R&D CARBON

INNOVATION IS OUR STRENGTH...

R&D CARBON: A SUCCESS STORY SINCE 1986

by Werner K. Fischer, Dr. Ulrich Mannweiler and Jean-Claude Fischer

After 20 years of successful development work in the field of carbon materials at Swiss Aluminium Ltd. (Alusuisse), Werner K. Fischer started his own business in 1986. He took over carbon materials development projects from Alusuisse, which had decided to abandon this sector. He had a clear vision of what the industry needed: an ever better understanding of how anode quality depends on raw material properties and on process parameters.

He built a technology centre in Sierre, Switzerland, where employees of Alusuisse's former carbon research group found a new workplace. Together with Dr. Ulrich Mannweiler, also a former ALUSUISSE man who joined RDC in 1988, he set up a new strategy which is still valid today:

R&D Carbon (RDC) shall become the world-leading supplier of know-how in the field of carbon technology. A multi-disciplinary and laterally-thinking team shall serve the aluminium, petroleum coke, pitch and electrode industries worldwide. With its extensive experience, and through intensive research in carbon technology, RDC will improve anode quality, so reducing metal production costs and lowering capital investment for production plants.

RDC established six distinct areas of activity, each having its clear role: i.e.

- Research & Development
- Carbon Test Equipment
- Technical Services
- Baking Furnace Production Control System
- Technology Development
- Training and Workshops

What has been achieved in these 25 years?

Research & Development

- Together with universities in New Zealand, Switzerland and China, seven thesis were completed, relating to raw material and to process improvement. The subjects include anode properties and anode behavior, heat treatment of anodes during baking, as well as an in-depth understanding of Chinese raw materials.

- More than 100 fundamental technical papers were published in renowned journals.
Several comprehensive handbooks were published, e.g. Anodes for the Aluminium Industry, Fundamentals in Anode Baking, and the like.

Twenty international awards were received from TMS, Light Metals, CHALCO, DKG and other societies.

More than 50 patents in process and product development were granted.

**Laboratory Test Equipment**

65% of the worldwide anode production is currently evaluated using equipment sold by RDC. In more than 100 laboratories on all continents RDC has installed and maintains some 1200 instruments for testing properties of raw material and anodes. The corresponding test methods have all been approved by ISO, DIN or ASTM.

**Technical Services**

Technical services provided to many customers around the globe are one of RDC’s core businesses. The services range from technical support for the production of all carbon materials, to plant audits and process optimizations. In its technology centre, RDC conducts pilot or bench scale trials, as well as any kind of laboratory tests and analysis, according to standardized ISO methods. Technical assistance to companies active in worldwide trading is an important way to improve anode & cathode qualities supplied to the world market. An example of its success is the "Swiss Made in China Quality Model", operated together with RDC’s American partner AMINCO Resources LLC. During 10 years of cooperation, this model has assured the quality of more than one million tons of anodes produced, tested, and exported to customers worldwide.

**Baking Furnace Production Control System**

Thanks to thirty year's experience in developing, manufacturing and operating Baking Furnace Process Control Systems, RDC systems now equip 40 bake furnaces (100 fires) worldwide. The control system is an integral part of the overall production control.

**Technology Development**

During three decades RDC has collected extensive results from research and development work, as well as through quality improvement programs. Through its know-how and practical experience in operating and optimizing anode plants for customers all over the world, RDC has proposed and implemented many modern, efficient concepts and designs for paste plants and anode baking furnaces. Low investment and operating cost, as well as efficient reduction of emissions, make these concepts attractive for new green-field plants as well as for refurbishing existing anode plants. Presently an anode plant of one million tpy is planned in a port of Northern Germany.

**Training and Workshops**

RDC organizes conferences in the field of carbon products for the aluminium industry, as well as training courses on anode raw materials, anode production and anode behaviour in smelters. Training courses are held in Switzerland or abroad (Middle East, China, North America, Brazil) on-site, tailored to customers needs.

**R&D Carbon Technology Centre**

Its headquarters in Sierre, Switzerland employs twenty engineers and skilled technical staff. They serve more than 150 customers worldwide, and maintain an excellent network with technology and trading companies. Cooperation with well-known business development companies leads to new business around the globe. During the last ten years China was and is in the focus of RDC.
The Future

A new generation of young engineers are taking over important tasks in the business. The succession is guaranteed as Jean-Claude Fischer, the owner's son, has already taken over an active role in R&D Carbon's business. The future for RDC is bright.