AVIATION UPLAND

PONAR Silesia co-creates the Aviation Upland Cluster. This supraregional initiative gathers scientific community of Łódź University of Technology, authorities of voivodships: Łódź, Lublin and Mazowieckie and above all, the companies operating and producing for aviation industry.

According to the authorities of Łódź University of technology, this document is of high significance from the point of view of formalizing already intensified cooperation of group of institutions, both on the side of the Industry and science. The document is to provide basis for creating new specialization in the region.

As pointed out by Mr Marek Nabiałkowski, Sales Director of PONAR Silesia, the companies of our Group had already been implementing technical projects for the aviation industry, including foreign projects. Presence in the cluster allows us to participate in many interesting applications, joint development of research, skills and gualifications in aviation, sharing experience and recommendation of PONAR company as a reliable partner in aviation industry.

AVIATION VALLEY

PONAR Silesia company has joined the group operating in the aviation industry. Our company became a member of the Aviation Entrepreneurs Group Association "Aviation Valley".

The Association was established on 11 April 2003 by 18 Founding Members. Currently, the association is composed of more than 100 entities.

The main goals of the "Aviation Valley" association are:

- organization and development of cost-efficient supply chain
- further development of research, skills and qualification in the area of aviation
- supporting the companies operating in aviation industry
- influencing the economic politics of Polish government about issues related to aviation industry and moreover:
- improvement of existing production base
- attracting foreign investors
- development of cooperation between other European centers for aviation industry
- promoting cooperation of the aviation industry with technical universities, science institutes and research entities

CERTIFICATES

PONAR Silesia Group holds a Quality Management Certificate of conformity with ISO 9001:2008 for: designing, production, assembly, and servicing of hydraulic and lubrication systems, hydraulic pumps, hydraulic control equipment, cylinders and hydraulic power packs, including equipment used in low temperatures.

Our products are certified for application in many different industries:

- for compliance with pressure directive 97/23/WE – safety valve DBD.../...C, accumulator AS...
- for compliance with transport directive 2000/9/WE – safety valve DBD.../...C
- AQAP (Allied Quality Assurance Publication)
- certificates GOST-R (Russia, Trade Union), ATEX (European Union), MakNII (Ukraine) for use in explosive atmospheres
- Ministry of the Interior and Administration concession for special productions
- Platinum Caterpillar Certificate

COMPLETE SOLUTIONS

PONAR Silesia Group was established to provide a comprehensive Customer service in hydraulic components, spare parts, repairs and complete supply of oil hydraulic systems. The Group consists of two companies:

PONAR Wadowice S.A., a renowned producer of power hydraulic elements, well-known on the domestic market and abroad, and PONAR Silesia S.A., a dynamically expanding manufacturer and supplier of hydraulic systems. Thanks to tradition combined with advanced technology, we have become more innovative, flexible and effective in responding to Customers' needs.

PONAR Silesia S.A. designs and supplies advanced hydraulic and oil lubrication systems, integrated on Customer's request with automatics, providing support during the assembly and start-up. The company delivers hydraulic installations for different mounting methods (welding, tube forming, flaring or cutting ring).

OIL HYDRAULIC ELEMENTS AND SYSTEMS







directional control valves

intrinsically safe valves logic valves





pressure control valves

check valves

flow control valves





proportional elements

subplates and manifolds

accessories

CONTACTS

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mobile hydraulics



cartridge hydraulics







PONAR FOR AVIATION

Top quality you can rely on

PRESENCE IN AVIATION INDUSTRY

PONAR is the largest Polish producer of oil hydraulics components and systems, a company with more than 50 years of experience in the industry. Our own design and engineering department, logistics, production and servicing facilities allow us to provide a full range of services to Customers from all industries. We are proud to undertake not only new projects, but also to provide comprehensive upgrade and repair services to existing oil hydraulic systems.

We are a strong, Polish brand, well-recognized on domestic and foreign market, our offer includes state of the art systems and solutions for all branches of industry. PONAR is a reliable and trustworthy partner.

RELIEF VALVE TEST STAND

Task: to design a hydraulic station for flushing, intended for producing a suitable oil flow to provide flushing for elements that undergone mechanical machining process. Workplace: Wrocław Poland.

Solution: the station has two oil chambers: the first is a typical oil tank, in which clean oil, used for flushing the elements is collected. The second is a flushing chamber for cleaning the valve bodies. All the elements form a compact, welded construction, placed on a shared oil sump with openwork platform grating, protecting



from accidental slipping. Above the oil tank, an electric control cabinet with a control panel was installed. Below the oil sump a pressure oil filter was mounted, as well as powering units: the main and auxiliary. At the side wall of the flushing chamber, a valve block was installed, consisting of a hydraulic subplate, electrical directional control valve, four flow controllers with maximum adjustable pressure of 20 dm³/min, a flow controller with maximum adjustable flow 30 dm³/min, a manometer and a measuring connections "test point" for controlling the pressure or collecting oil samples allowing to control oil cleanliness.

Additionally, the station has full automatics of flushing, including controlling of the oil mist separator, protecting from preliminary opening of the station after flushing (the separator removes the oil mist which develops during this process).

The whole construction is protected with an electromagnetic lock triggered in the process of automatic flushing. A person operating the device needs only to replace the element and to set up proper parameters of flushing (in versions of standard processes recorded on PLC, as well us set individually). For construction of the station, elements made by PONAR Wadowice were used, for example: valves type UDRD6 or 4WE10.

Main technical parameters:

- nominal size of the tank: 160 dm³
- max. capacity of the main pump 35 dm³/min
- nominal working pressure of the system: 90 bar
- electric motor power of the main pump: 5,5 kW
- hydraulic fluid type: mineral oil MIL-PRF-5606

"ALL IN ONE" TEST ROOM

Task: design and production of a testing stand for aviation industry, a rig that can be used with skydrol - a very aggressive medium of low viscosity. Workplace: Miramar, USA.

Solution: PONAR Group has many years of experience in production of testing stands for companies in Poland, involved in production of aviation components. Within the scope of the project, a "Test Room" for newly formed unit in Florida was made. The testing room consists of the following elements:

- hydraulic power unit working with skydrol
- hydraulic power unit working with hydraulic oil compliant with MIL-PRF-5606
- stand for testing aircraft cylinders high pressure. We carry out the measurement: pessure, flow, displacement and load
- station for testing aircraft hydraulic cylinders high pressure
- stand for testing aircraft valve blocks. We carry out the measurement: pessure, flow
- station for testing aircraft hydraulic cylinders low and very low pressure
- electronic system for controlling the "Test Room" and reading, recording and analyzing of data
- stainless steel pipework connecting each Test Rig with HPU
- at the stands and the systems, the following types of valves were installed: DBD, 4WE, 4WEH, DR, URED, URES, UZPR, UZZD, all compatible with skydrol or hydraulic oil MIL-PRF-5606



FAN DRIVE GEAR SYSTEM HYDRAULIC LOADING SKID AND LUBRICATING SYSTEMS

Task: The contractor was to provide all engineering, design, labor, material and equipment required for and pertaining to the procurement, fabrication, assembly, check-out, and delivery of a fan drive gear system hydraulic loading skid and LUB system for gear. Workplace: Rzeszów, Poland.

Solution: the hydraulic system consists of a hydraulic system based on servo technique, 12 pcs. of hydraulic cylinders equipped with force transducers, and an electrical control-powering cabinet. The lubrication system consists of the following units: a system for supplying oil to the module, heating the oil and cooling the lubricating oil with a glycol type fluid.

PONAR Group supplied complete pump units, a filtration system, plate heat exchangers, control-measuring columns type QpT, fan-type heat exchangers in the glycol system, powering-control cabinets. The Company also built the pipe-cable installation of stainless steel, installation flushing and pressure tests.

The system operates within temperature range limits from +100 °C to +200 °C (olny such values can simulate work of a module at the height of 10 000 m).



OIL TEST STAND



Task: Construction of test stand for performing tests of pumps, cooler and oil injections in conditions similar to the one occurring during operation - from the start of the machine, through fly at different heights, to the moment of landing. Workplace: Rzeszów, Poland.

Solution: In order to perform the tests, the power supply system of the stand works at the maximum pressure of 60 bar, max temperature 130 °C and flow rate up to 70 dm³/min. The pressure range in the tank is set from -0,8 bar (underpressure) to 3 bar – underpressure is produced by a vacuum pump, overpressure is obtained by reducing pressure from the factory installation of compressed air. Due to high values of underpressure and overpressure, it was necessary to perform a durability analysis of the tank, based on the Finite Elements Method. For the needs of the stand, a specially designed body was made, in which the pump was inserted. An electric 7,5 kW motor, powering a pump that is being tested makes it possible to achieve broad range of speed: from 2000 to 8000 rev./min. A feedback in the control system is performed by a speed sensor installed in the electrical motor.

At the stand, PONAR valves were installed: UDDD6, DB20, UDZB30, DBDS10, 2URES6, URZS32, UDUD10, S20. Among other things in these elements, sealing was changed to work at 130 °C, as well as the way of setting and some of the technical parameters.



HYDRAULIC AND PNEUMATIC SYSTEM FOR NEW ENGINE TESTING FACILITY

Task: Fabrication, installation and commissioning of the Hydraulic and Pneumatic Systems, at new engine testing facility. The System is part of the test cell equipment of the engine test facility. Workplace: Rzeszów, Poland.

Solution: PONAR Group designed, built an, delivered and start-up of seven subsystems for this Project:

- fuel prop fuel supply system to Propeller Test Cell (ATEX zone)
- fuel dyno fuel supply system to Dynamometer Test Cell (ATEX zone)
- oil fill oil supply to the engine
- waste fluids scavenge system of waste fluids
- oil reclaim oil scavenge system
- mobile flushing rig mobile rig for flushing the engine oil
- oil inhibit system engine maintenance system

