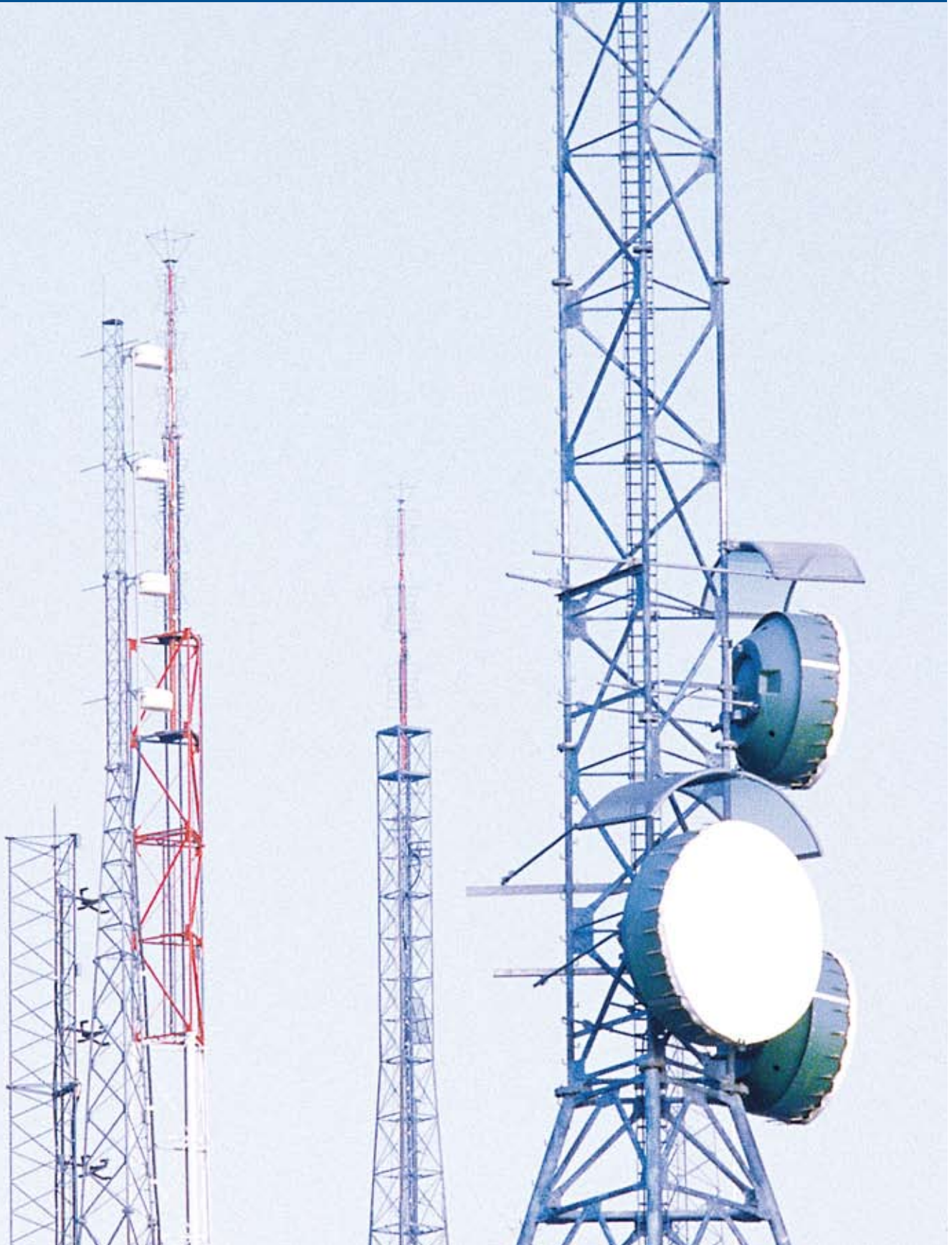


# Complex Radio Product Production

Improving production yield  
through fault analysis

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## Our client was a small company which designed and manufactured professional radio transmission products for markets such as telecommunications and utilities companies.

A contract manufacturer, which built and tested products prior to shipment, consistently failed to meet shipment targets resulting in an inability to satisfy customer demand. Customers were also reporting faults and returning the product. Neither our client nor the manufacturer had sufficient technical resource to address the key issues of production yield and throughput – and as a result first time yield was only 20 per cent.

To identify the real problem we undertook a structured, diagnostic assessment of the production process. We fielded a consultancy team of radio engineers with experience of complex radio system production, who worked both on-site with the client and at our laboratories in Cambridge. Having established the technical viability of the product and its market potential, we then undertook a series of focused tasks designed to identify the causes – and thereby minimise the risks – of faults at all points in the production process.

Analysis began with the diagnosis of faults on returned products, and also on boards which technicians had been unable to de-bug. As a result of our work, our client introduced a range of specific initiatives designed to address core problems. These included:

- an off-line diagnosis station to allow fault investigation without interrupting production
- a new test strategy designed to capture faults as early in the test-cycle as possible
- a fault-logging system designed to provide statistical evidence of fault occurrence and type
- focused training to enable technicians to efficiently diagnose faults
- technical advice on the re-spin of a radio frequency board incorporating changes designed to improve production yield

Our initial task involved a six-month analysis phase. We then drew together the contract manufacturer and our client's programme managers to change production assembly methods and processes, which led to a reduction in the

number of faults. Although most changes were incremental, the net effect was a dramatic overall improvement, realised primarily from better manufacturing processes, targeted inspection of hand assembled components, and improved test accuracy. First time yield was typically increased from 20 per cent to 80 per cent, with just as dramatic an improvement in delivery times.

One reason for the success of the project was the combination of technical and manufacturing expertise we could bring to the problem. This resulted in an accurate analysis of fundamental system flaws, and the definition of practical, realistic solutions that could be implemented quickly and easily. Our knowledge of complex radio product production was vital, as was our ability to work in partnership both with the client and its manufacturer in order to provide a solution which worked for all parties.

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