

## ESCOM's fourth decade

The Wonder Years...

# 1953 - 1963

The 1950s was a time of economic prosperity as the tough war years gave way to unprecedented economic expansion in many parts of the world. South Africa was swept up in this boom, which allowed ESCOM to embark on a period of massive expansion. Consumer goods, and especially electrical appliances, were becoming more available and affordable; and South Africans were eager to join the worldwide rush to plug into a more convenient lifestyle.

There were other, even greater forces at work, driving the demand for electricity in the 1950s. The use of atomic bombs in America's defeat of Japan set off a global rush to harness nuclear energy for peaceful means. In 1951 America's Atomic Energy Commission proved that it was possible to generate electricity from nuclear energy using uranium for fuel. This sparked international demand for uranium, which is found in the same ore structures as gold, and meant South Africa's sophisticated gold-mining industry was in a good position to exploit this valuable by-product. But, extracting uranium is an energy-intensive business and ESCOM was called upon to beef up the Rand Undertaking. ESCOM's answer to the plea for more power was to build Wilge power station at Ogies on the Witbank coalfields ... and to build it in record speed! Such was the haste of the construction that they didn't bother to build boiler houses, which meant that the first eight boilers stood exposed to the elements.

Thanks to its abundant reserves of uranium, South Africa was drawn into the international nuclear community and the government sought to make the most of the situation. From 1954 onwards ESCOM's chairman, Dr JT Hattingh, sat on numerous committees that investigated the possibility of using nuclear energy for industrial purposes. The chairman did not take into account the fact that coal mining for the supply of South

Africa's voracious power stations came at a terrible price paid in human lives and limbs. The accident rate in South African coalmines was one of the highest in the world. On 21 January 1960, 431 miners were trapped when a large chunk of the Coalbrook North section of the Clydesdale Colliery in the Northern Free State collapsed. Highveld and Taaibos were entirely dependent on the Clydesdale Colliery, and so emergency measures were undertaken to get them running at full steam.

A Mining Safety Committee was formed and it did indeed put safety first by closing down dangerous collieries; which meant significant cuts to the power supply. The gold-mining industry took a big hit.

Meanwhile, the attitude of the state towards the majority of the country's citizens was causing increasing upheaval. The Defiance Campaign began in 1952 followed by the adoption of the 'Freedom Charter' in 1955. In March 1961 the recently formed Pan African Congress (PAC) protested against the hated pass laws.

Fortunately for ESCOM, the ANC and the PAC did not perceive South Africa's power utility as a legitimate target. 'Normal' was in this case rather extraordinary as ESCOM achieved extraordinary growth. From 1952 to 1959, eight new power stations went into commission: Hex River, Vierfontein, Umgeni, Wilge, Salt River 2, West Bank 2, Taaibos, and Highveld. And additional capacity was added to Central, Colenso, Klip, Vaal, Vereeniging, and Witbank.

Vierfontein, the first power station to be commissioned in 1953, was situated in

the then Orange Free State and supplied both the Klerksdorp/Kimberley area as well as the Free State goldfields region; three generators dedicated to the former, and the remaining nine to the latter. Cape Town received a boost to its supply when Salt River 2 began operations in 1955. East London's West Bank 2 added 85 MW to that town's supply in 1956.

It became apparent that, with the bigger power stations, the standard generator size of the time should be upped from 30 MW to 60 MW. This necessitated switching to pulverised fuel (PF) firing. Although PF had been used in Congella in 1928, the performance of the station was compromised by what was really experimental technology. But PF technology had matured by the 1950s and was used in the second phase of the Wilge power station. It was also used at Taaibos and Highveld power stations. Taaibos, commissioned in 1954, was situated in Sasolburg in the Orange Free State and was built to satisfy the growing industrial demand in the Vaal Triangle. Highveld, adjacent to Taaibos, was commissioned five years later and, like Taaibos, boasted an installed capacity of 480 MW.

Increased transmission was necessary as ESCOM sought to supply the Orange Free State goldfields region with electricity from the Taaibos/Highveld complex. New technology allowed for higher transmission voltages, and 275kV (the standard at the time was 132kV) was decided on.

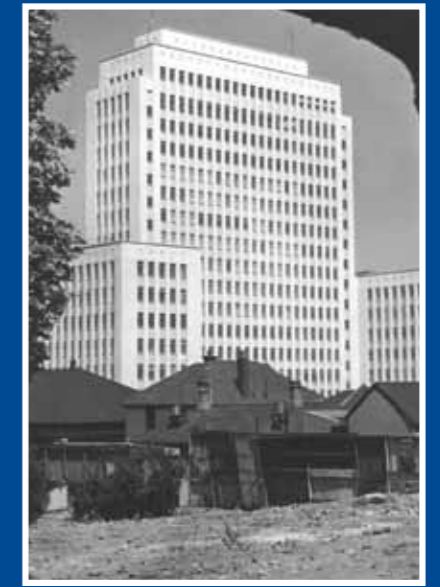
This meant ESCOM could use 300kV class international standard equipment; rated for an altitude of 1 500m.

In 1945 ESCOM's total generating capacity was 1 217 MW, by the end of 1954 it was 2 052 MW, and by the end of 1959 it had increased to 3 297 MW; a growth of 170% in 14 years. It was an astounding achievement for ESCOM and it allowed South Africa to benefit from international demand (driven by the post-war economic boom) for its commodities.

By March 1961 ESCOM had another 1 265MW of generating capacity on order. By 1960 ESCOM had also extended its supply area to 191 100km<sup>2</sup>. The development of new transmission technology meant ESCOM could save considerable amounts of money through pooling. Hence, in 1955, generation on the Rand, Eastern Transvaal, and Northern Cape undertakings were pooled. The Natal Southern and Central undertakings were also pooled in the same year.

ESCOM needed more office space and in 1958 the organisation's head offices moved to ESCOM Centre in Braamfontein.

In 1962 JT Hattingh had reached the end of his term and ESCOM needed a replacement. Professor Reinhardt Ludwig Straszacker had been a member of ESCOM since 1952 and was well versed about the organisation, although, he was aware that as chairman he would be entering, what was for him as a scientist, uncharted



territory: "The engineer must bring the analytical elements into a whole, which is more than the sum of the individual elements. The analytically-inclined person has got to fight for coming back to the synthesis, because the elements themselves are not the end results."

Straszacker would oversee some momentous changes in the organisation as ESCOM embraced innovation and technology like never before. After a detailed investigation it was decided that the abundance of coal in the Highveld of the then Eastern Transvaal made it an ideal area to replace the Vaal Triangle as the centre for generation. Komati power station was situated between Bethal and Middelburg and got its name from the Komati River; although its water in fact came from Nooitgedacht Dam 65km away. Komati's first unit were on the grid in 1962, and it was completed in 1966, boasting five sets of 100 MW each and four of 125 MW each and a final capacity of 1 000 MW. •

1953  
to  
1963

In 1957 the government appointed a commission of enquiry to look into the use of nuclear energy in South Africa.

### DID YOU KNOW?

In 1954 JT Hattingh predicted that for "the next 20 or 25 years" nuclear power would be impractical. His prediction proved spot on, and construction on Koeberg power station only began in 1976.

In the 1950s South Africa's reserves of uranium made it a major player in the nuclear power industry; and by 1956 the country was producing 3 677 tons of the metal.



ESCOM'S generating capacity was 3 479MW in 1960; today it is almost 10 times that amount.

In 1957 work was done on the Electricity Act, no 42 of 1922, to change the original Dutch to Afrikaans, and to incorporate amendments.



ESCOM'S annual power sales reached 16 billion units in 1960 - these sales showed an increase of 133% over a 10 year period.

In 1961 ESCOM employed 15 441 people.



In 1961 South Africa generated 57% of Africa's electricity. Now that figure is around 66%.

Komati's first unit were on the grid in 1962.



▲ Ian McRae was the first resident engineer of Komati power station (commissioned in 1962). He would later become the first chief executive of ESCOM.

