



**S.C.A.M.E. Srl**  
**SERVICE**

Costruzione Riparazione  
Motori Elettrici Industriali

## S.C.A.M.E.

### COMPANY PROFILE

Engineering, manufacturing, overhaul and service of industrial electrical machines, entirely made in Italy in-house.



Figure 1: Overhaul and stator rewinding of an MCF motor, rated torque 555kNm.



Figure 2: Design and manufacture of a frame size 500 DC motor for an extruder, torque 10,500 Nm.

## S.C.A.M.E. at a Glance

A family-owned company with more than sixty years of industrial experience, backed by technical expertise dating back to the 1930s. Today, S.C.A.M.E. is further expanding its product range to include smaller frame sizes below 315.

**1962**

Year of establishment

**H160–H900**

Standard manufacturing range

**102**

Motors and generators  
manufactured over the past 20  
years

**>90%**

New machine for rolling mill  
applications

SCAME designs, manufactures, overhauls and provides service for AC and DC electric motors and generators used in demanding and complex industrial applications. In-house engineering capabilities are combined with extensive field experience in the repair, revamping and servicing of machines from a wide range of manufacturers.

- Electromagnetic and mechanical design of new machines.
- In-house manufacture of special AC/DC motors and compatible replacement machines for existing installations.
- Overhaul, rewinding, diagnostics and restoration of motors and generators.
- In-house testing, performance testing and heat run tests.
- On-site assistance, installation, commissioning and technical support.

## OUR ORIGINS

### A family industrial legacy

SCAME's history is rooted in four generations of the Sabbadin family and in the electromechanical district of Monfalcone.

|                  |                                                                                                                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1930s</b>     | Stefano Sabbadin develops his expertise in electric motors at Ansaldo's Monfalcone plant.                                                                                              |
| <b>1955</b>      | Luciano Sabbadin begins his entrepreneurial journey alongside his professional career.                                                                                                 |
| <b>1962</b>      | SCAME S.r.l. is founded in Pieris, just a few kilometres from Monfalcone.                                                                                                              |
| <b>1980–2005</b> | Exclusive manufacture of parts, components and complete AC/DC motors for A.S.I. – Ansaldo Sistemi Industriali and I.E.G. – Industrie Elettromeccaniche Giuliane.                       |
| <b>From 2000</b> | Development of in-house engineering and manufacturing capabilities for low- and medium-voltage AC and DC electrical machines.                                                          |
| <b>Today</b>     | The company is now led by the founder's children and grandchildren, ensuring direct continuity between its long-standing experience, engineering expertise and manufacturing know-how. |



Figure 3: Stefano Sabbadin at the Ansaldo plant, 1935.

## KNOW-HOW

### From repair to new machine design

**Understanding how a machine fails is one of the most practical ways to design a better one.**

SCAME began as a company specialising in the overhaul and repair of electric motors and gradually developed a comprehensive on-site service offering at customers' plants. Collaboration with established designers and manufacturers enabled this maintenance experience to evolve into independent engineering expertise.

- Analysis of real operating issues observed on machines in service.
- Reverse engineering of obsolete, discontinued or unsupported motors.
- Design of fully compatible replacement machines matching existing dimensions, shafts, foundations and interfaces.
- Optimisation of performance, cooling, torque, efficiency and reliability compared with the machine being replaced.



*Figure 4: Overhaul and rewinding of a Westinghouse tandem motor of a rolling mill stand, 35.5 kNm.*



Figure 5: Frame 560 DC motor for rolling mill stand, 15,000 Nm.



Figure 6: Overhaul and rewinding of a Marelli generator for a hydroelectric power plant, 22,000 Nm.

## ENGINEERING

### In-house engineering

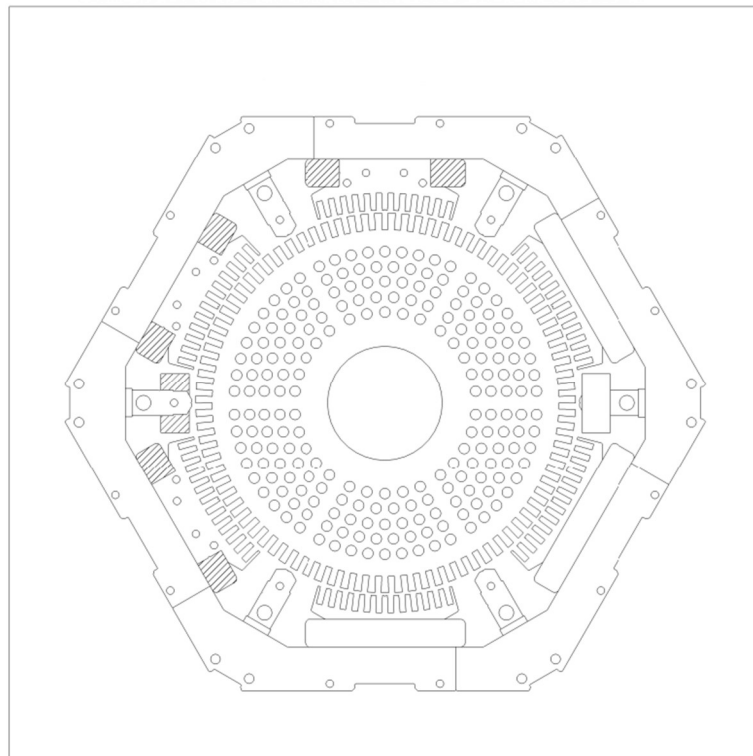
**Every new machine is engineered around its specific application, rather than adapted from a standard frame size catalogue.**

Our engineering approach combines internally developed tools, traditional electromagnetic calculations and advanced numerical simulations. Simulation results, including those obtained with ANSYS, are complemented by manual verification of the main electromagnetic parameters, both during the preliminary design phase and as a final cross-check.

- Electromagnetic design of stator and rotor.
- Calculation of torque, power, magnetic flux, current density, losses and efficiency.
- Thermal analysis and selection of the most suitable cooling system.
- Mechanical design and manufacture of frames, shafts, end shields and supports.
- State-of-the-art laser cutting and assembly of laminated cores.
- Analysis of inverter/VFD compatibility and required field-weakening range.
- Custom design to customer specifications and verification of installation constraints.



*Figure 7: Laser Genius with compressed-air cutting technology.*



*Figura 8: DC motor cross-section*

## MANUFACTURING

### New motors and generators

Standard ranges up to 900 mm frame size, in both AC and DC, for standard and special industrial applications.

**78**

DC machines

**24**

AC machines

**102**

Machine manufactured over the  
past 20 years

**H900**

Maximum frame size

- DC motors for rolling mills, coilers, stands, rolls, process lines and industrial drives.
- Low- and medium-voltage three-phase induction motors.
- Generators and special machines built to customer specifications.
- Horizontal and vertical configurations in a range of mounting arrangements.
- Laminated or welded-fabricated frames, alongside conventional frame solutions.
- Rolling-element bearings or sleeve bearings, depending on machine size and application.

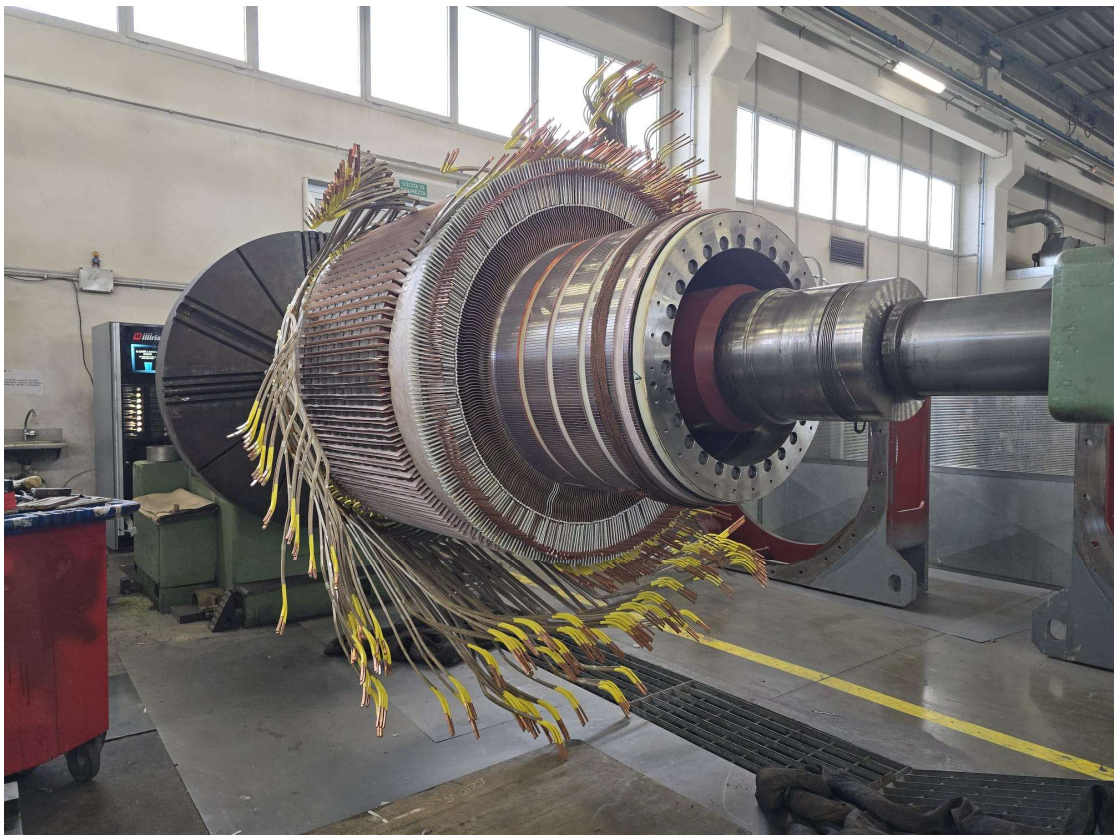
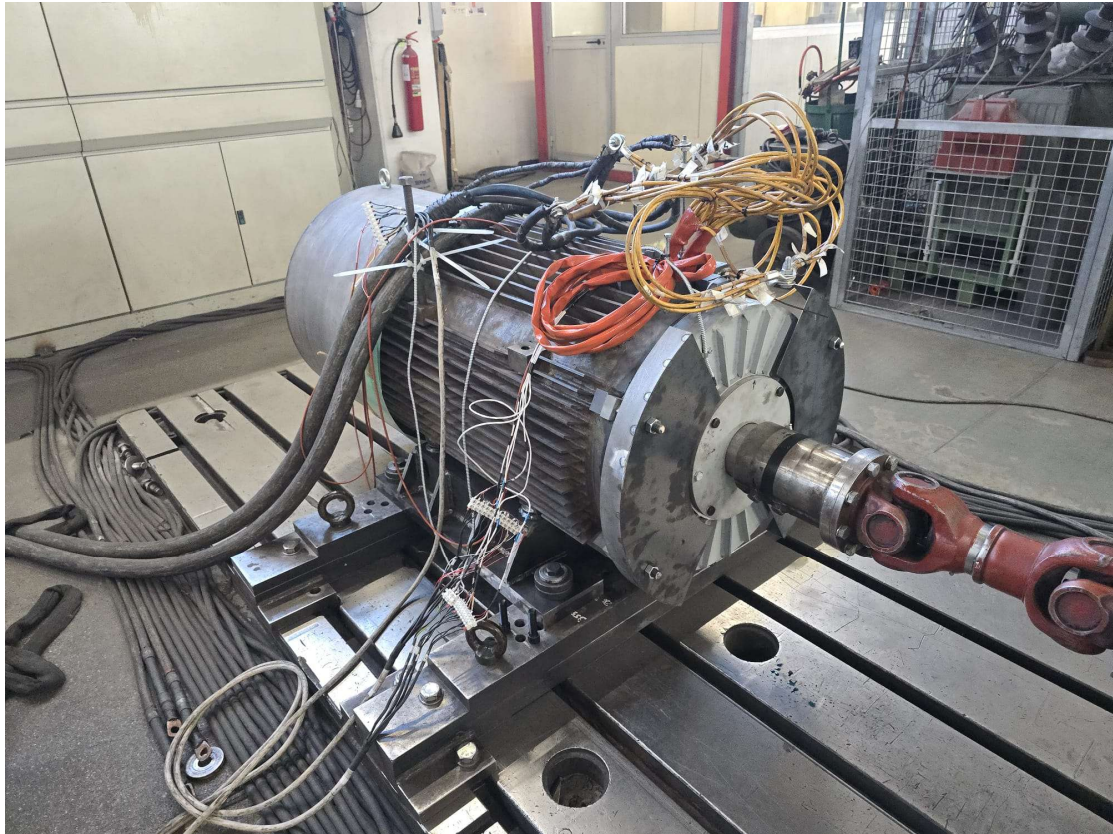


Figure 10: Overhaul and rotor rewinding of a frame 900 DC motor for a rolling mill stand, 60 kNm.



Figures 11 - 12: Design and manufacture of an AC motor for a rolling mill stand, 5,000 Nm.



Figures 13 - 14: Special frame 355 AC motor for a cut-off saw, with welded steel frame and high-efficiency rectangular-wire winding (>95% actual efficiency).

## SOLUTIONS

### Design configurations

Each machine is configured according to the operating environment, duty cycle and required performance.

#### COOLING

- IC411 – self-ventilated
- IC416 – forced-ventilated
- IC86W – air-to-water cooled
- Other configurations available on request

#### CONSTRUCTION

- Laminated frame
- Welded steel frame
- Special executions
- Custom mechanical configurations

#### BEARINGS & SUPPORTS

- Rolling-element bearings
- Sleeve bearings
- Insulated bearings or supports
- Solutions for high radial and axial loads



Figure 15: Frame 315 DC motor for rolling mill stand and roughing applications, 3,900 Nm.

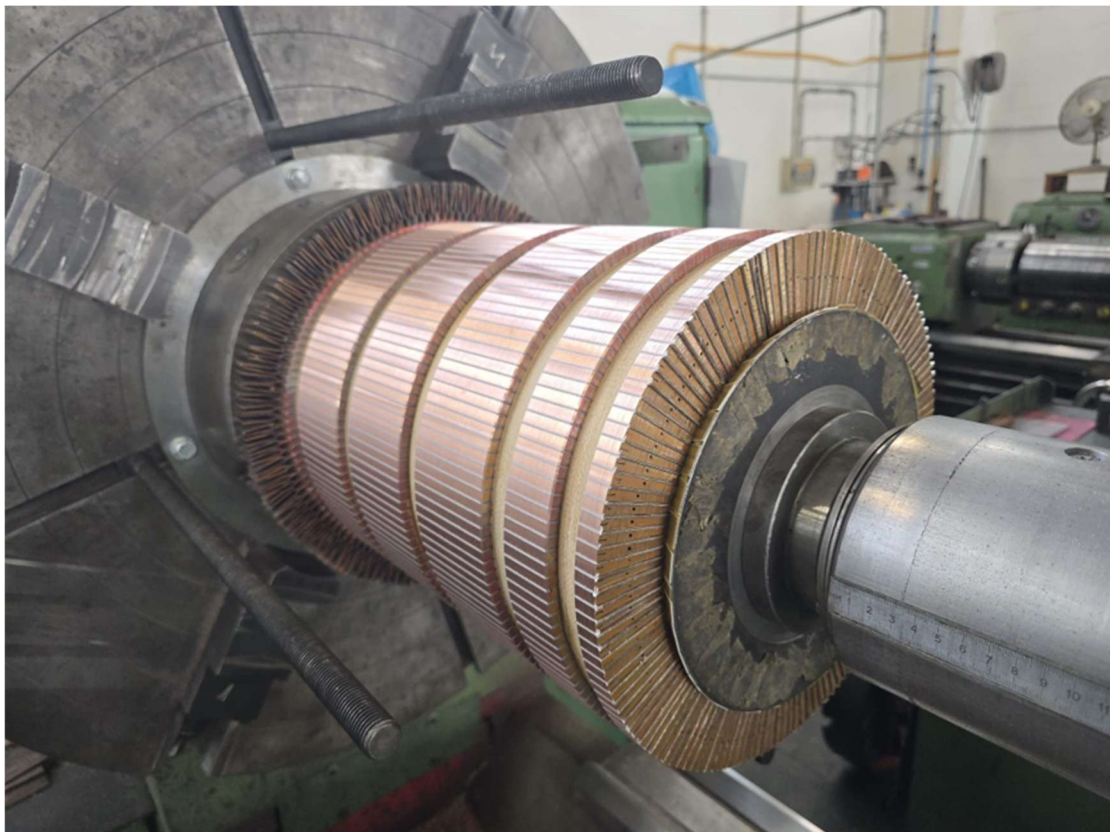
## MANUFACTURING QUALITY

### Materials and components

**Material selection is an integral part of the design process, particularly for high power-density and heavy-duty applications.**

Our machines are manufactured exclusively using CE-certified raw materials and components sourced from leading European manufacturers. Particular attention is given to magnetic circuits, insulation systems, windings, commutators and bearing components.

- High-performance M235 electrical steel, cut in-house using state-of-the-art laser technology.
- High-performance electrical steel also used for stator and rotor magnetic circuits in DC machines.
- Reduced hysteresis and eddy-current losses, improving efficiency and reducing temperature rise.
- Rectangular-wire windings for heavy-duty applications and inverter/VFD-fed motors.
- Premium components selected and sized for long-term reliability and ease of maintenance.



*Figures 16: Manufacture of a segment-type commutator for a DC motor.*



*Figure 17: Manufacture of DC motor end closures.*



*Figure 18: DC motor end closures undergoing stress-relief heat treatment.*



*Figure 19: DC rotor core stacking.*



*Figure 20: Reverse engineering and manufacture of a replacement main pole for an ASEA split-stator DC motor.*

## VALIDATION

### Testing and validation

Our test facility is equipped with two dedicated test benches for electrical machines: one analogue and one fitted with a digital system for data acquisition, monitoring and recording.

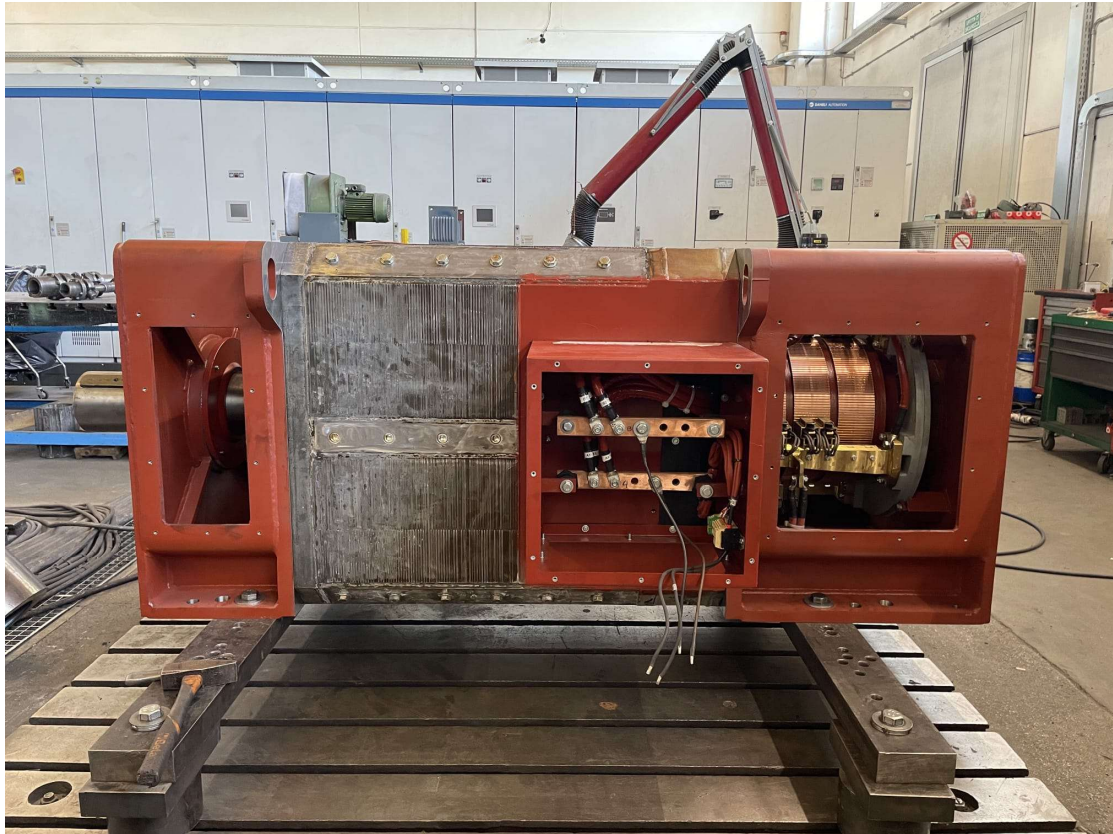
Every new machine is tested in-house before delivery.

- No load tests.
- Load and heat run tests on every motor manufactured.
- Performance and efficiency measurements.
- Full-load heat run to thermal stabilisation.
- Insulation tests and routine electrical checks.
- Vibration and mechanical parameter checks, as required.
- Customer-witnessed testing upon request.

Testing is not regarded merely as a formal end-of-production check, but as the final stage of the engineering process, confirming on the actual machine the performance parameters defined during the design phase.

*Minimum warranty on new machines: 24 months.*





*Figures 21 - 22: Manufacture and testing of a frame 355 DC motor for a rolling mill stand, 6,000 Nm.*



*Figure 23: Load characteristic test of an in-house manufactured DC motor.*



*Figure 24: Testing and validation services for third-party manufacturers.*

## SERVICES

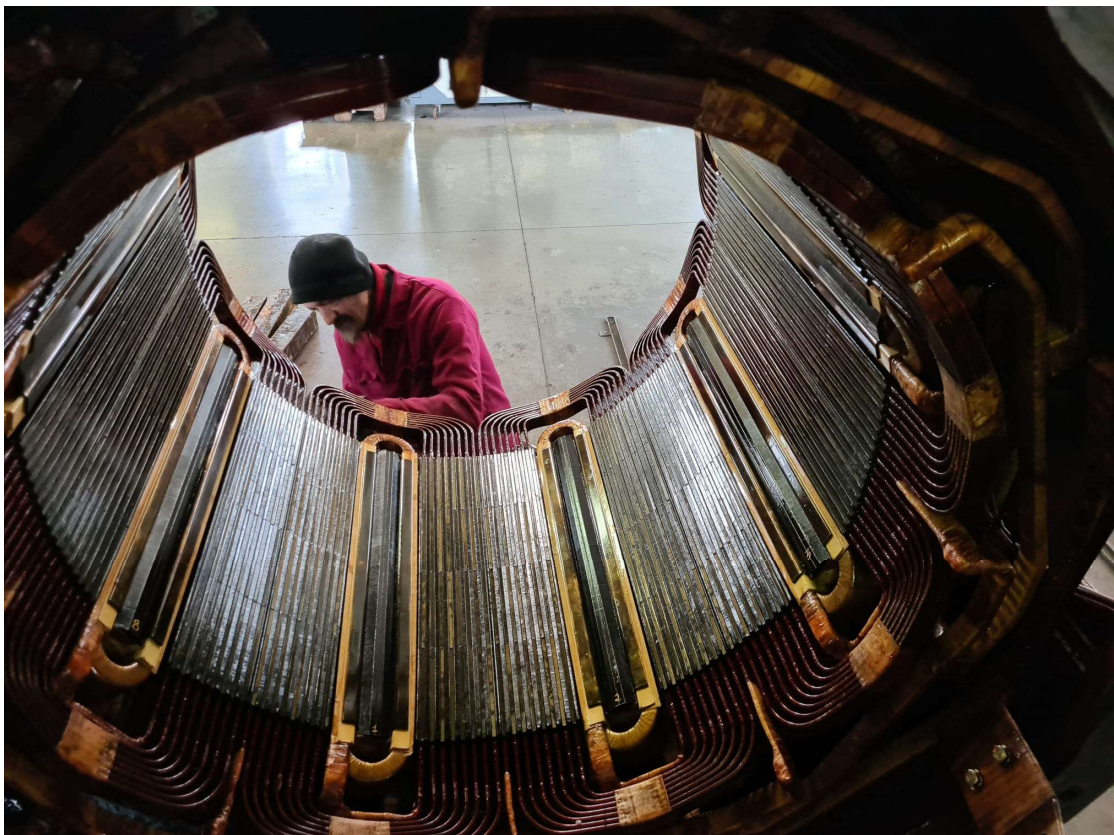
### Repair, rewinding & revamping

**The same engineering expertise used to design new machines is applied to the diagnosis, repair and recovery of existing motors.**

- Complete overhaul of low- and medium-voltage AC and DC motors up to 150 tonnes.
- Rewinding of stators, rotors, armatures and excitation circuits.
- Repair or replacement of commutators, brush holders and commutation systems.
- Inspection and restoration of bearing seats, shafts, end shields and mechanical components.
- Loop/ring testing and magnetic core inspections.
- Washing, drying, impregnation and insulation treatment cycles.
- Vibration and electrical diagnostics.
- Revamping of obsolete machines and improvement of weaknesses identified in service.



*Figure 25: Overhaul of a Ge.Co. Westinghouse motor during a summer shutdown.*



*Figure 26: Complete rewinding of a frame 710 DC motor.*

## ON-SITE SUPPORT

### Field Service

**From supply through commissioning, our support continues directly at the customer's plant.**

- Removal, overhaul, reinstallation and commissioning of new machines.
- Installation support when assembly is carried out by the customer.
- On-site maintenance and diagnostics at industrial facilities.
- Plant surveys and data collection for retrofits or replacement machines.
- Support during planned shutdowns and extraordinary maintenance.
- 24/7/365 technical support and emergency response.
- Our field service completes the machine lifecycle: engineering, manufacturing, installation, diagnostics and maintenance are managed through a single technical partner.



*Figures 27 - 28: On-site service, overhaul and installation.*



*Figure 29: Overhaul of motors and gearboxes, followed by reinstallation at a hydroelectric power plant.*

## CUSTOM ENGINEERING

### Special Projects & Retrofits

**When a standard replacement is not available, the machine is engineered around the existing installation.**

SCAME can develop new motors starting from customer-supplied stators, rotors or spare components, including parts originally manufactured by third parties. The objective is to ensure full mechanical and functional compatibility while retaining the existing interfaces.

- Dimensional survey of the existing machine.
- Reconstruction of missing dimensions and interfaces.
- Completely new electromagnetic design when required.
- Compatibility with existing foundations, couplings, gearboxes, cooling systems and sensors.
- Possibility to increase torque, power, efficiency or speed range without modifying the existing installation.
- We design and manufacture high-efficiency low- and medium-voltage induction motors, achieving efficiencies above 97%, custom-engineered for demanding, high-duty industrial applications.

## CASE HISTORY 01

# One Motor Instead of Two

### Rationalising spare parts without compromising performance.

For an installation using two different motor models with different frame sizes, operating in master-slave configuration across multiple positions, SCAME developed a single machine capable of replacing both.

- Higher performance than the more powerful of the two original motors.
- Overall dimensions kept within those of the more compact machine.
- Elimination of the smaller version, which was prone to failures and issues related to overheating.
- Reduced spare-parts inventory and greater installation flexibility.



## CASE HISTORY 02

# More Torque, Wider Operating Range

### Rolling mill stand motors redesigned around actual process requirements.

For a rolling mill application, the new machines were designed to deliver the same rated power as the original motors at a lower base speed, resulting in higher continuous torque.

- Same rated power at a lower base speed.
- Higher continuous torque than the machine being replaced.
- Constant power maintained throughout the field-weakening range.
- Extended speed range, up to 300 rpm beyond the original machine.
- Stable commutation under 175% overload at both base and maximum speed, in accordance with the adopted design specification.



## CASE HISTORY 03

# One Spare Motor for Coiler and Uncoiler

**A single machine designed to cover two operating functions.**

For an uncoiler, SCAME developed a machine fully compatible with the original mechanical dimensions, but with enhanced performance allowing it to be used as a coiler as well.

- Full compatibility with the existing installation.
- Operation both as a motor and as a generator.
- Performance sized for the more demanding duty.
- A single spare machine suitable for both reels.
- Reduced spare-parts inventory and simplified maintenance.



## SECTORS

### Industries & Applications

Our core specialisation is the metals industry, with expertise that extends across a wide range of industrial applications.

|                           |                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------|
| Steel & Rolling Mills     | Rolling stands, coilers, rolls, shears, process lines and auxiliary equipment.             |
| Aluminium                 | Rolling, coiling and material handling applications.                                       |
| Cableway Systems          | Motors and service for lift systems and applications requiring high levels of reliability. |
| Process Industry          | Special drives, replacement machines, revamping and technical support.                     |
| OEMs & System Integrators | Custom-engineered machines and solutions built to technical specifications.                |

*More than 90% of the new machines manufactured by SCAME are designed for iron, steel and aluminium rolling applications.*

## REFERENCES

### Experience with leading industrial groups

Over the years, SCAME has designed and manufactured machines for major industrial companies across Italy and Europe.

**AFV Beltrame – LME – Stahl Gerlafingen AG**

**Ferriere Nord – Siderpotenza**

**Acciaierie Bertoli Safau**

**Danieli Automation – Danieli & C. Officine Meccaniche**

**Dalmine - Tenaris**

**Carcano Antonio**

**Bipan – Gruppo Frati Luigi**

**Botto Giuseppe e Figli**

## OUR VALUE

### Why S.C.A.M.E.

A single technical partner combining engineering, manufacturing and hands-on maintenance expertise.

**01**

Custom engineering

**02**

In-house manufacturing

**03**

complete testing and performance  
verification

**04**

Field service

- Direct experience with electrical machines from different manufacturers and generators.
- In-house electromagnetic and mechanical engineering.
- Ability to turn a plant issue or a new customer requirement into the ideal machine solution.
- Flexibility in special designs and retrofit projects.
- Performance verification through in-house testing before delivery.
- Continuous technical support after installation.

*"Custom engineering. Standard price."*

## WHAT WE DO

### Integrated Capabilities

Three areas working together: new machines, repair & revamping, and field service.

#### NEW MACHINES

- DC motors
- AC motors
- Generators
- Special machines
- Custom replacement machines

#### REPAIR & REVAMPING

- Complete overhauls
- Rewinding
- Diagnostics
- Magnetic core rebuilding
- Mechanical repairs

#### FIELD SERVICE

- Plant surveys
- Installation
- Commissioning
- On-site support
- Scheduled maintenance

## CONTACT

### Let's discuss your next project

Whether you need a new machine, a critical replacement, a revamping project or technical support, the best starting point is understanding your actual requirements.

*"Don't just ask us for a replacement. Tell us what you want your motor to achieve — we'll engineer the solution."*

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