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## ENERGY SAVING ON A 70 MN OPEN DIE FORGING PRESS

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VID, acronym of Virtual Inertia Drive, is the new hydraulic drive that Danieli proposes in forging open die applications.

His aim is to keep the same size and performances of a conventional forging machine, but reducing the total electrical power installed, the n° of motor-pumps unit and the energy consumption.

System is made by the following components :

1. Hydraulic pumps
2. Flywheel
3. AC motor  $\approx$  4 poles standard motor
4. Inverter

The cyclical nature of the forging process makes the VID system perfect for this type of application. The pulsating load required by the pumps is met by the flywheel which releases energy by decelerating during the forging phases when there is the peak of pressure. During the rest phase (the return of the movable crosshead), the pumps are discharged into the tank, and the flywheel is re-accelerated to nominal speed thanks to the inverter.

The VID's benefit is not only during the forging process, but also during the handling phases of the ingot. In this condition typically the conventional drive runs at the nominal speed in idle condition (no load) to not exceed the limit of start/stop of the motor in an hour. With the VID system Danieli can put the motors in excess on stand-by and can reduce the speed of the motor pumps that are necessary to make the auxiliary movements (main slide or die storage for example). This allows to obtain relevant energy saving during the change of tools of the machine.

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