Eskom's third decade

Into the darkness

1943 - 1953

At the outbreak of war in 1939 the first set of three boilers for extensions to Congella power station (Congella 2) were about to be imported from Great Britain when the British government commandeered them for use in the war effort. In 1943 the ship carrying the replacement set was sunk by a German submarine. Eventually in 1946 Congella 2 received its boilers and was commissioned, adding a further 40 MW capacity to Durban's electricity supply.

The extra supply came in handy, for although electricity demand dipped in 1943 (for only the second time in ESCOM's history) by 1944, when an Allied victory seemed certain, demand increased by 3,3% and by 6,6% the following year. Indeed fuel and spare parts shortages (during the first part of the war) had placed strain on the system, and ESCOM was hard pressed to meet demand and had to rely on small generators belonging to ISCOR, municipalities, and even the Rand Water Board to keep the system running.

In January 1945 Vaal power station began producing electricity. This power station was built to "feed into the grid system of the Commission and the Victoria Falls and Transvaal power Company, Limited" (1938 Annual Report, pg 6). While it did indeed contribute to the Rand network, it also supplied much needed power to new goldfields that were springing up in the then Orange Free State.

The post war years saw renewed economic activity and growth, and ESCOM was increasingly called on to beef up its supply to smaller municipalities. In 1946 the decision was made to build a power station at Worcester in the Cape (this became known as the Hex River Station) to strengthen supply to the Western Cape and electrify the railway line from Belville to Touws River (and later to Beaufort West). Also in 1946 the East London municipality asked ESCOM to augment its supply, and in 1947 an agreement was reached whereby ESCOM acquired the West Bank power station. The following year ESCOM extended its reach in the Eastern Cape by acquiring the King William's Town and the Alice Municipal undertakings; and together with East London these three power stations formed the nucleus of what was later called the Border undertaking.

In 1948 ESCOM's finances were in good shape to effect the long anticipated expropriation of the VFP. There was one major problem to overcome though; the exact expropriation date was in dispute. The 1922 Electricity Act was ambiguous, and depending on how the law was interpreted the date could range from November 1947 to November 1950. Dr Van der Bijl was keen to expedite the expropriation and directly appealed to Prime Minister Smuts in a 1944 letter arguing that early expropriation would save the gold mines £2 million per year. As things turned out Dr Van der Bijl negotiated with Bernard Price (chairman of the VFP) and after months of wrangling an agreement a formal agreement was signed on 16 June 1948 whereby ESCOM would pay the VFP £14,5 million and commit to protecting the interests of VFP staff affected by the takeover. At the time it was South Africa's biggest merger, and one financed by a public loan of £15 million which was oversubscribed within hours. ESCOM acquired four power stations (Rosherville, Simmerpan, Vereeniging and Brakpan) with a total generating capacity of 298 MW. It also acquired 2 100km of transmission lines, 1 444km of pilot and telephone lines, as well as 1 000 transformers, 18 distribution substations and 304 consumer substations. Although the VFP had valued its assets at £14 million, ESCOM reckoned that their replacement value would be almost double that amount. ESCOM also increased its staff complement from 1 692 to 7 850 people.

Dr Van der Bijl passed away on 2 December 1948, of cancer. At his funeral opposition parliamentarian, Sir de Villiers Graaf, described Dr Van der Bijl as "the father of our industrial revolution, the master builder who evolved our whole economic structure."

Albert Jacobs, ESCOM's chief engineer and a Commissioner since 1926, took over as chairman at the beginning of 1949. After the end of the war ESCOM was faced with a dual challenge: strong industrial demand within South Africa, and worldwide shortages in power station plant equipment. In 1949 the Rand undertaking - an area which accounted for some 80% of South Africa's wealth - experienced severe constraints, and ESCOM consulted with the Chamber of Mines to come up with a quota system and emergency rules whereby interruptions could be avoided. Meanwhile ESCOM was furiously planning and designing new power stations, as well as upgrading current stations. Capital was needed for an ambitious expansion programme, and in 1951 ESCOM secured a US$30 million loan from the International Bank for reconstruction and development. The money would help beef up capacity at existing plants as well as pay for the seven new plants that were on order or in the advanced stages of planning.

Meanwhile in early 1950 ESCOM acquired Kimberley's Central power station from De Beers, which became sole supplier to the new Cape Northern Undertaking. This undertaking covered 40 000 km² – an area roughly the size of Switzerland, and brought home the point that, as a national power utility, ESCOM had an obligation to supply electricity to remote areas. Hence in December 1951 the Rural Electrification Department was established to provide power to small consumers outside municipal supply areas.

In 1952 Albert Jacobs retired and passed the baton onto Dr JT Hattingh, ESCOM's consulting engineer and a Commissioner since 1949. Jacobs did have the satisfaction of presiding over the commissioning of Hex River power station, whose overall design and layout he had personally been responsible for. The station's first generator and boiler were commissioned in May 1952, and according to a well-known European supplier of steam turbines, it was the best power station design and layout he had seen anywhere in the world. •

1943 to 1953

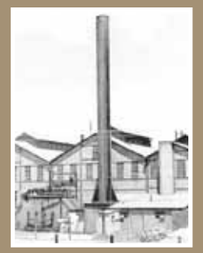
In **1943** not only did ESCOM lose Congella's turbine in enemy action at sea, it also lost certain essential equipment for **Vaal power station**, delaying its commissioning by over a year.

1943 was only the second year in which ESCOM experienced a decrease in electricity demand (by 1,2%). The first was in 1931.

On completion in **1945** Vaal power station's cooling towers stood 72m high, making them taller than ESCOM House, and the tallest structures in South Africa at the time.

DID YOU KNOW?

In the early **1940s** ESCOM contributed £124 875 towards the cost of the Vaalbank Dam, which gave it the right to draw 84 mega litres of water per day from the Vaal River: an adequate supply of cooling water for both Klip and Vaal power stations.



In **1943** the turbine of a 40 000kW turbo alternator for **Congella power station**, shipped in replacement of a similar set commandeered by the British Government for urgent war work, was lost by enemy action at sea. The ship carrying the turbine was torpedoed by a German submarine.

In **1946** ESCOM sold 5 000 million units of electricity, about 2% of today's yearly sales.

In **1947** England's King and Queen, along with princesses Elizabeth (now the Queen of England) and Margaret, visited ESCOM House.

In **1948** ESCOM bought the VFP for £14 500 000. At the time it was South Africa's biggest merger, taking ESCOM's staff complement from 1 692 to 7 850. >

Although **Klip power station** was meant to have sufficient coal for 40 years, in **1948** (just eight years after it had been commissioned), an ESCOM brochure admitted that "the time is approaching when Klip will have to look further afield for its fuel."

In **1949** power shortages led to suspension of all new applications for connections to the network, with the exception of essential services.

In 1950 ESCOM burnt 7 million tons of coal to produce 7 276 million units of electricity, which represents an average of 1,91 pounds of coal per unit. Thanks to larger units and more efficient boiler plants this figure was reduced to 1,61 pounds. Now it takes about 0,5kg or 1,1 pounds to produce a unit of electricity.

The ESCOM Pension Fund was established in **1950.**

< In **1952**, **JT Hattingh** succeeded Albert Jacobs to become ESCOM's third chairman. He did a Master's thesis entitled 'A Universal Stress Sag Chart', which included a practical field guide for the stringing of transmission lines which was used by ESCOM engineers for many years.

^ **Hex River power station**, which began commercial operations in **1952**, was referred in certain circles as "Albert Jacobs's pride and joy" because Jacobs, ESCOM's chairman at the time, had taken such a keen personal interest in its design. <