers – Group C2 – Rubber and plastic industry

Main customers

- **Buzuluk (over 15 years of close co-operation, www.buzuluk.eu) – main activity:**
 - mixing lines (hydraulics of mixers), cooling machines (if they are with hydraulic system);
 - two-roll mills (eventually completed by scrapping desks and stockblenders);
 - calandering lines (roller head, roller die, multiple-roll calanders);
 - tire testing machines, rubber bale presses , ...
- **Konštrukta (over 10 years of close co-operation, www.kotaind.sk)**
 - mono extrusion lines;
 - multi extrusion lines (duplex, triplex, quadroplex);
 - production of APEX.

Customers – Group C2 – Rubber and plastic industry Mixing Lines – Intermix - 2014



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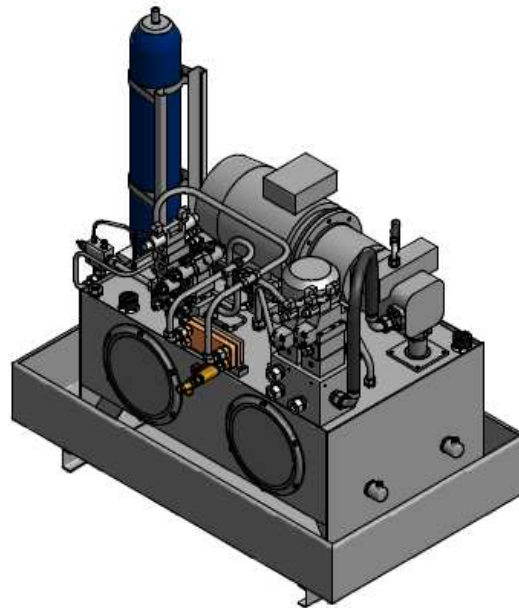
Mixing Lines – Main features of mixers

- **Typical parameters** – tank 630 litres, main electrical motor 30 kW, for supporting function and filtering / cooling circuit 7,5 kW
- **Unique solution** to operate upper ram hydraulically in all working mode (lifting , lowering , floating) with **high efficiency** – without throttling or supporting accumulator for high speed movement
($v \leq 0,5$ m/s), thanks electronically operated high end pump (flow , pressure , power) smooth moving of upper ram
- Supporting functions (bottom stopper , doors and fixing of bottom stopper)

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independent on main function = can be operated at the same time to increase productivity smooth function thanks proportional valves

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Mixing Lines – examples of HPU



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Two-Roll Mills – 2014 (Indonesia)



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Two-roll mills – Main features Mixing

- **Typical parameters** – tank \approx 100 liters, main electrical motor 4 kW, hydraulic accumulator (**CE mark**) to secure function – opening of rolls in emergency situation /power failure – safety rule **CSN EN 1417**
- Hydraulically operated positioning of rolls with **main characteristic**:
 - Synchronized movement of hydraulic cylinders due to precise flow divider, movement without throttling / heat occurring
 - Protection of hydraulic cylinder overloading – strange object between rolls (with fulfilment of other side of cylinder) with electrical indication (pressure switches)
 - Emergency opening of gap between rolls – synchronized movement due to extra flow divider, poppet valve to control safety function

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Two-roll mills – examples of HPU



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Calendering lines – Example 5-Roll Calander



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Calandering lines – Main features

- **Typical parameters** – tank \approx 160 liters, main electrical motor 7,5-11 kW, hydraulic accumulator (**CE mark**)
to secure function – opening of specific rolls – gap between rolls in emergency
situation /power failure – safety rule **CSN EN 1417**
- Hydraulically secured functions with **main characteristic**:
 - High accuracy of positioning of rolls - $\pm 0,05$ mm (servo / high response valves)
 - Protection of hydraulic cylinder overloading – strange object between rolls (with fulfilment of other side of cylinder) with electrical indication (pressure transducers)
 - Emergency opening of gap between rolls – synchronized movement, poppet valve to control safety function
 - Deflection of cylinders – proportionally set pressure reducing valves
 - Crossing and preloading of cylinders – mechanically set pressure reducing valves

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Calendering lines – examples of HPU



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Rubber bale presses - examples



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Examples – Konštrukta Industry a.s.

Example of machines: Konštrukta – Duplex and Triplex



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