

THE **SARL** JOURNAL

Year 8, Issue 2 2010

No risk, one choice:



**CERTIFICATION
AVAILABLE
SOON**



A VIEW TO A DRILL

POWER THROUGH EFFICIENCY

APPLICATION FOCUS

GSO3 OPTIMIZATION OF ROOF BOLTER

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Dear Readers,

with this latest issue of **The SAI Journal** we are starting a series of "themed issues" that will explore a specific topic in its various aspects and especially in relation to the possibilities and the role that SAI motors can play with respect to that.

As shown in the "Preview" of the last issue, the subject in this edition is the Drilling.

Making holes is something which has been done for several millennia and drilling in all its various guises is now fundamental to our existence.

Nonetheless, current drilling technology can be improved by making use of SAI motors and in this issue some of the possible technological advantages will be investigated.

Additionally, we will continue to offer news and information about our other activities so that you can always be up to date about our business and our forward thinking.

We hope you will enjoy reading and we look forward to receiving your feedback.

WELCOME TO THE SAI JOURNAL!

**UP AND DOWN...
AND UP AGAIN!**



The last three years have been challenging indeed! Our group of companies achieved record turnover in 2008, when the market was growing at an incredible pace.

During 2009, we experienced a considerable reduction in turnover in the industrialised countries. With the market in the G7 nations basically collapsing and nothing better than a stable situation in the developing markets.

Amazingly, 2010 has seen SAI breaking record turnover figures again!

Our company had to cope with this uncertain environment where capacity first needed to be expanded, then shrunk and then expanded again, within just a matter of a few months.

This put strain on the whole organisation and especially on the manufacturing system. The question everybody is now asking is: "Are we riding a rollercoaster and will everything be more stable as soon as we step out of it, or is this going to be the **general market condition** for the years to come?"

Gladly, we can say that whatever the answer to this conundrum is, SAI will be capable of coping with both.

In recent years SAI has demonstrated a flexibility and resilience to the swift changes happening in a turbulent marketplace. Our products and services have proven to be adaptable and innovative enough to change in accordance with the different markets we were facing and this has been very important.

However, our opinion is that our employees, our customers and our suppliers have all played a great role for us achieving this success! This is why we would like to thank all our partners for what we have achieved together and we look forward to even greater successes in the years to come! **Grazie a tutti!**

Vittorio Pecorari

IN THE NEXT
ISSUE

MARCH 2011

FOCUS ON
INFRASTRUCTURE





A VIEW TO A DRILL

...SAI has recently developed a new range of motors and drive units that can offer a great deal of new possibilities when used in drilling machines...

It is said that the first drilling rig was built many hundreds of years ago in the Chinese city of Zigong

where the people have been drilling for brine, from which they extract salt, since before the Han Dynasty (76-88 A.D.). Today our life wouldn't be possible without drilling and drilling equipment.

Our homes are standing on piling systems made by using drilling machines.

Much of the water we drink comes from the ground through holes that have been bored using drilling equipment.

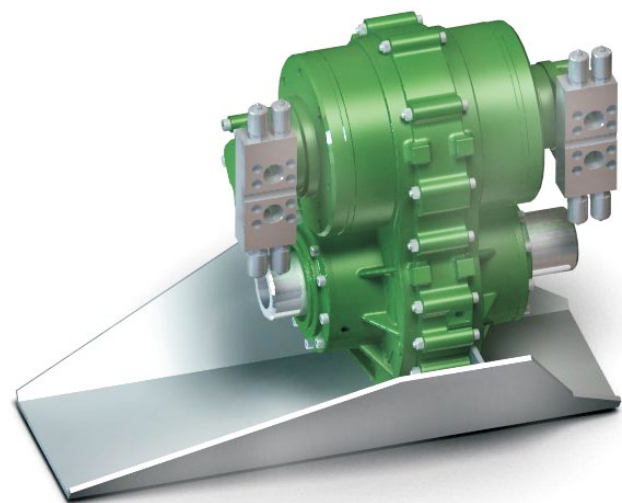
Also, since we need more water everyday, it becomes even more necessary to find it at deeper levels in the ground.

For the same reason of higher demand – fossil fuel is searched for at deeper and deeper levels everyday challenging the limits of drilling operations on a daily basis.

Even in catastrophic events like the collapse of a portion of the San Jose copper-gold mine in Copiapo Chile, the men trapped underground have been rescued making great use of essential drilling technology.

Moreover, drilling is now becoming strategic for the transformation of our urban life into a “greener” one.

In the not too distant future, our household heating systems are likely to be based on hot water coming from the ground.



CONTACT PERSON

Vittorio Pecorari Managing Director | vittorio.pecorari@saispa.it

Last but not least, many people living in arid regions will have water taken from very deep holes drilled in the ground and life in such places will be much easier and more enjoyable. However, despite being something that mankind has done for hundreds and hundreds of years, there is still a lot that can be done in order to enhance the potential of drilling operations.

SAI has recently developed a new range of motors and drive units that can offer a great deal of new possibilities when used in drilling machines. The higher power and displacement density make these drives unachievable by any other solution on the market.

The core element is the SAI motor with its well known method of operation based on an eccentric crankshaft and swivelling cylinders. This has been the subject of further development by the introduction of the innovative variable eccentricity crankshaft. The crankshaft can now be produced to provide a variation of its eccentricity, in a continuous way, from maximum to zero.

Consequently, the displacement of the motor can vary likewise adapting the torque and speed output of the drive to the operational requirements of the machines.

This shift can be achieved extremely quickly or very slowly depending on the needs of the application. The shape of the ramp and the response of this variation can be adjusted electronically and mechanically, and fine tuning can be achieved very easily directly on the machine during the initial running and validation of the application.

The long-established high volumetric efficiency of SAI motors lends itself to very accurate controllability of rotational speed even at times of vastly varying load/pressure. The high starting efficiency offered in every displacement within the range permits the overcoming of obstacles found during the drilling operation whether these be at start up or during low speed running. These characteristics make SAI motors very flexible and easy to use when drilling any ground condition.

A multiple motor set up offers enhanced variation possibilities giving way to an extremely wide operational range of the machine. Variable motors can be controlled separately or with a single input signal and the "addition" or "elimination" of motors can be done automatically without stopping the drilling operation. The increased power density of the motors, that can now work continuously at 350 bar, and that can reach peak pressure in the range of 500 bar, allow the drilling machine to make efficient use of the installed power. This, together with the high speed characteristics of the SAI motors, allows them to make profitable use of the maximum oil flow installed on the machine therefore reducing drilling time.

The high resistance to cavitation, typical of SAI motors, reduces the complexity of valving systems and consequently the size of the drive and its accompanying costs. The latest range of SAI motors have been designed to achieve an extremely long lifetime. Hence, they can be used in harsh environments or for continuously long periods leading to reduced maintenance and operational costs.

All of the above results in increased machine productivity and consequently higher operational profitability.

THE LONG-ESTABLISHED HIGH VOLMETRIC EFFICIENCY OF SAI MOTORS LENDS ITSELF TO VERY ACCURATE CONTROLLABILITY OR ROTATIONAL SPEED EVEN AT TIMES OF VASTLY VARYING LOAD/PRESSURE

NO RISK, ONE CHOICE

ATEX CERTIFICATION AVAILABLE SOON!



SAI is highly sensitive to current international standards and European Directives that determine improvement to their products and guarantee job security.

The SAI management have considered it necessary to invest time and effort in an extension of their existing ISO approved Quality System, by announcing that full ATEX 94/9/CE Certification will be soon available for certain of their motor ranges.

SAI currently co-operates with its customers that supply ATEX certified machinery, by supplying them a range of support documentation related to the application of SAI motors, to enable them to obtain ATEX certification for their complete machine.

SAI will be undertaking specific tests based on monitoring the temperature differential of its critical components in high power situations.

Using this data and by carrying out specific tests and risk analysis for any given application, SAI will be able to suggest the ideal product to be used in any highly explosive atmospheres as outlined in the ATEX Directive.

CONTACT PERSON

Marco Costaggu Technical Supervisor
marco.costaggu@saispa.it

R&D SRL

Looking for a reliable partner? Choose R&D srl Certified UNI EN ISO 9001:2008



R&D srl proudly announces that UNI EN ISO 9001. 2008 certification has now been achieved

This quality standard is now considered compulsory within Industry in order to demonstrate a company's ability to consistently provide products which meet all aspects of customer requirements.

R&D srl has been investing many resources to develop and implement its quality management system to exercise adequate responsibility to employees and workers throughout training, analysis, interaction and the control of the ongoing company processes.

The UNI EN 9001: 2008 certification recently achieved by R&D is the result of the effective planning of management activities, product realization, process analysis and continuous improvement in human resources and company infrastructure.

In attaining and maintaining this quality standard R&D srl is now known in national and international markets as an even more reliable and efficient company, it is your perfect partner to meet all your requirements, reduce waste, increase productivity and guarantee the application of the certified ISO quality to the research and development of your business

R&D srl

welcomes customers and potential customers in
Via Olanda , 71/A
41122 Modena (MO) - ITALY

Web-site: www.rd-srl.com
E-mail: tech@rd-srl.com
Phone: +39 059 313360
Fax: +39 059 310874

AUTUMN 2010 THE SUCCESSFUL SEASON OF BUSINESS

SAI's worldwide Market position meant it could not pass up the opportunity of exhibiting at 4 different trade fairs, on the same days, within the first week of October 2010.



In fact, SAI exhibited its wide range of technologically advanced new products in 4 different Countries and 3 different Continents! AANDRIJF TECHNIEK (The Netherlands), ELEKTRA MINING (South Africa), GEOFLUID (Italy) and KIOGE (Kazakhstan).

All four shows were highly successful and left SAI with very positive feelings about the ongoing Market recovery.

This impression was also widely felt after the last two marine exhibitions which we took part in, SMM (Germany) and ODESSA 216 (Ukraine). Visitors and exhibitors alike were each confident about the return of business, and the excellent results achieved by SAI, both during and after these shows, bore strong evidence of this.

Satisfied with this renewed success and hopeful that the best has still to come, SAI is now arranging further exhibitions during 2010: MATCHING (Milan - Italy), BAUMA CHINA (Shanghai - PRC) and MDA INDIA (Bangalore - India), do not miss the opportunity to see our latest innovations, please come and visit us!

CONTACT PERSON
Marco Costaggiu Technical Supervisor | marco.costaggiu@saispa.it

GS03

GS03



TABELLA DI PERFORMANCE
PERFORMANCE TABLE

	25	30	40	50	60	80	100	120	150	170	200
Displacement / Cilindrata	25	30	40	50	60	80	100	120	150	170	200
Stroke / Corsa	30	30	30	30	30	30	30	30	30	30	30
Specific Torque / Coppia Specifica	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Pressure Rating / Press. Nominale	300	300	300	300	300	300	300	300	300	300	300
Peak Pressure / Pressione di Picco	425	425	425	425	425	425	425	425	425	425	425
Cont. Speed / Velocità cont.	800	700	600	500	400	300	200	150	100	70	50
Max Speed / Velocità max	1500	1120	870	670	500	370	270	200	140	100	70
Peak Power / Potenza di Picco	4.5	5.5	7.5	9.5	12.5	17.5	23.5	31.5	41.5	53.5	69.5
Approximative mass	15	15	15	15	15	15	15	15	15	15	15
Motor casing oil capacity	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Max casing Pressure	3	3	3	3	3	3	3	3	3	3	3
	1	1	1	1	1	1	1	1	1	1	1



GS03 MOTOR

Extremely compact five piston high speed, high torque fixed displacement motor.
This motor can reach a peak power of 22 kW and its displacement range goes from 25 to 130 cc/rev.

Description: Fixed displacement, high speed, high torque 5 piston motor
Motor code: GS03
Mass: 15 kg
Power: 22 kW
Data sheet: 100910.5

BFDH1

BFDH1



TABELLA DI PERFORMANCE
PERFORMANCE TABLE

	100	170	250
Displacement / Cilindrata	100	170	250
Bore / Alargaggio	37	44	54
Stroke / Corsa	30	30	30
Specific Torque / Coppia Specifica	1.6	2.2	3.8
Pressure Rating / Press. Nominale	300	265	250
Peak Pressure / Pressione di Picco	425	400	375
Cont. Speed / Velocità cont.	800	700	600
Max Speed / Velocità max	1500	1120	870
Peak Power / Potenza di Picco	45	65	95
Approximative weight	30	30	30
Motor casing oil capacity	1	1	1
Max casing Pressure	3	3	3
	1	1	1



BFDH1 MOTOR

Based on BF Series, BFDH1 is an advanced new generation five pistons motor with hollow shaft.
This motor series is featured by a crankshaft with through hole for special set up with flushing circuit or passing through rods.

Description: Five pistons, single displacement hollow shaft motor
Motor code: BFDH1
Mass: 30 kg
Power: 48 kW
Data sheet: 090922.1P

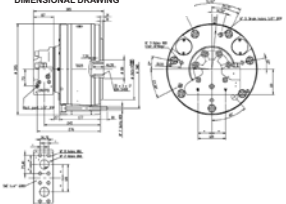
TD3.5

TD3.5

- CHARACTERISTICS
1. Max Displacement 1200 [cc/rev]
 2. Max Peak Torque 7760 [Nm]
 3. Max Continuous Torque 6790 [Nm]
 4. Max Speed 1800 [rpm]
 5. All of the motors can be provided with minimum displacement equal to zero
 6. Approximative Mass 120 [kg]
 7. Approximative oil capacity 4 [lit.]



DIMENSIONAL DRAWING



TD3.5 MOTOR

Seven pistons, dual displacement hydraulic motor. The seven pistons allow to get a higher torque enabling higher power transmission stability. Based on the experience of BD dual displacement motor series, it can be provided with minimum displacement up to zero. The TD 3.5 hydraulic motor can reach a peak power of 220 kW. Its case is composed of three parts in order to guarantee extreme modularity and lightness.

Description: Seven pistons, dual displacement hydraulic motor
Motor code: TD 3.5
Mass: 120 kg
Power: 220 kW
Data sheet: 100937.2P

SAI Spa
41122 Modena Italia
www.sai.it
marco.costaggiu@saispa.it

Provisional layouts subjected to change without notice. All data are real and calculated according to existing project.



CONTACT PERSON

 Giovanni Pecorari Sales Director | giovanni.pecorari@saispa.it

GS03

OPTIMISATION OF ROOF BOLTER

SAI has been developing solutions to satisfy customer specific requirements, as and when they have arisen, since 1964.

Thanks to SAI's know-how and the advantages offered by its radial piston motors, those of high starting torque, speed and displacement variation, SAI has provided its customers with enhanced performance and reliability resulting in improvements in overall machine efficiency.

A perfect example of this can be illustrated by the drive unit produced by DELMAS DRUM & ENGINEERING (DDE) under technical supervision of TURNKEY HYDRAULICS PTY, shown in the picture above. These units are fitted to roof support machines working in the soft rock mining industry.

DDE decided to replace the previously used axial piston motors with the SAI radial piston motor GS03 130, it being capable of fulfilling the high torque required by the roof bolter drive. The motor is able to reach a maximum torque of 450 Nm, a peak power of 22 kW, and it can reach a maximum speed of 1430 RPM.

The high starting torque capability of the GS03, along with its high efficiency conveys noticeable advantages at times when it becomes necessary to control the relationship between torque and speed due to position or conditions. By maximizing machine performance, the much higher performance capability guarantees better results in terms of work time saving thus improving overall productivity.

The DDE drive unit has been selected to be applied on various roof bolters, such as

Sandvikones, in order to significantly improve the performance of the machines. Machine operators, having tested the new roof bolters equipped with the SAI GS03 motor, were positively impressed by the wide range of benefits gained by the new technological advances of the SAI Motor, resulting in higher levels of safety, lifetime and productivity.



MATCHING

22 - 24 November 2010 Milano ITALY



23 - 26 November 2010 Shanghai P.R.C.



15 - 18 December 2010 Mumbai INDIA



8 - 11 February 2011 Mumbai INDIA



22 - 26 March 2010 Las Vegas USA



4 - 8 April 2010 Hannover GERMANY



2 - 6 May 2011 Ribeirão Preto BRAZIL



WORLDWIDE



SAI HYDRAULICS INC.

168 E Ridge Road Linwood,
PA 19061 USA

Ph. +16104970190
Fax +16104970194
info@saihyd.com



SAI HYDRAULICS CANADA LTD.

6105 Blvd. Couture St. Leonard
Quebec CANADA

Ph. +1 51 43234552
Fax +1 51 43238780
saicanada@saihyd.com



SAI BRASIL LTDA

sai brasil@saispa.it



SAI (GB) LTD.

Unit 8, Honywood Road Business Park,
Basildon SS14 3HW UK

Ph +44 1268272030
Fax +44 1268272040
info@saigb.co.uk



SAI MOTORS SOUTH AFRICA (PTY) LTD.

Suite 244 Postnet Private Bag X5061 Stellenbosch
7599 Western Cape SOUTH AFRICA

Ph. +27 (0) 219 050 835
Fax +27 (0) 866 468 306
info@saihydraulics.co.za



SAI OD (UKRAINE)

sai od@saispa.it



SAI INDIA LTD.

26/C, Doddanekkundi I.A. Phase 1 Post
Mahadevapura Bangalore 560048 INDIA

Ph +91 8042605509
Fax +91 8042605506
marketing@saihydromotor.com



SAI HYDR. MOTORS SHANGHAI CO. LTD.

1st Floor, 2nd Building, No.1281, Jinhu Rd
Pudong Shanghai P.R.C. (201206) CHINA

Ph. +86 2150315248
Fax +86 2150315246
saichina@saihydro.com



SAI JAPAN LTD.

Keisho ARK2 201 4-29-12 Kamiogi
Suginami-Ku-1670043 Tokyo JAPAN

Ph. +81 333905500
Fax +81 333905501
info@saijapan.jp



SAI SPA

Via Olanda 51, 41122 Modena (MO) ITALY
Ph. +39 059. 420111 Fax +39 059. 451260
saispa@saispa.it