

SA1 STATOR

A SkyAzur project



A double advantage for industry : an improvement in machine energy efficiency and a reduction in manufacturing costs.



The SA1 STATOR, a radical innovation combined with a more efficient production process.

WHY GET A NEW STATOR ?

The slot fill factor and the overall developed wire length of rotating electric machines have a direct impact on their output.

IMPROVING THIS COEFFICIENT COULD BE A MAJOR ISSUE, LINKED TO :

The development of electric and hybrid vehicles

The projected increase of the power-to-weight ratio of electric machines

The increasing rarity of the available raw materials and especially of copper

1 INCREASE

Copper fill factor raised to 80%



2 OPTIMISATION

Overall dimensions of the overhang and the developed length



3 FLEXIBILITY

Use of materials with isometric performance/dimensions



Today, the maximum fill factor that can be achieved with coils and their insertion processes is approximately 50%. SkyAzur aims at pushing forth this current limit to a rate of 80%. For this, SkyAzur is developing new and more efficient technical solutions, one of which is the SA1 STATOR.

THE INITIAL TESTING RESULT OF SA1 STATOR

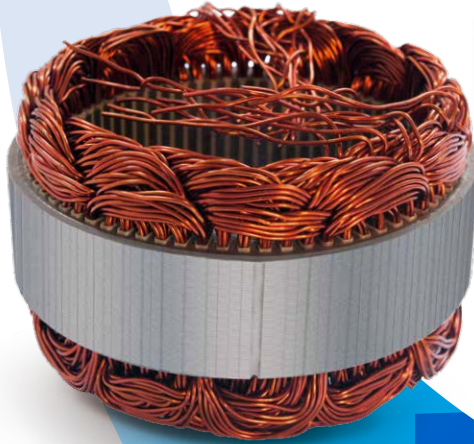
confirm that increasing the copper fill factor enables to achieves the following objectives :

- Increase output ;
- Reduce the quantity of active material used ;
- Reduce heating in the machine ;
- Authorise the use of less crucial conductive materials in place of copper (a crucial material that will soon be depleted) ;
- Increase power density.

Patent reference :

SA1 STATOR : « ROTATING ELECTRIC MACHINE STATOR FITTED WITH AN OPTIMISED COIL »,
patent application submitted in France on 29 April 2014 under the no. 1453874, and then at the international level on 28 April 2015 under the no. WO 2015/166188

ELECTRIC STATOR EVOLUTION



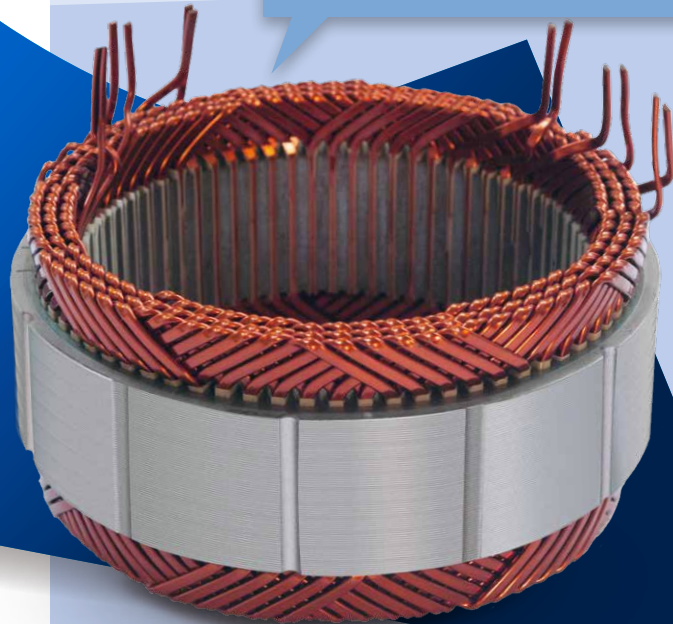
Standard STATOR

38% fill factor

SA1 STATOR

80% fill factor

15% reduction in the developed length



THE MAJOR ADVANTAGE OF THE DESIGN

The major advantage of the concept lies in the manufacturing of the coil with a rectangular cross-section with a wire and a pack with a tooth root, with no need for a coiled pack and welded conductors.

OUR COMPANY PLUS

The SkyAzur team promote studies and create prototyping solutions and/or limited series production in a complex domain : the coil.

IN BRIEF

SkyAzur is an industrial engineering and design firm (automobiles, energy, textile, etc.) highly focused on research and development.

Our expertise relates especially to the development of new coil designs for rotating electric machines and associated processes.