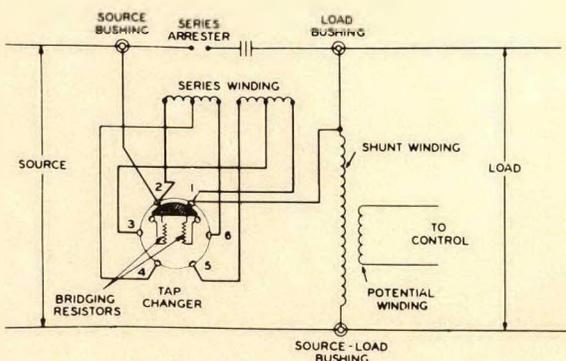


Voltage Improvement with Auto-Boosters

Hudacolec (Pty) Ltd.,
P.O. Box 3762,
JOHANNESBURG.



Boost connection.

Good voltage regulation usually means increased revenue, reduced costs, and improved customer relations. Yet, prior to the development of Auto-Booster regulators, the high cost of conventional regulation methods prohibited extension of regulation to isolated loads or low density areas. Now many previously unregulated loads enjoy the benefits of Auto-Boosters.

Design Details

Auto-Boosters are regulating auto-transformers, which provide four-step feeder voltage regulation without the high degree of sophistication found in 32-step regulators. An electronic control senses need for voltage correction, and a motor-operated tap changer automatically provides four-step voltage boost or buck (depending on connection) within a six or ten percent range. Each step represents a one and a half percent voltage change for six percent units, and a two and a half percent change for ten percent units.

Power circuit schematics for the Auto-Booster regulator clarify the operating principles of this regulation tool. As shown, the Auto-Booster consists of a series coil, shunt winding, and a control winding. Source voltage is applied across the series and shunt windings, while the load appears only across the shunt windings. In close magnetic proximity to the shunt winding, the control winding senses the output voltage and provides this intelligence to the control. Voltage correction will be initiated by the control if the output voltage does not conform with the band width of the control setting. In such a case, sections of the series winding will be placed in or taken out of the circuit by the tap changer operation. The winding sections represent either one and a half or two and a half percent rated voltage, depending upon whether the unit has a six or ten percent range of regulation.

Tap Changer

Auto-Booster tap changers have six stationary contacts and a rotor comprised of three separate contacts. Rotor contacts are interconnected electrically with bridging resistors. These resistors allow insertion or removal of tap sections without circuit interruption. This type of switch differs from the one used in 32-step regulators in that the bridging resistors can carry full-load current for only a short period. And, as a result, no bridging positions are possible on the Auto-Booster. The 32-step regulator tap changer has a bridging reactor designed to carry full-load current continuously.

Operation speed of the tap changer is determined by the spring force available, the rotor mass, and to a small extent, by contact friction. Considering these factors, the speed of the actual tap change is optimized for the operation under →

load. An inherent tap-changer time delay prevents the Auto Booster from switching under transient voltage conditions. This delay is 30 seconds for the first tap change, and 10 seconds for subsequent tap changes in the same direction. The motor is required to load the spring operator for 30 seconds before the tap-change takes place.

Shaded-pole Motor

A shaded-pole motor is used to drive the Auto-Booster tap changer. This method allows basic single-phase motors to develop torque and become self starting. High-resistance shading coils are wound on the stator and main motor winding. When one of these coils is shorter, induced current flows in the shorted shading coil. Since the main motor winding has low resistance and high reactance, the high resistance shading coil will have a magnetic field displaced 30- to 60-degrees from the main motor field. This magnetic field difference provides the starting torque. When both shading coils open, the motor will stall.

Electronic Control

The heart of the Auto-Booster is the electronic, voltage-sensing control. Its circuit consists of diodes, transistors, silicon-controlled rectifiers, capacitors and resistors. A voltage level control simplifies adjustment to a particular system voltage. The main function of the control is to

sense the output voltage. If it is not correct, the control then will short the appropriate shading coil, and initiate a tap change.

Application

For circuits with loads up to 100 amperes, Auto-Boosters can be installed wherever the familiar 32-step unit was used in the past. Larger loads will still require 32-step regulators because Auto-Boosters are presently available only through 100 amperes. Although system conditions will determine the actual savings, Auto-Boosters will normally cut equipment costs by more than 50 percent.

Summing Up

The primary objective of system voltage control is to supply each customer economically with voltage that conforms to the design limitations of utilisation equipment. Auto-Boosters provide economical voltage regulation and can reduce capital outlay. As electric heat and air conditioning build more load each year, this regulating tool will become increasingly important in utility planning.

Additional information about Auto-Boosters is available in a 12-page booklet and an 11-minute color slide-tape presentation. The booklet includes comments from six users and application data. The slide-tape details benefits. ●

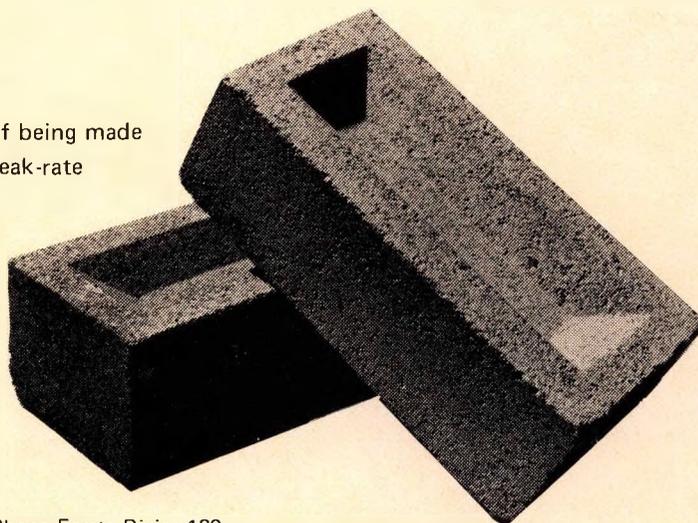
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Agréments Certificate

The Agrément Board recently published its third Certificate. This has now been issued in favour of Octopin (Pty) Ltd of Durban and this fact was advertised in the Government Gazette.

This Certificate relates to the Octopin walling system which was developed in South Africa in which single-storey loadbearing and non-loadbearing walls are erected by means of precast reinforced concrete panels secured against galvanised steel pipes by means of special galvanised steel plates and pins (octoplates and octopins).

Walls erected by the Octopin system are intended for use in single-storey buildings, in situations where a fire resistance rating of 1 hour and an airborne sound insulating index of 42dB is considered satisfactory. The maximum height of walls is 5,3 m and assuming that there is reasonable use and maintenance, it is assessed that walls erected by the Octopin System will have a life of not less than 30 years in coastal regions and more in inland regions, and will have a performance under heaving subsoil conditions superior to that of normal masonry walls.

The Certificate includes further details of the producer, marketing, use, assessment, conditions of use and of certification, technical specifications (including drawings) and design data of value to designers and builders.

Copies may be obtained from the office of the Agrément Board, P.O. Box 395, Pretoria at a cost of R1,00 per copy, and are available in English and Afrikaans. ●

SABS

The Editor
Municipal Engineer
P.O. Box 31365,
Braamfontein
JOHANNESBURG

Dear Sir,

SABS 972-1970: STANDARD SPECIFICATION FOR STREET NAME PLATES AND PROPERTY NUMBER PLATES

Further to recent discussions on the subject matter in "Editorial Comment" which appeared in the July/August 1971 issue of "Municipal Engineer," we are pleased to submit our observations on certain aspects of the article in response to your kind invitation to comment on these points.

We congratulate you on your drawing attention to the necessity for improvement in the display of street names and agree that there appears to be little uniformity, if any, between the display systems adopted by various local authorities.

We would like to point out that the statement that "in the matter of colour the SABS are at variance with overseas opinion" does in fact convey strictly the wrong impression.

The true position is that much research and extensive testing was carried out in overseas countries prior to the acceptance of colours for road signs. Full use was made of this information in compiling the SABS specification and it is interesting to note that the green colour chosen for street name plates corresponded closely to that recommended in the South African Road Traffic Manual, and which colour is employed most extensively overseas.

Investigations, envisaged in the scope section of SABS 972-1970, Standard Specification for 'Name plates and property number plates' have been completed and should result in an early amendment, concerning reflective signs in particular, which could provide added brilliance to signs, especially at night.

We thank you for your interest and shall be pleased to inform you immediately of any amendments which may be introduced.

Yours faithfully

William S. Armstrong

for DIRECTOR GENERAL ●

redevelopment of germiston

PROPOSED REDEVELOPMENT OF CENTRAL BUSINESS DISTRICT

The Central Business District should be the heart of a city or town. It should be the centre of civic, commercial, financial, professional, cultural, entertainment and general urban activities. The Central Business District (C.B.D.) should give the greatest feeling of urbanity, the open spaces should be the most highly organised, the buildings the most impressive architecturally. It should be the hub of activity and provide the most picturesque and varied environment in the town. Since it is the focus of the town's life and is the place to which a visitor is first drawn, his judgement of the town will largely rest on the impressions he gains there.

It has long been felt that the heart of Germiston has been neglected in terms of redevelopment and that it required to be revitalised. The urban renewal scheme for Georgetown outlined the need for a scheme to stimulate the growth of the C.B.D. A further socio-economic survey of Germiston West by the department of the City Engineer during July, 1970, also emphasised the necessity of integrating this area with the remainder of the business district. Subsequently a land-use survey of the Central Business District and the adjacent area north of the railway line was made in the field during August, September and October 1970, traffic counts taken, and studies made of traffic

flows, communications, parking, shopping trends and industry and employment.

Based on these studies, the Town Planning Section has submitted a comprehensive report for the proposed redevelopment of the C.B.D. The implementation of this scheme will radically change the central area. The scheme sets out a policy to cultivate the efficient individuality of the Germiston C.B.D.; to encourage the private sector to participate in the growth of the area; to plan for a stable population within the C.B.D. able to support the growth of commerce and shops; to accommodate the type of industry appropriate to the C.B.D.; to improve the road system of communication with the adjacent centres; to provide parking for the central area sufficient for its ultimate growth and expansion; to ensure Germiston's place as one of the most important cities of the Republic.

The detailed proposals include the following:—

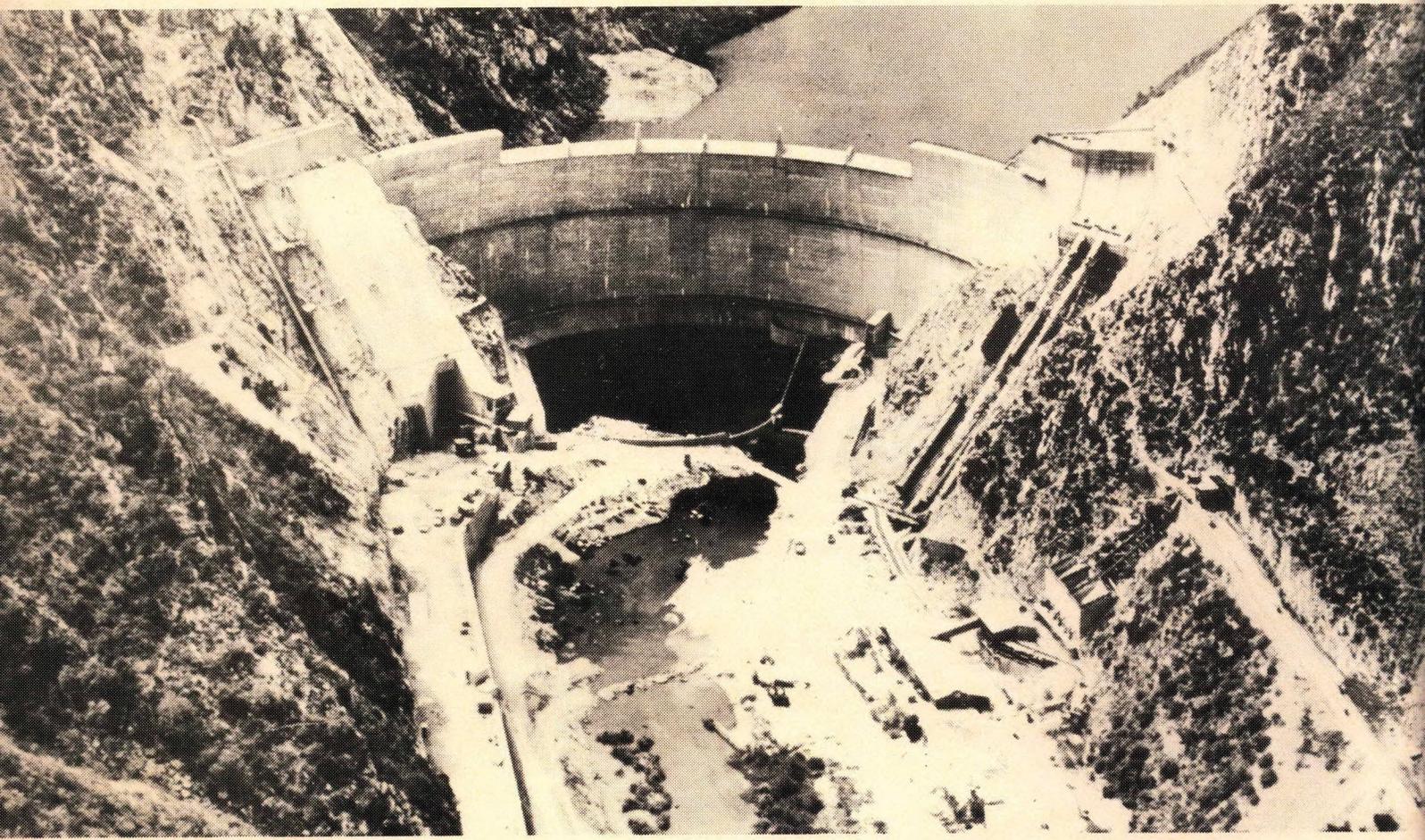
- (a) A site of approximately 5½ hectares for the new Civic Centre. The design is being put out to competition under the auspices of the Institute of South African Architects and will consist of a theatre, public assembly halls, restaurant, library, Council chambers, polyclinic and offices, and will provide an expansive and decorative civic square.
- (b) The business area to include sites for large departmental stores, separate blocks of offices and at least one first class hotel which will be a credit to the city. Residential accommodation in the form of highrise flats for an ultimate population of about 10 000 persons.
- (c) The preservation of existing, and creation of new open spaces, some of which will be used in conjunction with parking areas and underground parking garages.
- (d) The boulevard treatment of traffic circulation systems. The widening of certain streets, and prohibition of parking in others to improve traffic flows. Several roads to be closed in order to counteract the grid pattern of development and to prevent further signalised traffic control. The construction of additional links and outlets such as Meyer Street and Jack Street.

- (e) Extended bus services into West Germiston to provide the area with adequate mass transport.
- (f) Shopping precinct to be encouraged by the closure of certain streets so that pedestrians and motorists are separated to allow uninterrupted shopping movement for pedestrians.
- (g) The replanning and development of the present library and market sites.
- (h) The City Council to purchase certain land in the C.B.D. including part of West Germiston and to consider leasing such land, with certain safeguards, to private developers willing to comply with the Council's minimum development clauses.

The City Engineer states in his report that it confirms the problems which are known to exist within Germiston's Central Business District and proposes recommendations which will put some corrective processes into effect and help to stimulate others. The key to the whole scheme lies with the opportunity presented by the present redevelopment process for Germiston West. The existing roads are inadequate for the volume of traffic and the report puts forward road proposals which should satisfy our known modes of transport for many years whilst not neglecting to provide for the pedestrian, shopper and office worker. The City Engineer states further that the report embodies the means of making the Central Business District of Germiston a place to be proud of in the future, a city worthy of its name.

The report has been accepted and adopted in principle by the City Council. Although the proposals provide for long term development, it is expected that substantial progress will be made during the next five years with the first phase of implementation. This includes the Civic Centre, the Jack Street bridge, the Meyer Street subway and development of the present market site. Private developers have already shown a keen interest in the scheme and it is known that several large high-rise projects are being planned.

Printed copies of the report containing full details of the proposals are available and may be purchased from the Town Planning Section, Municipal Offices.



Civil Engineer Award

The Paul Sauer Dam on the Kougha River, Eastern Province, has earned the award of the South African Institution of Civil Engineers as the most outstanding civil engineering project for 1970.

The R8-million dam was designed and constructed by the Department of Water Affairs to provide an assured water supply for the irrigation of 8 137 ha of land and a water supply of 66 mega litres a day for Port Elizabeth. In addition to these primary functions, the water released for the above consumers will generate hydro-power by means of three turbines of 1 750 KVA each. This power will be sold to Escom. The other important function of the dam is that of flood control.

The structure consists of a double curvature thin arch, or "cupola", having a maximum height of 94,5 metres above the lowest foundation level. The dam has a crest length of 305 metres. The gross capacity of the reservoir is 143,6 million cubic metres.

The Paul Sauer Dam has the distinction of being the first thin shell double curvature arch to be designed in South Africa. Extensive literature surveys and an overseas study tour were undertaken by design-office staff members of the Department of Water Affairs and an original mathematical mesh model was developed for obtaining the shape of a dam which would result in a minimum of bending within the shell.

In conjunction with the mesh model test, solid model laboratory tests were also undertaken which was also a "first" in Water Affairs. These methods, developed for the Paul Sauer Dam, form the basis of design of several double curvature arch dams since designed and built. Prototype observation of strain and deflections inside the dam was another "first" and is applied to optimise future designs, according to the Department.

"Courtesy Department Water Affairs".

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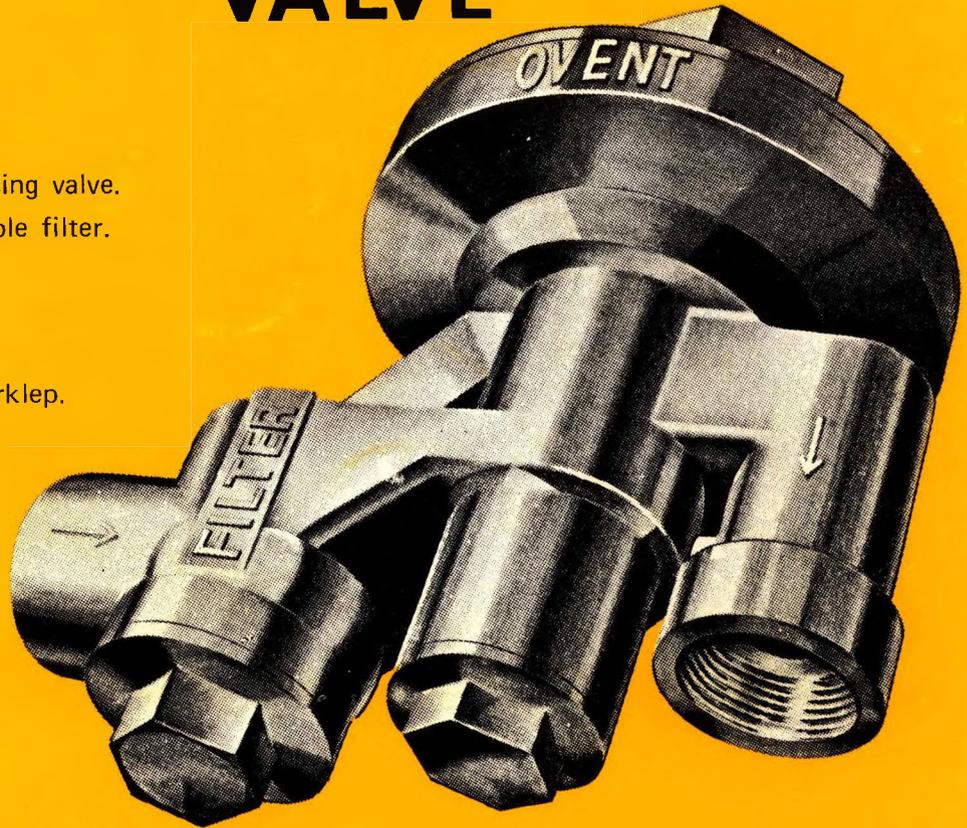
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INCLUDES:

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- 3) Keerklep.



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GEEN REGSTELLING BENODIG NIE!

Die klep is by die fabriek reggestel sodat die water hoogte in die ekspansie pyp nie meer as 1,25m oor die hoogte van die klep sal wees nie, afgesien van drukwisseling by die waterhoofleiding tussen 0 en die maksimum druk van 13 bar.

R.S.A. Patent Nr. 64/5452 67/2096 Swiss Patent Nr. 456,279 Canada Patent 811,483 Patents Pending: Germany



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