



Success Story Cooling Solutions

## Complex motor development: Air circulation drive for optimum cooking performance

Conjure up a juicy roast with little effort – an easy task for the latest high performance oven. Elektrosil has developed a customised air circulation system which is in a class of its own for a premium supplier in the domestic appliance sector to ensure that hot air flows around the oven in an optimal manner.

### ► The challenge

Powerful circulation for a cooking innovation: a leading kitchen appliance provider required a 24 V DC reversing motor with a power rating under 12 watts which was quiet and temperature-resistant for a new range of ovens to ensure a uniform distribution of air and heat. Elektrosil undertook the development – with strict cost specifications.

### ► The solution

The team designed an energy-efficient, brushless 3-phase DC motor. By cyclically reversing the rotation of the drive, the team of experts achieved the uniform airflow which is necessary for perfect cooking results.

To cool the motor at high temperatures, the engineers developed an internal cooling concept to the customer's specifications. They matched the fan function to the operation of the oven during the 500-degree pyrolysis self-cleaning phase by means of software.

To reduce the noise in operation to less than 30 dBA, the team developed a commutation method which reduced the cogging torque of the brushless DC motor.

### ► Advantages and benefits

With the circulation motor, Elektrosil provided the client with the innovative, high performance and optimised drive solution for his premium oven befitting his position as a top innovator in the market. With fully automatic cooking programmes and uniform airflow, the units provide end-users with benefits and convenience to an extent which sets new standards in the field of cooker technology.

### Project information

- Client: Leading domestic appliance supplier
- Sector: Domestic appliances
- Project size: Start of development November 2010. Serial production in preparation.

### Elektrosil's services

- Application advice, development supervision, design-in support
- Quality Assurance
- Engineering and production
- Completely customised applications



“Hot air in the oven was not the only thing:  
the flow was also important.  
That’s when I called Elektrosil.”

Comprehensive expertise in drive and fan development combined with a feel for the best technical solution – with these qualities, Elektrosil has developed the core of an innovative oven which makes precise cooking child’s play.

Are you looking for the right product for your application and need a development partner? Then give us a call.

### + Elektrosil’s strengths

Elektrosil applied its comprehensive interdisciplinary expertise in the fields of electrical engineering, software development, printed circuit board design and flow technology for this project. Process engineers ensured that the specifications were adhered to within the target costs. For the mechanical design, the team enlisted the support of a competent Asiatic manufacturer.



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