

RESEARCH AND DEVELOPMENT

HMS Group continuously strengthens its research and development capabilities in order to reach sustainable organic growth. Aspired by the Company's strategy aimed at establishing the best R & D in Russia and CIS countries HMS Group engineers continued to design and provide to its customers innovative solutions meeting any given specific requirements.

Last year was marked with further developments in the field of *Delium pumps* product line elaboration. These next generation double suction pumps have a wide operational capacities and can be used in almost all industries. These highly efficient pumps are characterized by excellent absorbing capacity and water proof design that increases efficiency and reduces wear and sputtering.

HMS Group continues to strengthen its expertise in pumps designed according to the international standards. In 2013 our engineers introduced a new line of up-to-date pumping equipment. For example, a *new high-pressure BB5 pump* designed and manufactured according to API610 with new high speed hydraulics. This new product has a complete skid with pump motor turbo gear, pressure lubrication system and a new configuration of hydraulic components. It can be used at the most critical stages of technological process in various industries, including petrochemical, chemical, oil upstream and thermal power.

- *New vertical high-pressure pump VS6 pump, especially designed for offshore application according to API610 and Norsok standards*, was successfully tested including noise hood and sound intensity measurement. The pump is manufactured in super duplex stainless steel with new inlet- outlet casing form.
- Among other innovative solutions was the introduction of a *new vertical single stage OH3 pump in titanium, especially designed for offshore according to API610 and Norsok standards*.

Following the ever increasing customer demand for the measuring equipment and in order to enhance the expertise in the development of this type of equipment HMS Group in association with Tyumen State University has developed a *new metrological stand*, which will allow the testing and metrological calibration of up-to-date multiphase measuring units.

One of the key innovations of HMS Group in this field is the *Mera MR measuring unit with NetOil&Gas (NOG) mass flow meter*, which was tested successfully throughout the last year on a number of oil and gas fields developed by leading Russian oil&gas companies. The equipment features an automated mobile measuring unit used to measure the mass flow rate of oil and gas taking into account the water cut without a separator. The first contract for the delivery of this measuring unit was signed in December 2013.

In 2013 HMS Group has successfully accomplished a milestone acquisition in terms of the reinforcement and promotion of its compressor equipment business. The existing innovative capacity of our R&D is complemented by the strong expertise of one of the leading Russian institutes focused on compressor technologies- *NIITurbocompressor (NIITK)*.

Thus, a number of new solutions were introduced, such as the new compressor unit based on a new 25 MW gas turbine driver which is level up from conventional 16 MW and a compressor stations of low and high pressure that were developed based on a new type of air pumps.

HMS Group owned portfolio of more than 260 patents reflects our R&D commitment. In 2013 HMS Group filed 32 new patents increasing the overall number by 20%. This patent portfolio is primarily focused on pumping and compressor equipment, including borehole pump units, double suction pumps, centrifugal and screw compressors, as well as measuring equipment, including units for oil production rate measurement and various preliminary filters etc.