

BOOKS

Sonnenenergie, by H. Rau, (Mainz, Krauskopf-Verlag, 1962; DM. 12.80).*

In its airy manner this delightful little book possesses certain attributes of a soufflé. While consuming it, one has that sense of well-being which only a tasty morsel can convey, and on finishing it, one is pleasantly replete. But one very soon develops a craving for more. So with this book: it acts as an *apéritif* without really answering all the questions.

The author is obviously endowed with the gift of being able to convey to the reader a relatively large amount of information, requiring the minimum of effort on his part to understand and to absorb. This is no idle compliment: we note that the book is written in German, a language more fitted for semantic acrobatics than for an exercise in simple expression. Mr. Rau had rightly decided to tackle his subject from the 'Ur-beginning' and to leave no fact

* We understand that Dutch, English, and Italian editions are also available, or will be shortly, and that editions in Croat and Arabic are in preparation.

untouched, however insignificant. The result is not only a formidable table of contents but also a tidily written book which it is a pleasure to read.

The opening chapter, not unexpectedly, discusses the need for new sources of energy. The next deals with existing 'stocks' of energy and on we go, relentlessly. A quick look at the mythology and what our ancestors thought of the whole affair, then a little physics of the sun, followed by the first pioneers who attempted to harness solar energy for other purposes but human sacrifice. (Curiously, the author does not mention the Mayas or the Aztecs, who, after all, were the experts in this field. But that is unimportant). The technology and economics of solar energy, with all their ramifications, form the backbone of the book. Photobiology and the rocket strato-probe experiments are mentioned, and the book ends, inevitably, with an outlook on the future. All this information is carefully packed into some 170 pages, including some very fine illustrations, both photographs and line drawings, and a truly magnificent bibliography. Is one permitted to wonder whether the author has indeed read all the material he lists?

Strangely enough it is just this extensive bibliography which is the main weakness of the book. The author had evidently decided that the reader for whom the book is intended would rarely if ever bother to look up one or the

Last month at CERN (cont.)

beam. A new central conductor, designed to increase the number of neutrinos produced at higher energy, had been put into the magnetic horn, and a completely new arrangement of spark chambers had been installed for further measurements on **neutrino interactions**. In the event, everything worked well, and very soon the scanners were busy again, picking out photographs of neutrino interactions obtained both in the spark-chamber array and in the CERN heavy-liquid bubble chamber. The spark-chamber set-up now includes one section of chambers interspersed with magnetized iron plates, intended to provide a good distinction between positive and negative particles arising in the interactions. Altogether, the arrangement contains more than 100 tons of material.

In the East bubble-chamber building, another centre of activity was formed by the **150-cm British bubble-chamber**, filled with liquid hydrogen again, cooled to -246°C , and producing high hopes of a good run. The decompression and recompression cycle was successfully put into operation, and the cycle time afterwards reduced to once every two seconds. After about 24 hours testing like this, particles from the o_2 beam were introduced into the chamber and conditions adjusted to give the best tracks. Later the magnetic field was turned on, and finally the automatic cameras tested. On 22 February several

thousand photographs were taken with incident protons. But a number of small troubles made it less clear that the chamber would be able to run continuously for several days at a time and, rather reluctantly, the beam was switched to the 81-cm Saclay/École Polytechnique chamber for the physics experiments scheduled.

This period was also of particular interest since, for the first time, a bubble-chamber experiment at the PS was being carried out simultaneously with the neutrino experiment. By using the '**rapid beam deflector**', a small part of the circulating beam was directed at the target serving the o_2 beam shortly before full energy was reached; this was then followed by ejection of the full-energy beam in the usual way.

Missing from last month's issue of *CERN COURIER* was the news that electrons had been successfully 'stacked' in the **electron storage-ring model, CESAR**. Towards the middle of January the circulating current from a single pulse of the Van de Graaff injector was accelerated slightly by means of the betatron core, so that it circulated on an orbit of larger diameter, but oscillations of the beam were building up to large values and soon causing it to be lost. With a shut-down for maintenance and alterations scheduled for 31 January, there was little incentive for a full investigation of the reasons; instead, by manipulation of some two dozen

different magnetic corrections around the ring, it proved possible to accelerate the beam to the full energy determined by the 7-cm width of vacuum chamber available. Whereas the betatron core accelerates all the particles circulating in the ring, the radiofrequency system accelerates only those electrons which have about the right energy. This system was then tried out, and 20 successive pulses were injected into the ring and 'stacked' into adjacent orbits. After this, measurements were made on the lifetime of the circulating current, for single turns in different positions and for multiple turns, and the second radiofrequency system, intended for phase-space analysis of the stacked beam, was successfully tested.

These preliminary experiments completed the 'running-in' phase of the storage-ring, and their success provides grounds for believing that CESAR will prove an extremely useful experimental device. During the subsequent shut-down, the 2-MeV Van de Graaff was completely dismantled and rebuilt, with many new components. Among many other jobs, the whole of the vacuum chamber also had to be dismantled, for modifications to the clearing-field electrodes, and several new targets for measurement of the beam position were added. Insertion of a new inflector tank should enable the pressure to be reduced for the first time to 10^{-9} torr or better, giving much longer beam lifetimes when experiments are resumed ●

other reference. As a result the amount of information concerning the source of most entries is rather sketchy and in more than one case ambiguous. What, then, is the point of such an exhaustive list? The absence of an index, that perennial gripe of all reviewers, is less noticeable, since the table of contents, as we have said before, is rather detailed.

To return to the opening paragraph of this note: for whom exactly did Mr. Rau write this book? For the scientist seeking information outside his own field, or for the layman wishing to gain some insight into a fascinating subject? If the former is the case, the author has succeeded admirably; if the latter, we are not so sure that Mr. Rau has not been led astray by his own thoroughness. The dose is perhaps a little too concentrated and may even lead to indigestion.

We wonder, by way of ending, whether Mr. Rau, since he would seem to have all the information in his possession, could not produce another book on the same subject, but this time for the expert, with all the details, technical information and calculations involved?

St. L.

Knowledge and wonder — the natural world as man knows it, by Prof. V. F. Weisskopf, has now been published in paperback edition (Science Study Series; New York, Anchor Books, Doubleday and Company, Inc.) and is available at the Geneva bookstalls ●

VOTRE MAISON DE CONFIANCE POUR

Microfilms — Appareils photographiques et dispositifs de lecture - Locations de caméras - Travaux de développement en régie.

Photocopies — Appareils d'éclairage et dispositif de développement - Papiers pour photographies - Installations pour la photocopie.

Héliographie — Appareils d'éclairage et machines à développer - Nouveauté: HÉLIOMATIC, machine à héliographier avec VARI-LUX permettant de faire varier la puissance d'éclairage - Papiers pour développements à sec et semi-humides.

Bureau-Offset — Machines-offset et plaques, offset présensibilisées OZASOL.

Dessins — Machines à dessiner JENNY et combinaison de dessins - Papiers à dessin (papiers pour dessins de détails), listes de pièces, papiers transparents (à calquer), papier pour croquis.

Meubles pour serrer les plans — « Système à suspension, à soulèvement et à abaissement ».

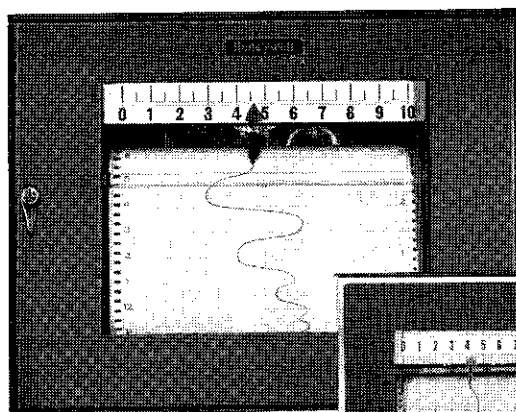
Installations de reproduction pour héliographies, impression de plans, photocopies, travaux de photographie technique, réductions, agrandissements, travaux de développement de microfilms.



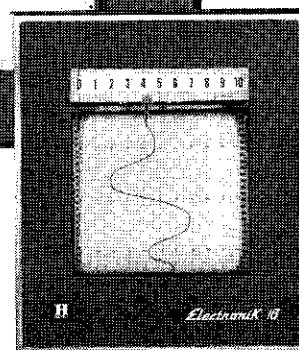
OZALID ZURICH

Seefeldstrasse 94 - Téléphone (051) 24 47 57

New features in potentiometer recorders for your laboratory



class 15



class 18

Your choice is between three main models with a large number of options:

- The class 15 wide-chart recorder with pen speeds of 1/4 second or 1 second full scale.
- The class 15 universal multipoint recorder which is easily adaptable to print any number of measuring points between 2 and 24; easy change of range and input action.
- The class 18 one or two pen recorder, fully transistorized; portable, rack or bench mounted.

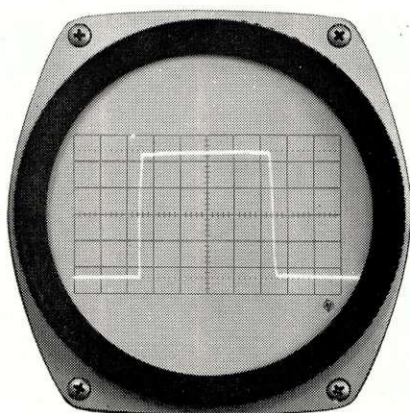
The high input impedance, the extremely high stray rejection and high gain meet the demanding needs for spectroscopy, low millivolt spans and many other laboratory applications. The new capillary pen system has a large ink supply and guarantees an ever ready and fine writing.

Write for detailed information and demonstration to Honeywell SA, 73, Route de Lyon, Geneva, or Dolderstrasse 16, Zurich.



Honeywell

Data Handling Systems



Impulsion du générateur 214A reproduite sur un oscilloscope universel 175A.

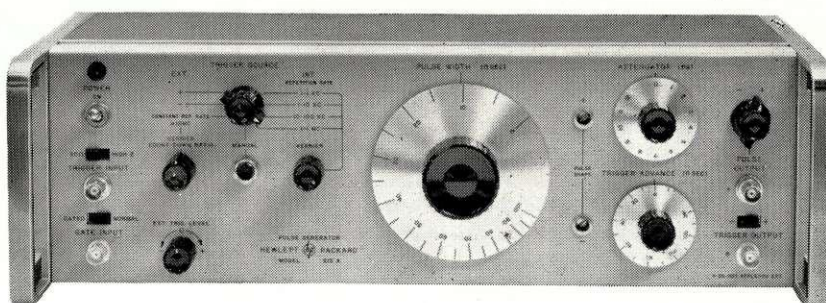
IMPULSIONS

DE FORME PURE

TEMPS DE MONTÉE 1 NANOSECONDE 215A

GÉNÉRATEUR 215A

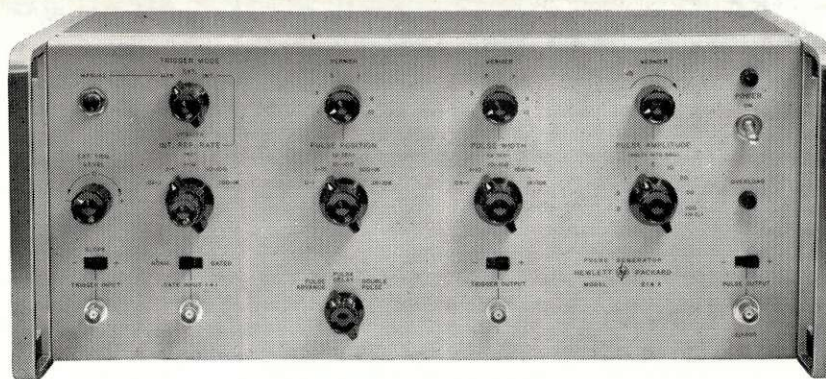
Impulsions positives ou négatives de 10 volts sur 50Ω . Une nanoseconde de temps de montée et de descente. Largeur d'impulsion continûment variable jusqu'à 100 ns. Fréquence de répétition ajustable intérieurement entre 100 Hz et 1 MHz et s'étendant jusqu'à 10 Hz par déclenchement externe. Prix: Fr. 8688.-



IMPULSIONS DE 200 WATTS 214A

GÉNÉRATEUR 214A

Impulsions positives ou négatives de 2 A sur 50Ω . Fréquence de répétition jusqu'à 1 MHz. Temps de montée et de descente compris entre 10 et 15 ns. Largeur d'impulsion continûment variable entre 50 ns et 10 ms. Prix: Fr. 4193.-



Quelques caractéristiques communes à ces deux générateurs:

Une définition précise de la forme d'impulsion est donnée pour chaque condition de fonctionnement: Pour des réglages différents de la fréquence de répétition ou de l'amplitude, la valeur des paramètres tels que temps de montée, sur-oscillation, instabilité, est toujours exactement définie.

Impédance de sortie constante. Les réflexions qui seraient produites par l'emploi d'une charge mal adaptée sont absorbées par l'impédance de sortie constante de 50Ω du générateur.

Différentes possibilités de synchronisation: Possibilité d'ajuster le retard ou l'avance de l'impulsion par rapport à la synchronisation d'entrée (positive ou négative). Le niveau auquel se fait cette synchronisation est réglable.

Sous réserve de changements sans avis préalable.



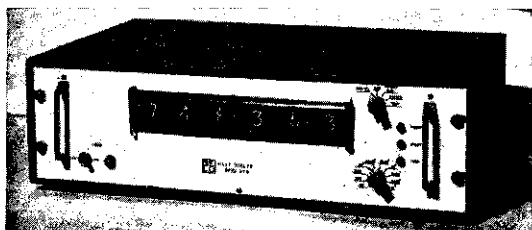
HEWLETT-PACKARD

Direction aux Etats-Unis: Palo Alto (Calif.). Direction pour l'Europe: Genève (Suisse). Usines européennes: Bedford (Grande-Bretagne), Böblingen (Allemagne). Pour tous renseignements complémentaires, vente et maintenance, s'adresser à

INGENIEURBÜRO M. P. FREY
WANKDORFFELDSTRASSE 66, BERNE
TELEPHONE (031) 42 00 78

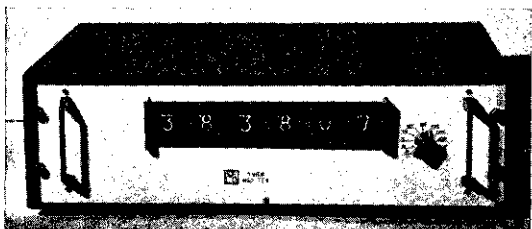
SELO transistor line

for automatic counting • for automatic spectrometry •
internal modules construction • very competitive prices



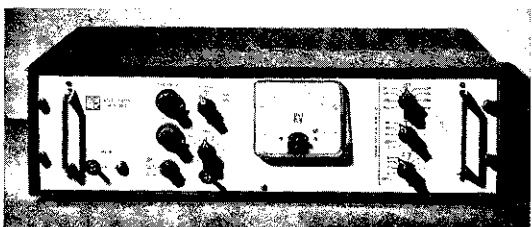
ST 6

6 decade scaler.
0.5 μ sec. resolving time.
positive or negative input pulses
from 0.1 V up.
pre-set number operation.



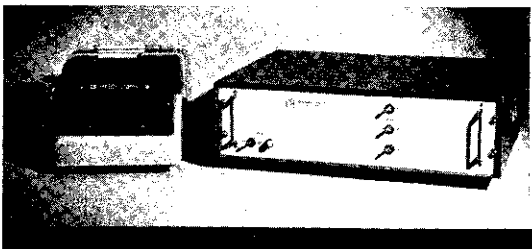
TT 6

6 decade timer.
time base operated from mains frequency
or crystal controlled.
pre-set time operation.



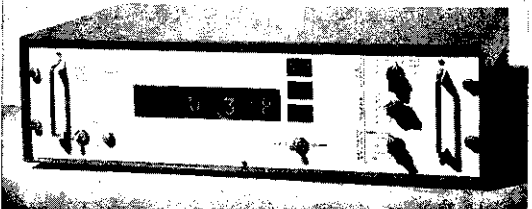
AA 1

H. V. supply / Amplifier / Analyzer.
meets most severe requirements for
stability and linearity.



PS 1

Automatic printer for 4 groups
of 6 digits.
complete with Olivetti Elettrosomma
printing machine.



RD 1

Digital RateMeter.
Accuracy of 0.1 % full scale (1 digit).
Connection to parallel entry printers
(HP type 562 A or equivalent) or tape punchers.
Analog output to operate graphic recorders.

SELO agents:

GREAT BRITAIN - GENERAL RADIOLOGICAL -
Bessemer Road - Welwyn Garden City
GREECE - GIMET - 1 Haritos Street - Athens
HOLLAND - WESEMAN - Bentickplein 32 -
Rotterdam
ISRAEL - ISOTECHNIQUE - P.O. Box 8381 -
Tel Aviv

WRITE FOR FULL DETAILS TO: Soc. Elettronica Lombarda S.p.A. - P.O. Box 3076 - Milano - Italy



Systems integration helped us

To handle mass measuring results efficiently systems integration helped us. Handling the ever-growing stream of measuring results threatened to overwhelm our radiation laboratory personnel. So we studied the possibilities of using a computer to process the measuring data. But that would have required a separate card or tape punch machine at the output of each measuring position. Then we found that by using Philips equipment, we could make the various measuring positions co-operate in passing results to a computer or other data handling equipment. This operation is fully automatic, and can follow any required programme. In such integrated systems, the measured data are all handled by a single common output.

If you are faced with similar problems, please consult your own Philips organisation. They will give you expert advice and assistance in designing the most efficient equipment for the instrumentation of your laboratory.

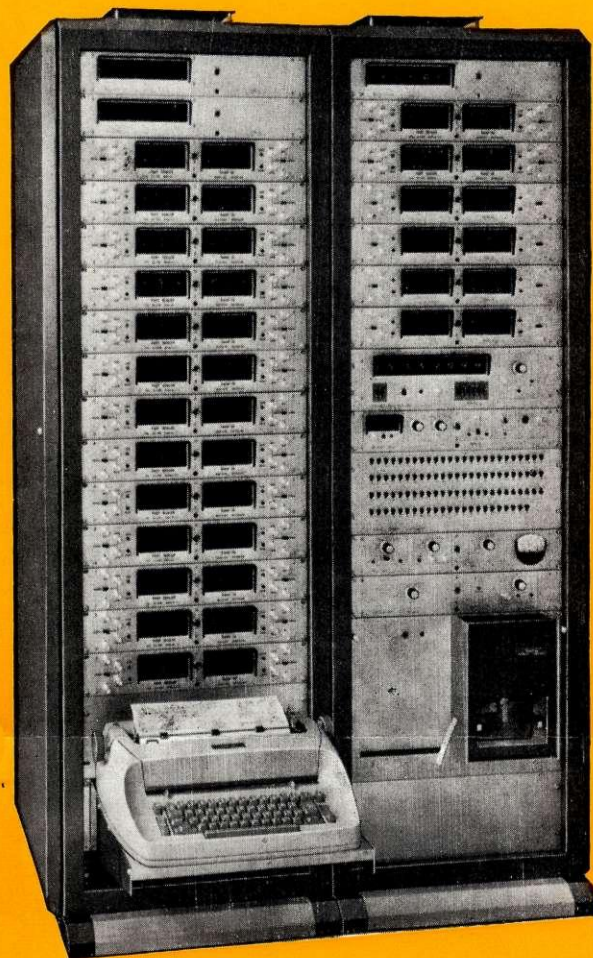
Sole distributors:
in the U.K.: Research & Control Instruments Ltd.,
207 Kings Cross Road, London W.C. 1;
overseas enquiries:
Philips, Scientific Equipment Dept.,
Eindhoven, The Netherlands.



PHILIPS nuclear equipment

Fast-Scalers with Automatic Readout

That is what the physicists need
to simplify their experiments!

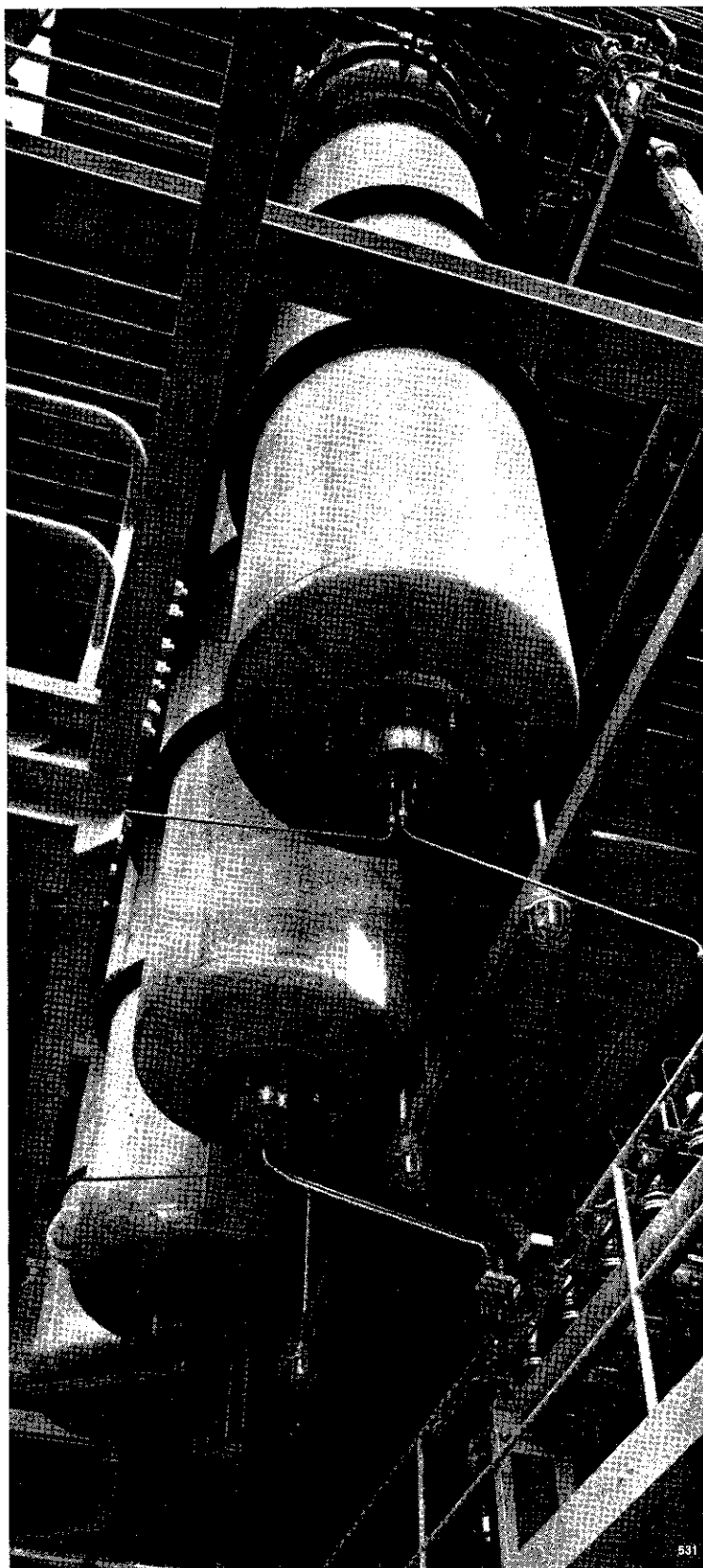


Ask for demonstration or literature!

5, 25 or 100 Mc counting rate
Modular construction
Fully transistorized
Readout facilities for:
Punch Tape, Printer or Sheet Writer
Highest quality—low cost
Versatile accessories:
Nanosecond Logic
Fast Pulse Amplifier tr 1,5 ns
Fast Low Jitter Discriminator
Fast Coincidence and Anti-Unit

ELECTRONIC
borer | **co**

SOLOTHURN · SWITZERLAND
Tel. (065) 2 85 45/46
Cable: BORELECTRONIC SOLOTHURN



SULZER

plans and delivers

Processing Plants for :

Precision rectification
Heavy water recovery
Gas liquefying
Uperisation sterilizing
Town gas detoxification, etc.
Laboratory columns

Thermal Plants

Steam generators up to
the highest pressures
Hot water boilers and
accumulators
Gas turbines
Diesel engines
Reactor plants for
nuclear power stations
Heat pumps

Refrigerating Plants

Cooling installations
Tube-ice generators
Low-temperature installations

Air conditioning plants

Heating and air conditioning plants also :

Axial and radial compressors

Oil-free reciprocating compressors

Pumps

for delivering high- and
low-viscosity fluids and corrosive media

Sulzer Frères

**Société Anonyme
Winterthur, Suisse**

Low-temperature installation (-250°C) for
 D_2O recovery (Emser Werke AG., Domat/Ems,
Switzerland)

— 250 °C