rep news 4

Rubber injection

march 1999

focus G8

contents

K98

editorial

G8 meets the Customers

REP's launch of a new generation of technology on to the world market is a major challenge for the rubber processing industry.

The customers strong positive reception to the G8 promises a fine future for this range in the market whose expectations of complementary services (Applications and After Sales) are growing. The range of services on the G8 that we offer our customers will allow REP to respond more precisely to their requests.

For REP, 1999 will be dedicated to converting the market to the G8 through a large number of sales events which will, there is no doubt, bring in new enthusiasm for the REP technology.

(B. Tabar)

THE REP BOOTH GETS LARGER EACH YEAR!

All the exhibitors will tell you: a victim of its own success, the Dusseldorf show had difficulty meeting individual demands for booth space. However, the organizing company, "Messe Dusseldorf", was again eager to satisfy REP's request, in view of the company's role on the rubber injection market. The REP booth, which was 1700 sq. ft in 1992 and 2100 sq. ft in 1995 benefited from 2600 sq. ft this year, which allowed visitors to see all of the company's new products in excellent conditions.

A WELCOME WORTHY OF THE EVENT.

During this show, there were no fewer than 45 permanent staff in the REP booth. This impressive team, made up of Receptionists, Subsidiary Managers, Sales Reps, Engineers and Technicians, was justified by the large number of visitors eager for information and demonstrations. A total of 700 existing and prospective customers representing 550 companies paid us a visit: 76% of them were European, 16% came from America, North and South, and 8% from Asia.

Once again the K'98 exhibition has been succesfull for REP.

THE NEW G8 "IN SITU"

Nothing says more about a machine than real demonstrations. Made aware of it through a mailing before the show, a great many existing and prospective customers came to see the new G8 presses in operation. We even saw a large number of competitors, undoubtedly interested in the many new products presented by REP on this occasion. The following is a general overview.

3 REP G8 presses two V48/160

The first press was fitted with the optional silicone stuffer for mountain bike handles on a 4 cavity mold with a cold runner block with pneumatic obturators. The parts were produced with a new range of hot reticulating silicone elastomers : EVC Rhodorsil® polyadditive FIM (Fast cure Injection Molding) from Rhône Poulenc Silicones. The 2nd press, without a mold, made it possible to Reveal all the new features and to demonstrate the full accessibility to all parts of the press.

one V58/260

This press was fitted with an 8 cavity mold with a cold runner block and a rear top mounted demolding kit for automated production of a "hand strengthener".

One REP horizontal press H47/160

This press ran with a fully automatic cycle and produced valve push rod seals (without inserts) on a 49 cavity mold with a cold transfer chamber.

One SACOMAT vertical press IDS 1500 V 250 EAV

This press produced pump gaskets on a 2 cavity mold by injection in a vacuum chamber.

RepNet-win®,

a user friendly industrial network running under Windows NT which linked all the REP Intelinject® presses to a central PC type computer.

The G8

Suggested by users, Produced to meet their needs.

History of a birth

Why launch a new range of machines, when the G7 had established a solid reputation for reliability and performance? During their visits to customers, our After Sales and Applications Department technicians had noted with surprise that the full possibilities of the machines were not being exploited. In some production units, users sometimes did not know all the settings available as standard on every REP press. This astonishing observation was confirmed by a huge survey conducted jointly by REP's Sales Department and Technical Services of the main players in the rubber industry world-wide.

A summary report was produced, taking account of the different industrial cultures in each part of the world where REP is established.

The broad lines of development were decided

- *To improve global performance*
- *To make them easier to use and more user friendly,*
- *To maintain compatibility with previous presses,*
- *Not to raise prices.*

What's new on the G8?

The introduction of a new range of presses should not lead to any disruption in the organization of a production unit. The designers of the G8 therefore reconciled new features and continuity.

1 Communication with the operator.

- The color screen provides fast access to the press functions,
- Programming is done by programming individual press functions
- Five selection keys give access to the basic parameters,
- In each base page, highlighted boxes suggest to the operator how to optimize his production cycle,
- Only the parameters of the options available on the machine appear on the screen,
- The parameter reference numbers, that have been used since the first Intelinject® press, remain the same so that the operator is not confused.
- The amount of text on each page has been deliberately reduced, so that the operator does not have to "read" to set his press.

2 Communication with maintenance.

- A 'MAINTENANCE" key to access six diagnostic help pages,
- Dynamic display of the state of all inputs and outputs, of the value of all analog inputs and outputs and counters.
- Graphic display and storage of six selectable variables.
- Fault history display,
- Access (with password) to a setting program permitting adjustment and calibration of hydraulic components,
- Diagnostic help page detecting the origin of a fault while in production.
- "PREVENTIVE MAINTENANCE" page allowing the setting of the parameters to schedule service operation as a function of the number of cycles completed or the time of production.

3 Accessibility and compliance with safety standards.

The G8 is successful in providing spectacular solutions to fully reconcile the need for accessibility and user safety.
The front of the machine pivots 180° offering freedom of access never previously seen on an injection press.

4 Designed to facilitate action in the event of problems

A few examples:
- All thermocouples are fitted with quick disconnect sockets,
- All electronic devices in the electrical cabinet use pull-out connectors,
- Hydraulic pressure quick disconnects are provided on all machine movements, to install regulation and control pressure gauges.

5 Lower energy consumption and environmental protection.

- Through the use of efficient variable displacement pumps, the G8 uses 30% less electricity.
- Water consumption is reduced by a ratio of 7 to 10, depending on the model,
- The strictest noise reduction standards have been observed for comfort during operation,
- The side panels of the press are predisposed to receive (optional) fume extractors.

6 Improved performance.

- Thermotrac2® (the mold temperature regulation optimization software) has been revised, to permit faster identification of a mold while being easier to utilize.
- Mastertrac® (the learning program) has been revised, to make it easier to use, with on-screen display of the cycle phases, greater capacities in modifying the press cycle.

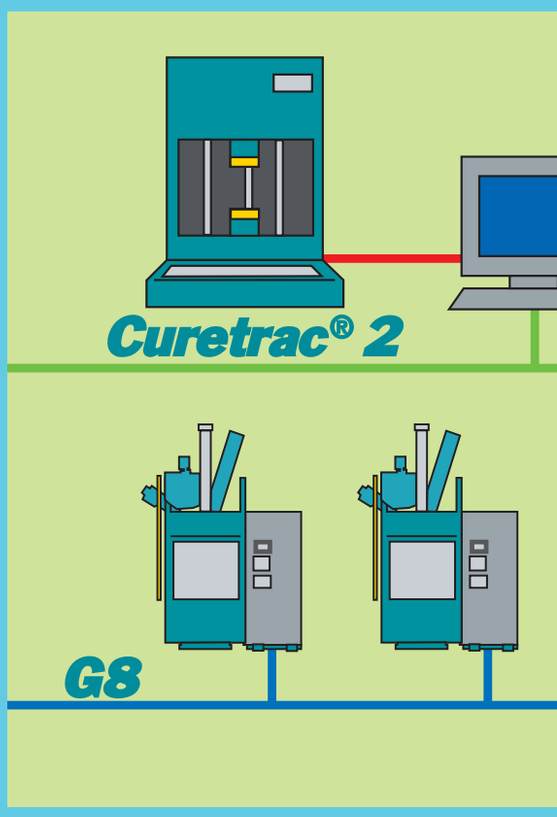
Dry cycle time has been reduced by 10%.

7 Fully compatible.

- All molds used on the G7 are compatible with the G8,
- All molding settings can be copied from G7 to G8,
- All peripherals, such as RepNet-win® and Curetrac® are G7/G8 compatible.

8 Prevention of connection problems

80% of breakdowns on REP presses are caused by connection problems which appear after a change of mold (damaged electrical heat cables, damaged flexible tubing, etc.) Half of these problems are caused by a damaged thermocouple.
On the G8, REP has taken great care with the cable sheathing and hydraulic hose connections. In addition, all thermocouples are connected via easily accessible connectors.
It is thus no longer necessary to wait for an electrician to replace the faulty thermocouple. A spare thermocouple can be kept in reserve and replaced immediately by the set-up technician (or indeed, the operator), when starting a new production run.



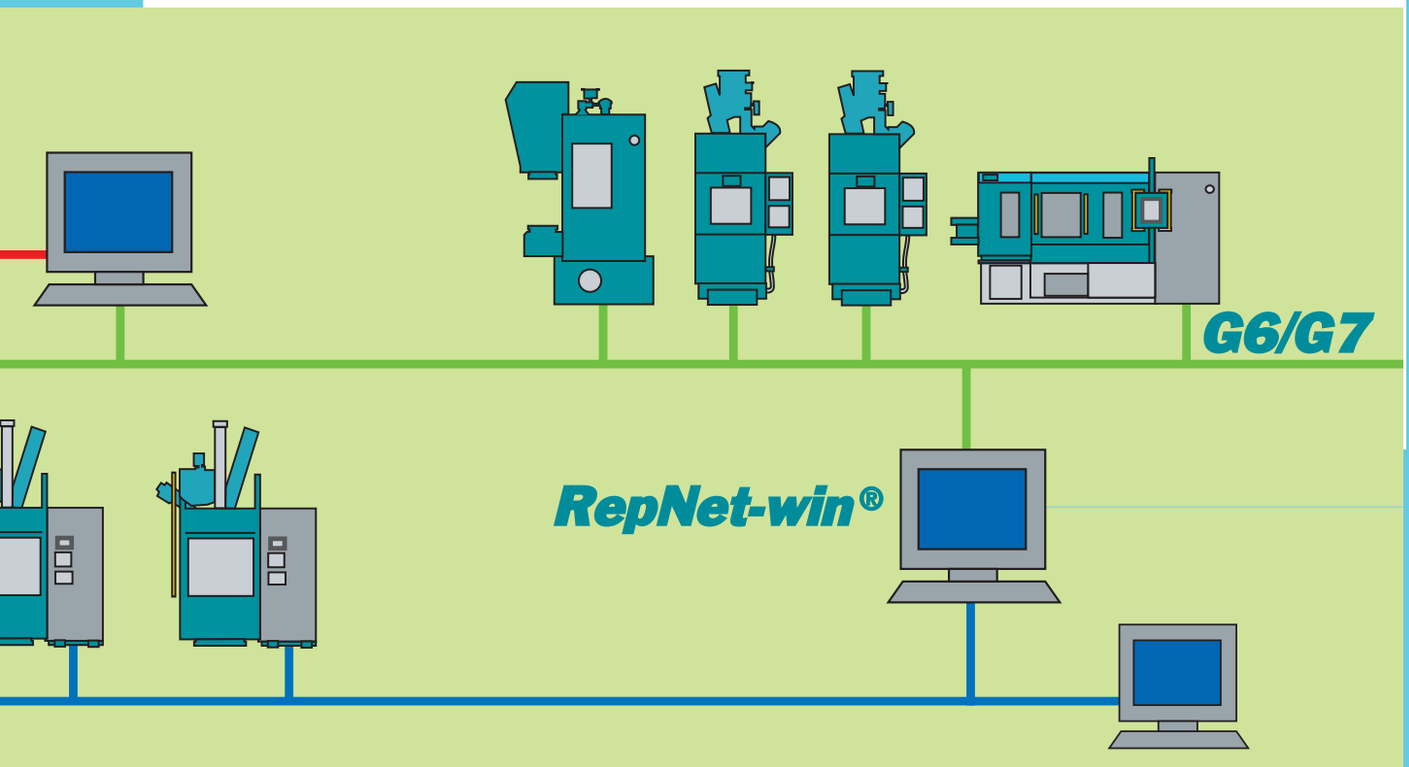
RepNet-win®

the logical development!

repnet® was launched for customers in 1986. Since then, almost 3,000 REP presses in the world market have been connected to Repnet®.

RepNet-win® performs all the basic functions of repnet® and provides some significant improvements.

- Windows NT® is the "support" software for RepNet-win® which makes it very user-friendly.
- RepNet-win® allows up to 60 presses to be connected to a central work station (30G7, 30G8 or 60G8).
- Connection and management of supervisor work stations are integrated into RepNet-win®
- Externally accessible: all stored data (set and actual values) are held on ACCESS® database. It is therefore very easy to extract all or some of the data and to process it in software such as EXCEL® or other spreadsheet programs.
- Compatibility: the link between G8 and the central RepNet-win® work station is an Ethernet link. The link between G7 and the central RepNet-win® work station remains a LAC link. There are therefore no changes to be made to the G7 presses, or network connection to change from repnet® to RepNet-win®. Production recordings stored under Rep-net® can of course be consulted under RepNet-win®.



Molding with a cold transfer chamber

At first sight, molds with a cold chamber seem to be nothing more than an ingenious combination of the technologies of cold runner blocks (CRB) and injection. In fact, for this highly specialized technology, the reality is very different. Optimizing this method requires a study of the whole system of conveying the raw material and of the molding process itself.

The most difficult points to overcome are:

1 Stagnation of the compound:

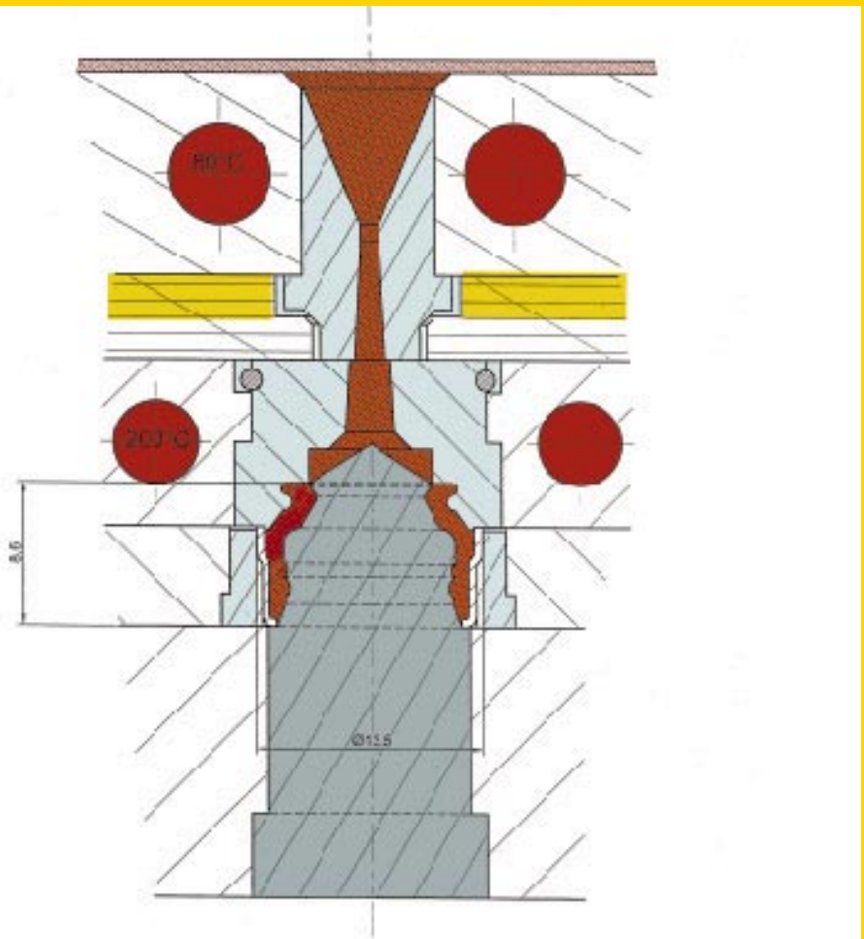
The solution is to prevent areas of stagnation in the transfer chamber by a judicious location of feed points and appropriate machining of the Chamber / Piston unit.

2 Regulation of the Chamber / Piston unit:

Regulation controlled by pre-arrangement of the press is achieved along the same lines as regulation of the injection unit and the 'CRB's of the 'REP' type. However, it calls for a specific type of circulators. These circulators will therefore have specific characteristics designed in direct relation to the design of the regulating circuits.

3 Heating of the mold unit and the mold / cold chamber interface:

The mold / cold chamber interface is especially important. This thermal barrier should be sufficiently efficient but as thin as possible to reduce waste. This entails a sophisticated technology for the mold unit in contact with the chamber via the insulation device. The small space available between the cavities and the requirements in terms of heat power frequently entail the use of heating oil circuits or the use of small diameter, high performance, electrical heating cartridges.



1 : Valve push rod seal

Production on vertical press in integral automation with part demolding and insert loading between cycles. Feed by direct feed sprue attached to the part, permits a sprue design compatible with a high viscosity FPM compound.

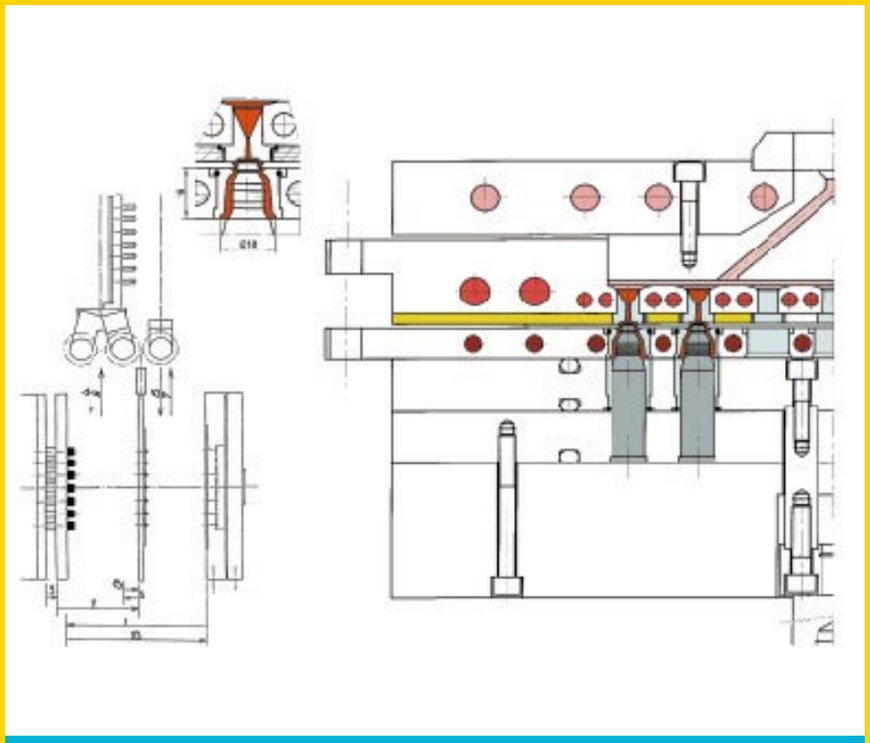
4 Part feed and scrap rates:

As far as REP technology is concerned, we considered 2 main possibilities whose objective remains a minimal scrap rate, even if this entails more sophisticated tooling.

a) Mini feed sprue coming with the part: Example 1

This is undoubtedly the easy answer.
However, in view of its simplicity, feasibility, and lower tooling costs, this method should not be rejected out of hand.

implement but is "top notch" especially if associated with a very low scrap rate.
Since waste recovery systems over fabric have limits in terms of profitability (cost of fabric) and quality (migration of fibers into parts) it is preferable to focus on other systems.
In a general way, the compound is the dominant factor in the part feeding system design. Its rheological behavior, the risks of pre-vulcanization, reversion, and sticking all have to be taken into account. In addition, the type of feed will create pressure drops and should also be taken into account when calculating the transfer pressure.



2: Electrical motor gasket
Production on horizontal press with integral automation that selectively sorts the parts and the feeding system. The compound NBR is quite compatible with an automatic rupture of the feeding system.

b) Automatic separation of the feed: Example 2

This solution is of course trickier to

5 Automation of the process:

This technology quite logically leads to the possibility of total automation of the cycle. i.e.

- The high performance aspect implies working at an even pace for greater reliability,
- The total investment cost can in practice only be justified for large production runs,
- The very principle of eliminating a transfer mat or feed runners, makes it tempting to take this idea to its logical conclusion.

Other important points are to be taken into account when considering automation:

- Demolding of parts
- Cleaning the mold,
- Possible spraying of demolding agents,
- If necessary, insert loading.

In these diverse fields, it is essential to be able to rely on an adequate mold design combined with the use of various standard or special options which can be fitted to the REP press.
The Applications Department is always ready to help REP customers, offering assistance on molding and making the best possible use of machinery.
It's up to you to make use of our creative enthusiasm to move rubber injection forward.

400-Ton horizontals and 100 ton C frames.

When a machine doesn't exist, Rep will create it for you.

A new 400 t horizontal press

The design of the SH4Y20D is based on the H57 horizontal press, using the same compact design and a standard Y2000 injection unit (2000 cm³ injection volume at 1500 bars).

Its main characteristics are:

- Clamp force: 400 tons,
- Dimensions of heating platens: 650x800 mm,
- Distance between columns: 600x810 mm,
- Opening stroke: 500 mm (with 170 <mold thickness<500mm).

To meet the needs of long and highly automated production runs, this press has been fitted with the following optional features:

- 2000 cm³ injection unit, with 2000 bars injection pressure
- Back pressure
- CRB pre-arrangement with REP circulator,
- Heating platens with T-slots,
- Hydraulic ejectors on both traverses,
- Central hydraulic ejector,
- Two brush units,
- Automated, pneumatic front safety screen .

Combining standard and customize

Organized to supply the equipment best suited to the production process of each of its customers, REP responds to this requirement in two ways:

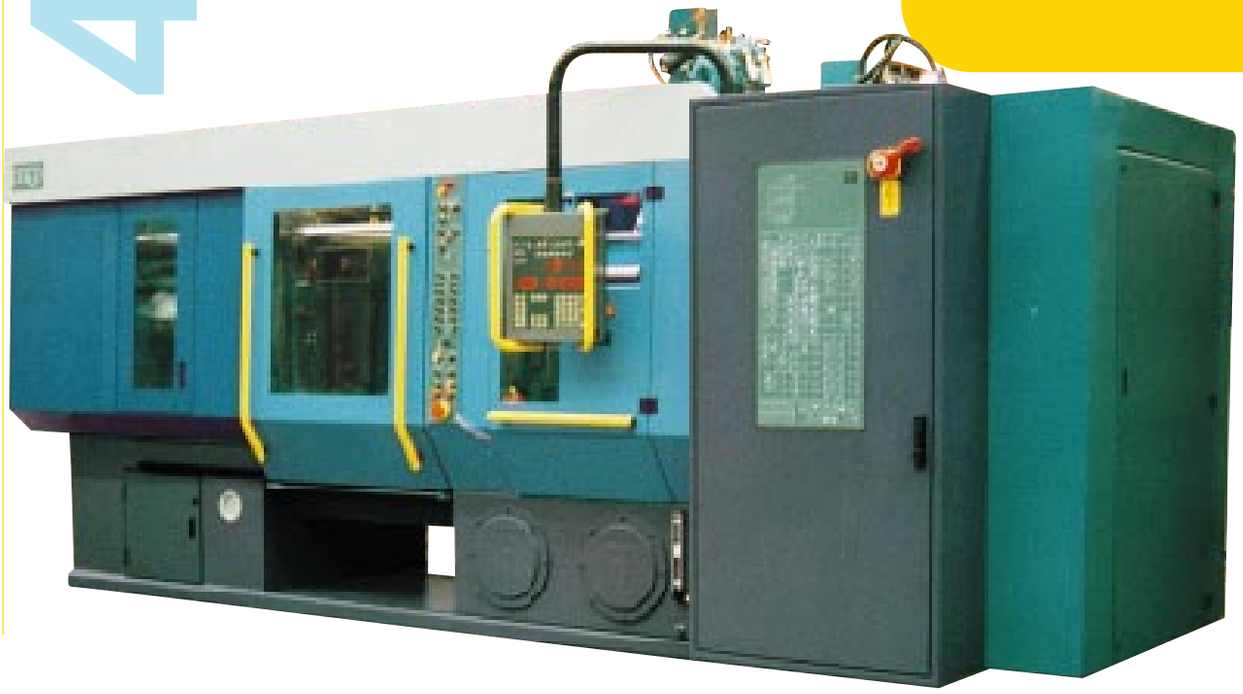
- By offering a standard press which can be modified by retrofitting standard options. The main press components are pre-machined so that optional features can be fitted when the need arises.

- By designing special presses to customer specifications. In this case, REP sets two constraints:

- *To use as many REP standard components as possible,*
- *To supply equipment of exactly the same quality as standard presses, not only in design and manufacture, but also in terms of documentation and after-sales service.*

To provide this "customized" service REP has set up a special technical department which now manages almost half the presses produced by the company.

It is this department which has recently designed the two special presses described below.



"C" Frame type 100 t press

This machine has been designed for two very specialized and technically demanding types of application:

- Splicing of profiles for car body sealing units,
- Molding of technical parts in a highly automated environment where access from 3 sides is an advantage for the installation of automated manipulators and robots.

These presses are fitted with molds with a few cavities which allows great production flexibility on small and medium production runs.

This new press, called the S01Y05S has:

100 tons bottom clamp force,

420 cm3 injectable volume at 2000 bars,

Platen size 500 x 500 mm, with opening stroke of 470 mm (less mold thickness),

The standard V37 hydroelectric unit with a variable flow pump.

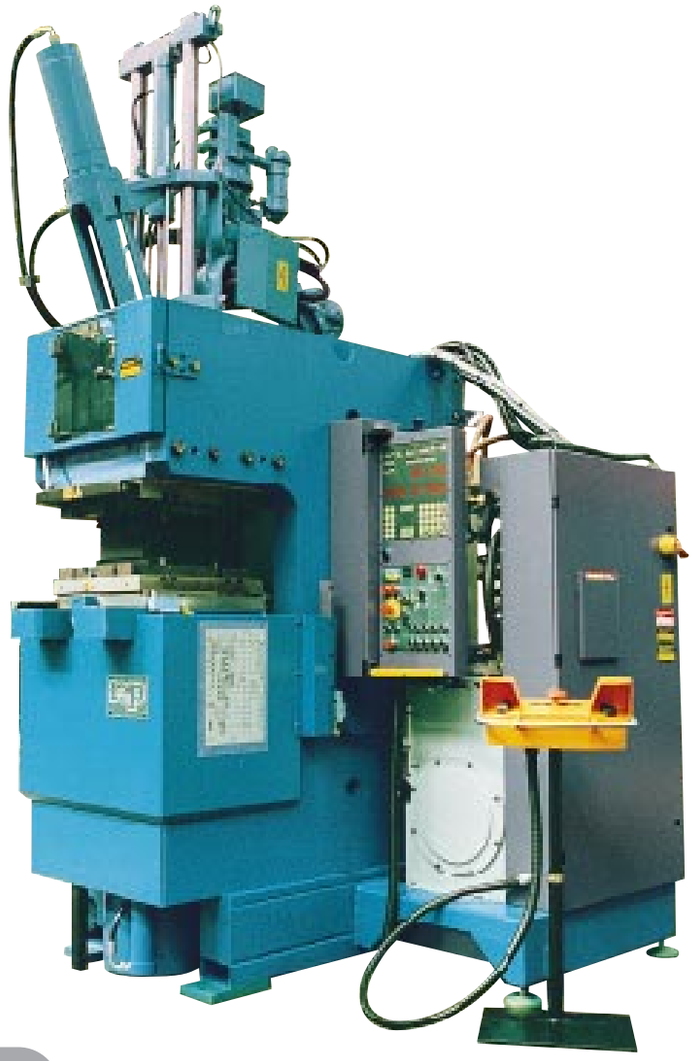
It is constructed as a slab side "C" frame, with a direct clamping cylinder, assisted by fast closing cylinders. The hydroelectric unit is located on a support frame located on the right-hand side of the press, which keeps the unit very compact (1750 x 1850 mm).

Optional features supplied are:

2000 bar injection unit pressure,

Sliding platen with 500 mm stroke,

Heating platens with T-slots.



100 T

Remember:

The SH4 and S01 incorporate as standard:

Intelinject® microprocessor process control program for closed-loop regulation,

Digit/Monodigit control / process control unit

Mastertrac® learning software package,

Thermotrac® automatic calculation of mold temperature regulation coefficients software package.

news

Schedule with REP

In addition to the exhibitions, REP will also be holding open houses at all its subsidiaries in the early part of the year; they will present in their technical centers, the new features of the G8 and the RepNet-win® software. If you are interested in seeing a demonstration, get in touch with your usual contact to arrange a time and date for a presentation of products in which you are particularly interested.

In 1999, REP will be taking part in the following events:

EUROPLAST	FRANCE	Paris	30 / 05 to 04 /06
IRE	GREAT BRITAIN	Manchester	07 to 10 / 06
CHINAPLAS	CHINA	Beijing	06 to 10 / 07
RUBBER EXPO	USA	Orlando	21 to 23 / 09
EXPOBOR	BRAZIL	Sao Paulo	09 to 12 / 11
EQUIPLAST	SPAIN	Barcelone	09 to 13 /11

France
REP FRANCE
15, rue du Dauphiné - B.P. 369
69960 CORBAS
Tél. : 04 72 21 53 53
Fax : 04 72 51 22 35

France
SACOMAT
Rue de Bramafan B.P. 2
73230 BARBY
Tél. : 04 79 72 88 88
Fax : 04 79 72 74 15

Germany
REP DEUTSCHLAND
Sauergasse 5-7
69483 WALD-MICHELBACH
Tél. : 06 207 9408.0
Fax : 06 207 6632

Great Britain
REP MACHINERY
Petersfield Avenue
SLOUGH BERKS SL2-5EA
Tél. : 01 753 57 09.95
Fax. : 01 753 53 88 41

Italia
REP ITALIANA
Corso Vercelli 13
10078 VENARIA (TO)
Tél. : 011 42 42 154
Fax. : 011 42 40 207

U.S.A.
REP CORPORATION
8 N 470 Tameling Court
P.O. Box 8146
BARTLETT, Illinois 60103-8146
Tél. : 847 697 7210
Fax. : 847 697 6829

China
REP BEIJING OFFICE
JUNEFIELD PLAZA. ROOM 1305
n°6 XUANWUMENWAI
XUANWU DISTRICT
BEIJING 100052
Tél. & Fax. : 86 10 63 10 1447

Brazil
REP INJETORAS DE BORRACHA
Av. Kennedy, 54
Sala 05 2° andar
Jd. do Mar
SAO BERNARDO DO CAMPO
CEP 09726 - 250 SAO PAULO
Tél. & Fax. : 55 11 448 79 50

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