GENERAL LECTURE:

INDUSTRIAL HYDRAULICS: NOW – NEXT - BEYOND

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Industrial hydraulics is often perceived as an old fashioned technology at the end of its innovation cycle. Despite its indiscussable technical benefits as well as its economical importance it is not seen as a promising future technology so that influencing people like to talk about and to promote. This results in disadvantages when it comes to customer choices comparing solutions, bidding processes, and – maybe most important – in a difficult position concerning the war for talents in the long run.

Partly, this situation is even home-made. For decades hydraulic people have told others how complicated industrial hydraulics are with its “hydraulic computers” made out of orifices, adjusting screws and that expert knowledge is needed to set it up and to maintain it. Even if that may be true – and of course there are challenges – it should be the job of all hydraulic people to make industrial hydraulics as easy as possible to configure, to buy, to set-up, to use as well as to maintain, repair and overhaul.

The challenges for industrial hydraulics are widespread. There are traditional challenges such as energy efficiency, environmental demands concerning material, oil, noise and, of course, safety related issues overlaying everything. New challenges are functional integration and especially the field of digitalization which offers multiple opportunities for additional digital service along the life cycle for both machine builders and end-users.

Depending on the requirements, products themselves will have everything from simple digital interfaces (e.g. IO-Link) to real-time-

capable multi-Ethernet connections. Uniform standards such as OPC-UA and TSN will come and change the existing ones. Another upcoming technology is 5G communication. Its impact on industrial hydraulics is not clear yet, however due to the performance step in e.g. latency new topologies and services are possible.

Coming to digital services and ease of use, industrial hydraulic users are increasingly expecting the same level of convenience they are accustomed to from the “IT consumer world”. This applies to the complete customer journey, from design via commissioning and production to maintenance.

Configurators, digital twin including product lifecycle management (PLM) will make selection and sizing process easier or even automated dependent on the customers’ needs. Virtual commissioning allows plug and produce and - if required at all - start-up wizards and autotuning algorithms reduce the on-site efforts to a minimum. The production in general is characterized by small batches with different requirements. Here online parameter adjusting of the industrial hydraulic equipment either via industrial Ethernet or Bluetooth offer opportunities for the end-users facing changing customer demands on short notice.

Continuous condition monitoring and predictive analysis reduces unplanned downtime. Digital service assistants and globally available AR supported remote services helps to keep high productivity if maintenance or repair is needed even for the robust and long lasting industrial hydraulics components and systems.