

The CRABTREE MB45

Memories of an ill-fated project

by

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The story of the Crabtree MB45 miniature circuit breaker is now almost forgotten. Before attempting to recall the details, it may be of interest to examine briefly the history of miniature circuit breakers and the Crabtree company's involvement in their design and production.

The first miniature circuit breakers appeared in Germany just after the first world war, where they were used as an alternative to screw-in type fuses in general use there at that time.

Realising the potential of these new devices, during the 1920s and early 1930s, John Crabtree carried out much research into their design and operation with electrical engineers on the continent and in the UK. He was keen to manufacture such products in his factory Lincoln Works at Walsall.

Sadly, due to his premature death in 1935 and the outbreak of the second world war, these plans had to be postponed for a number of years.

Following the end of the war, the Crabtree company put new product development programs in place, and in the late 1940s/early 1950s Ted Coleman, an electrical engineer with the company, started work on the design of a range of Earth Leakage and miniature circuit breakers incorporating some of John Crabtree's early research. At this time two alternative types of operating mechanism were used in miniature circuit breakers, magnetic-hydraulic, using a silicone fluid filled tube, and thermal-magnetic which used a thermal bi-metal.

The Crabtree company chose the magnetic-hydraulic mechanism, since whilst it was marginally more expensive to produce, it had a number of performance and operational advantages. It was also a well proven design used very successfully by Heinemann Electrical of Germany and marketed in South Africa.

Design of the new circuit breaker products progressed well, and in 1956 the E60 voltage operated Earth Leakage circuit breaker was launched, rapidly becoming established as a market leading product.

This was followed by the F60 and C50 miniature circuit breaker ranges in 1957 and 1961 respectively.

In 1955, Jim Robbins (BSc. C.Eng. F.IEE. F.I.Mech.E.) a very well-qualified engineer, joined the company to head up circuit breaker sales. Also, in 1959 a short circuit testing station with a short circuit capacity of 10,000 Amps was installed at Lincoln Works, putting the company at the forefront in the research and testing of miniature circuit breakers.

Due to the quality and performance of the product, and the promotional and technical support given by Jim Robbins and his team, the Crabtree C50 range rapidly became the market leader for industrial and commercial installations. Also, since its magnetic-hydraulic mechanism remained stable over a wide range of temperatures, it was used extensively in export markets.

During the 1950s and early 60s, large local authority and private housing developments were taking place throughout the UK, including the building of multi storey flats in most towns and cities.

These developments created a large demand for domestic consumer units.

In the UK rewirable fuses were in general use at that time, with which the C50 was unable to compete on price, such large demand mainly being met by low cost moulded or metal consumer units with brands such as Wylex being dominant.

Recognising this major business opportunity in the early 1960s, Jim Robbins submitted a new product design brief to the Crabtree board. This was for a range of small domestic consumer units with miniature circuit breakers to be price competitive with the equivalent rewirable units.

And so, the concept of the MB45 was born.

At the end of the 1950s, after more than twenty-five years' service, designer Ted Coleman had left the company, eventually to be replaced by Stan Clives.

Under Stan, design of the MB45 commenced in the mid 1960's.

In order to meet the competitive price level required, the proposed miniature circuit breaker had to be of the thermal-magnetic type, so departing from the company's previous magnetic-hydraulic designs.

It needed to have ratings up to at least 45 Amps, and a short circuit duty capability of at least 2,500 Amps.

Design and development of the circuit breaker proceeded slowly, taking over ten years during which time much testing and modification to components took place in an effort to achieve an elusive acceptable performance.

This was a time of change within the company. Jim Robbins becoming marketing and sales director, with Jim Butcher replacing Tom Wintle as technical director.

All of this was however overshadowed by the take-over of the company by Ever Ready in 1972.

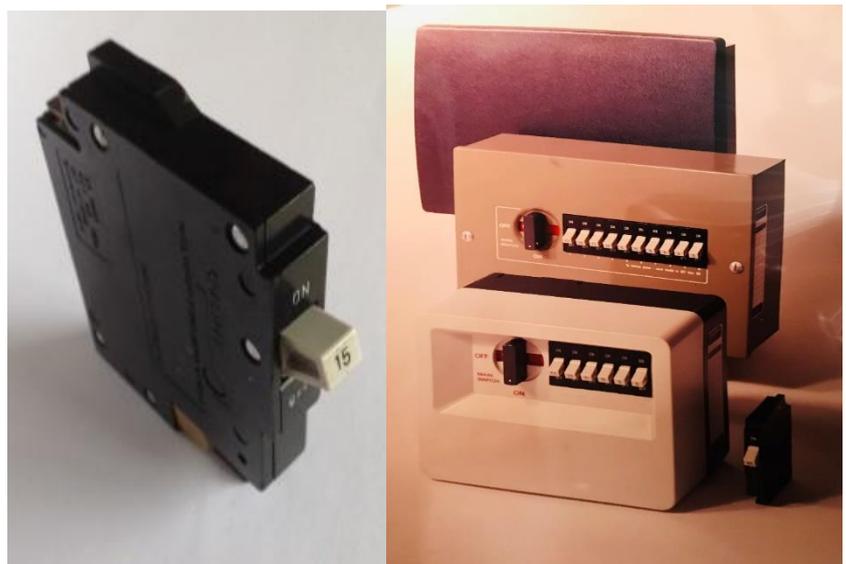
Work on the MB45 continued, and by the mid 1970's development and tooling for the range was complete.

The small single pole circuit breaker was 0.5 inch wide, with ratings of 5 to 45 Amps and with a short circuit duty capability of just 1500/2000 Amps. A 6 way moulded consumer unit

and larger metal versions were available.

The company was now keen to start to recoup its expenditure on the project, it also urgently needed a product with which to compete in the domestic consumer unit market.

Pressure was therefore building to launch the MB45, and so plans for a major national launch were prepared.



MB45

Promotional literature was designed, this included a board game with counters and dice entitled "The Power Game", this was modelled on the popular TV series of the time and was designed to create an element of fun during the launch.

Stocks of the product were manufactured and a series of presentations around the UK were planned.

Within the company however engineers and the marketing team had serious doubts as to the viability of the MB45.

During the fifteen years since the original design brief had been prepared, market requirements had changed significantly. Higher performance current limiting circuit breakers with short circuit duty capability up to 6000 Amps were now being introduced in modern attractive consumer units which had the flexibility to also accept high sensitivity residual current earth leakage circuit breakers and other devices.

In all of these respects MB45 could not compete, and a decision was taken at board level to terminate the project.

All work on the launch was immediately cancelled, and all stocks of the product were scrapped.

At this time Stan Clives left the company.

The ill-fated MB45 project had come to an end. On reflection it was perhaps a tall order to try to achieve the levels of performance and quality at the price required.

Following the demise of the MB45 in the late 1970s, the company needed to urgently restructure its miniature circuit breaker product offering. It did not have a product with which to compete in the domestic consumer unit market, and the C50 range was twenty years into its product life cycle and starting to lose business to competitors.

Moving rapidly, Crabtree reached agreement with Busch-Jaeger of Germany to acquire the design and manufacturing rights for a small high performance current limiting miniature circuit breaker with ratings up to 50 Amps and a short circuit duty capability of 6000 Amps.

With slight design adaptations to make it suitable for the UK market, and with a range of modern attractive consumer units of Crabtree design, the new circuit breaker went into production.

It was launched as the Starbreaker range in 1979, not a moment too soon, as that same year, one of the company's major competitors, MK Electric, launched its first range of current limiting miniature circuit breaker consumer units.

With Starbreaker firmly established, the Crabtree company turned its attention to a replacement for the ageing C50 range.

Based on current limiting design, and with investment from Hanson, owners of the company since 1982, a new miniature circuit breaker was developed.

The new circuit breaker had ratings up to 63 Amps with a 16000 Amp short circuit duty capability, it was available in single and multi-pole forms with an extensive range of distribution boards.

The new range was launched as the Polestar, with a major presentation at the London Planetarium in 1986, followed by a series of launches throughout the UK.

Following the successful introduction of both the Starbreaker and Polestar ranges, by the end of the 1980s the Crabtree company had re-established its position as a leading UK manufacturer of miniature circuit breakers.
