

ELECTRICITY IN CORNWALL – PART 2 **CORNWALL ELECTRIC POWER COMPANY**

by **Eric Edmonds**

Continuing our story of "Electricity in Cornwall" with Part 2 extracted from 6 articles in the Trevithick Society Annual Journal No.29 as above written by Eric Edmond, who I failed to say last time, that he is President of the Trevithick Society.

*This edition also includes three appendices : 2 – Hayle Generating Station, mainly plant details
3 – Areas Never Supplied by CEPC
4 – Staff – Management & Engineering Department*

Dolcoath Mine and The Cornwall Electric Power Act 1902

Sinking of the Williams' Shaft had been started in 1896, in order to improve the haulage of ore from the mine. It was also evident from the start that the existing Cornish pumping engines would soon have to be replaced. Consideration was given by the mine to generating their own supply and the Cornwall Electric Power Syndicate was formed, with Mr. F Harvey as Chairman, and Mr. O.Wethered as Vice-Chairman. They were respectively Chairman and Vice-Chairman of Dolcoath Mine Ltd. Clearly a lot of work was done on this study. The Syndicate was registered as a limited company on 23.6.02 and on 23rd June 1902 the Cornwall Electric Power Act received the Royal Assent. The area covered was "the whole of the County of Cornwall, exclusive of the Scilly Isles and the rural districts of Stratton and Holsworthy" (Clause 36). Land for two generating stations was detailed in the First Schedule - at Par Harbour, on the boundaries of St. Blazey and Tywardreath parishes owned by Mr. C.E. Treffry, and in the parish of Phillack at Hayle on property owned by Harvey & Co. Ltd.

The Cornwall Electric Power Co.

The 1902 Act incorporated this company and conferred powers on it. It was first registered by the Syndicate on 23.6.02 with a Capital of £45,000, though the first meeting was not held until 31.1.06 at Dolcoath Mine, when Mr. F. Harvey took the chair, supported by Mr. Wethered with Mr. J.A. Stonecham as Secretary. At that meeting they resolved to pay the Syndicate £2,364.19.4 being their expenses in promoting the Act. For a while the Duchy Development Association got control of the company. They signed contracts to supply Dolcoath Mine and Wheal Vor from a power station at Hayle, but these proposals fell through and control reverted to Dolcoath Mine.

On 6.12.07 the Company, on the advice of Dolcoath

Mine gave an option to Edmundsons to purchase the rights of the 1902 Act, and on 3.10.08 Edmundsons resolved to take up this option. On the same date, the CEPCo., held another meeting at Dolcoath Mine and three Directors nominated by Edmundsons were present, and thereafter, Messrs. F Harvey, O.Wethered and L.C. Foster are not listed in the Minute Book. Mr. C.H. Jones took over as Secretary.

In 1908 the Royal Cornwall Polytechnic Society chose Camborne as the site for their annual exhibition, the theme being mining equipment and plant. On the first evening a discussion was held, with Mr. R.A. Thomas, Manager of Dolcoath Mine and Chairman of Camborne U.D.C. in the chair. The subject was "Pumping Machinery at Deep Levels". Amongst the speakers was Mr. L.A. Hards, who naturally spoke in favour of using electricity. So did Mr. W.A. Scott, a Consulting Engineer from Cardiff, who had experience of electric pumping in several South Wales collieries. He was consultant to Dolcoath Mine and later to Geevor Mine. Urban ESCo won a Diploma for their exhibits.

At the 14th A.G.M. of Dolcoath Mine Ltd., held on 24.2.09, it was announced that the study of the pumping problem by the Consulting Engineer had proved that it would be cheaper to install electric pumps in preference to a Cornish steam pumping engine. Likewise, that a saving of over £20,000 capital outlay would be made purchasing from the Supply Co. compared with the cost of building and running their own generating station. On 7.12.09 an Agreement was signed between Dolcoath Mine, Urban ESCo, CEPCo and the Merchant Trust, as mortgagees of Carn Brea Generating Station. This agreement was for 700kW on duplicate lines at 3000v 25 cycles AC, and included the Mine's right to take over Carn Brea Generating Station, if Urban ESCo ceased to trade. The Consulting Engineer to Dolcoath Mine, Mr. W.A. Scott. had had a lot of experience of

25 cycles supply and insisted on it. Dolcoath had obtained the 1902 Act and so dictated terms. The affairs of CEPCo were by then handled by the staff in the office of Urban EScO at Carn Brea. They now held all the £10 shares in the £45,000 capital of CEPCo. Mr. L.A. Hards was now Engineer & Manager of both companies. Plans for further major extensions at Carn Brea were abandoned and the decision made to build Hayle Generating Station. The Cornwall Power Company Ltd. was formed in 1926 by Edmundsons to adopt an agreement for the sale of all their Ordinary Shares in CEPCo. They duly acquired all the Ordinary Shares and over half the 5% Preference Shares.

Carn Brea Generating Station, 1909-1924

As an interim measure in 1909, when the load had reached 988 kW at Carn Brea, the dynamo on No.5 set was replaced by a 400kW 3000V 25 cycle 3 phase alternator with 3/10kV transformer and 10kV switchgear, and at the same time a Parsons 500 kW Turbo-Generator, 3000V 25 cycles was installed with transformer. South Crofty Mine was then converted to AC from the new 10kV line, which was extended to Dolcoath Mine substation for their 3kV supply. By 1910 Nos.1 to 4 sets had been removed and replaced by two 275kVA Rotary Converters, to maintain the DC supply to the Tramway & consumers in Camborne and Redruth.

After the removal of the Parsons Turbo Alternator to Hayle in 1924, the only set left was No.5 with the 400kW Alternator. The boilers were kept alight to provide an alternative supply in the event of a station shut-down at Hayle or of loss of the dual line.

The Post-War Slump

The price of tin went down, the mines and tin streams gradually ran down and ceased work, and unemployment rose. From the March quarter, 1922 the Company ceased to make maximum demand charges, only charging for units until the December quarter 1924. The local Councils cut down on street lighting to make economies and the "West Briton" of 29.9.21 commented about Camborne, which was lit by gas, that it was "not in the best interest of public morality, as large portions of the town are in darkness". There was little new business to connect, certainly no supplies to mines and hence no extension to the 10kV network, other than the conversion of Camborne and Redruth to alternating current in 1920/21.

Dolcoath Mine in Difficulties

Early in 1920 it was apparent that the mine was in trouble and the myth was about to be exploded that "whatever the price of tin - Dolcoath will make a profit". The falling price of tin, coupled with the poor yield, which required some 71 tons of tinstuff to be put through the mill to obtain one ton of tin, together with rising costs of wages, coal and materials, resulted in the mine running at a loss. They could not pay their energy account. The company, faced with increased costs, wanted to increase the energy cost or

to suspend the Supply Agreement, were prepared to go to Court.

However, it was too late, as in June the Directors gave notice of closing Dolcoath Mine, and in July, after the B.O.T had refused financial aid, the pumps were lifted from the bottom of the mine. The mine was closed. By January 1921, the Dolcoath account was still unpaid. A Lien upon 35 tons of arsenic, given by Dolcoath Mine Ltd to the Company against the amount owing, was considered, and it was decided to purchase this arsenic:-

In June a settlement was reached as follows:-

To receive cash equal to 5/- in £1	£1,041
To purchase for £1,000 35 tons of arsenic	£1,000
To take Priority Shares amount of balance	<u>£2,123</u>
	£4,164

Indeed Dolcoath - Queen of Cornish mines - had had to pawn her crown. In 1926 the Company sold 3,444 10/- shares in Dolcoath at 6/3d each, and lost £667 on the investment. Further hopes were raised on 9.6.27, when the Company signed a new Supply Agreement for supply to the original mine and also to the new shaft at Roskean This was for 400kW maximum, 50kW minimum charge, for three years with a deposit of £200, on which 7% per annum interest would be paid. These hopes did not materialise and the mine finally closed in August 1929. More losses were to come, as the General Reserve Account 1935, shows the writing off of £500-1,000 Dolcoath shares at 10/-.

The Legal Side of Electricity Supply in Cornwall Cornwall Electric Power Act, 1902

The first stage of Hayle Generating Station was completed in 1910, and the station at Par Harbour was never built by CEPCo.

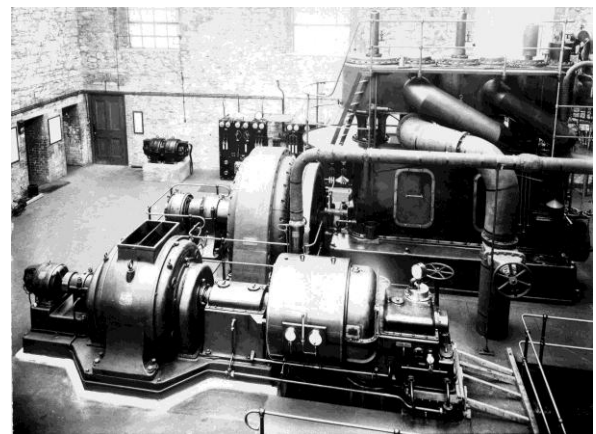


Fig. 1 The First Bellis & Morcom Machine Set 1911

The Electricity (Supply) Act, 1926

This Act covered the formation of the Central Electricity Board to oversee the development and operation of all generating stations. The better ones would be regarded as "selected Stations" and would be linked by the proposed 132kv Grid system. The frequency of alternating current supply was standardised at 50 cycles per second, and the CEB could order any non-standard undertaking to change to 50 cycles. The CEB was divided into ten areas and each had to settle a tariff for the purchase of all power

generated at each station and also a tariff for the owners to buy back power at cost plus for their operating needs. The Electricity Commissioners had to prepare schemes for the 132kV lines linking the selected stations in each area, and to put these schemes to the CEB for implementation and then operation.

Hayle was classed as a selected station and the 132kv Grid reached that station in 1932. The change of frequency of the CEPCo 25 cycle network, as well as of plant in Hayle Generating Station, was completed in 1932/33. This Act also encouraged the active development of supply in the country and so Edmundsons promoted the following Orders:-

- 1928 West Cornwall Electricity Special Order
- 1930 East Cornwall Electricity Special Order
- 1933 East Cornwall Electricity Special Order
- 1934 East Cornwall Electricity Special Order

Between 1926 and 1936 Edmundsons acquired the following undertakings:- Newquay, Wadebridge, Padstow, Launceston, Delabole, Bodmin, Looe, Penryn, Liskeard, Callington and Torpoint & Saltash.

Cornwall Electric Power Act, 1936

Power consumers had Supply Agreements with CEPCo. These never totalled more than 67 and most of them had their own substation. As the system developed through the company's area domestic consumers had their Supply Agreements in the name of the subsidiary holding the Order for that area. There were eventually ten such companies. Every transformer was connected to the LV mains through a kWh meter with "2-hourly maximum demand indicator. The total units registered, and the kW MD, were billed each quarter to the subsidiary company. This involved much meter-reading and clerical work to produce each set of annual accounts. This Act increased the capital powers of CEPCo and empowered it to acquire Electricity Order undertakings in and adjacent to its area. With the exception of the areas supplied by the three non-associated undertakings (St. Austell, Falmouth & Bude) the whole of the 1902 Act area was now covered by Orders held by ten companies financially associated with CEPCo, under separate accounts. These ten companies, and their Orders, were thus transferred to the Cornwall Electric Power Co., namely:-

- Callington & DESCo.Ltd. Callington & DESO 1924
- Camborne ES Co. Ltd. Camborne ELO 1899.
- East Cornwall ESCo. Ltd. East Cornwall ESO's 1930, 1933 & 1934.
- Launceston & DESCo.Ltd. Launceston ELO 1912.
- Liskeard Gas & Elect Co.Ltd. Liskeard ESO 1929
- Newquay EL&P Co. Ltd. Newquay ELO 1904.
- Penzance & DES Co. Ltd. Penzance ELO 1904.
- Truro ES Co. Ltd. Truro ESO 1926.
- Urban ES Co. Ltd. Redruth ELO 1900 & Illogan ELO 1903.
- West Cornwall ES Co.Ltd. West Cornwall ESO 1928.

There were 32,782 consumers at the end of 1936 and only one set of accounts was now required. The Urban Electric Supply Co Ltd., as such, was wound up though it lingered on in spirit and the local name of "lectric party" continued to be used for years.

The Capital Expenditure up to 1936 had been :-

	£	s	d
Tramways	44,888.	17.	0
Mineral Line	7,419.	19.	2
Gen. Station & Mains	29,803	16.	11

Cornwall Electric Power Act 1940 - mostly financial



Fig. 2 Hayle Power Station 1934

Electricity Act 1947

This Act nationalised the Electricity Supply Industry. On Vesting Day 1st April 1948, the distribution side of CEPCo., was transferred to the South Western Electricity Board and Hayle Generating Station to the British Electricity Authority. The gas undertaking in Liskeard went to British Gas. CEPCo., had been steadily developing all over the area. They had made a profit and paid dividends every year, since 1911, except for the two depression periods 1921-1923 and 1931-32, when no MD charges were made, in order to help industrial consumers. There were 59,744 consumers on 31.12.47 and the Capital Expenditure to that date had totaled £3,970.28s.6d. The whole of the area, together with that of St. Austell and Falmouth Undertakings, became Cornwall Sub-Area.

The Rural Districts of Stratton and Holsworthy went into Devon Sub-Area and the Undertaking on St. Mary's Isles of Scilly remained in private hands, until taken over by SWEB in 1958.

Edmundsons Electricity Corporation Ltd., had been a very successful company and the Managing Director, Wade H. Hayes, was strongly opposed to nationalisation of the industry. An article of his had been published in "The New English Review" entitled "The Case against Nationalisation of Electricity". In September 1946, he sent a copy of this article to each member of the staff of each associated company including CEPCo. There was also some plain speaking by Lord Royden, the Chairman of Edmundsons at their 50th OGM in July 1947. This

speech was also recorded in a booklet and circulated to staff.

Fig.4 Hayle power Station circa 1950

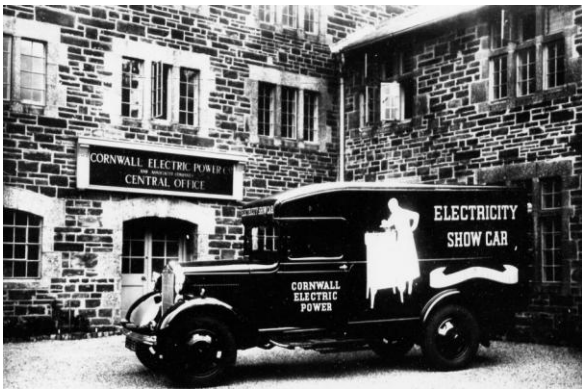


Fig. 3 Carn Brea Premises as the Head Office of Cornwall Electric Power Company by the late 1930's

The CEPCo Network at Vesting Day

Only essential reinforcement had been carried out during the war years, but load growth had been monitored by local load checks. The cold spell early in 1947, necessitated temporary measures to meet the increased domestic load east of Carn Brea and also in the Penzance area, pending receipt of planning approval for new 33/11kV substations and overhead lines as well as financial approval from the new Board (i.e.SWEB).

Annual load checks were introduced in 1947 at all substations with instrumentation. These figures were essential for system operation and also for long term planning, bearing in mind not only the wartime backlog of reinforcement and replacement of some of the original lines, but also the rural development programme and information on new housing. The 1948 figures showed that the domestic load was greater than the week-day industrial load :-

Day of Peak

Thursday			
23.1.48	12.01pm	Hayle BSP	25,260MW
Sunday			
22.2.48	12.01pm	Hayle BSP	28,380MW
		Fraddon BSP	<u>29,500MW</u>
		Total	57,880MW

Judgement on the state of the network in Cornwall on Vesting Day is best left to Mr. Stanley Steward, the first Chairman of South Western Electricity Board, who said :-

“With a modern power station at Hayle and the installation of a 33kV and 11kV distribution system throughout the County, electrical development in Cornwall was further advanced than in other parts of the Area” -----

“Apart from Bristol and Cornwall, the distribution system was overloaded in almost every part of the Area-----“.