



# Engineering Company of Electric Motors



FEDERAZIONE NAZIONALE  
IMPRESE ELETTROTECNICHE  
ED ELETTRONICHE



CONFINDUSTRIA

150° ANNIVERSARIO UNITA' D'ITALIA



ISO 9001:2000  
Cert. N° 2595



ENERGY CLUSTER MEMBER

Industrial cluster for power generation, transmission and distribution



# COLOMBO Group of Companies

## FELM



Engineering Company of  
Electric Motors

## NUOVA CEAM



under license of



**NTB** Motortechnik  
Technology in Motion

**NTB** SEVER  
Technology in Motion

**NTB** Laurence Scott  
Technology in Motion

## M&G International

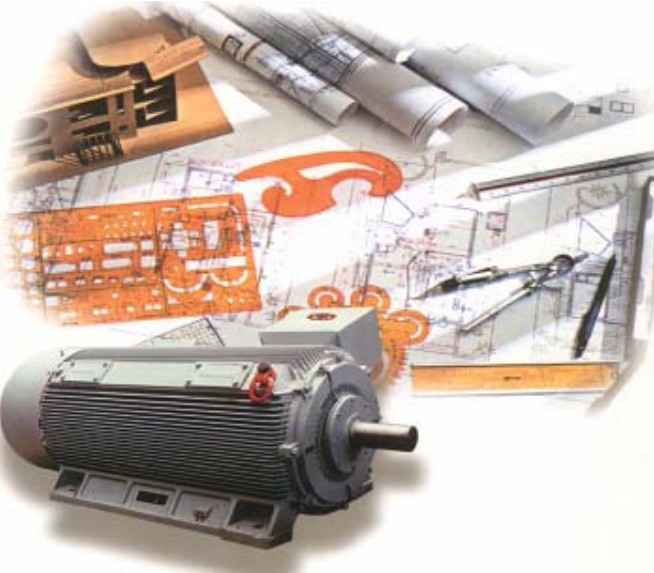


SERVICE World wide  
Our first priority:  
AVAILABLE

Service  
DIVISION



**Rockwell  
Automation**



*Our flexibility to meet any challenge*



**Certified company UNI EN ISO 9001:2000  
CISQ / ICIM CERT. IT – 27970**



ISO 9001:2000  
Cert. N°: 2508



Production of standard and special electric motors on customer's specifications.

Trade of electric motors and related electric or electronic accessories.

**EN ISO 14001 : 2004**

**Certificate n° 4382**

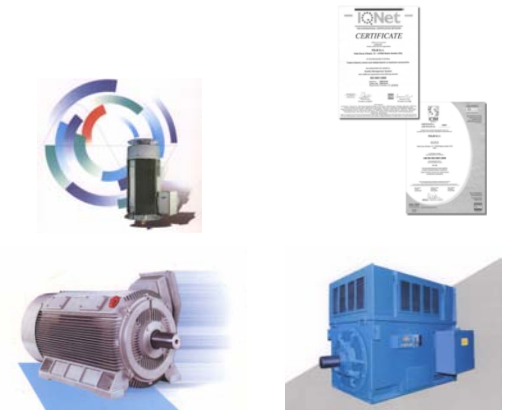


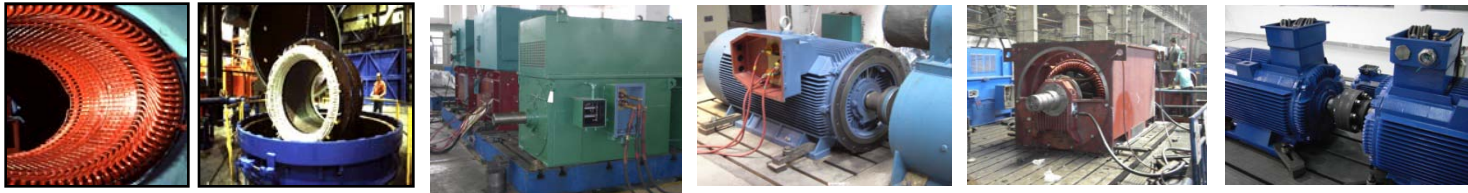
## About us:

**FELM** has been operating in the electric motor sector since 1960 and has a well-consolidated background in the market of electrical machines.

Thanks to the considerable experience of its staff, it can guarantee a technical back-up capable of responding to the most sophisticated technical requirements, both installations and maintenance, ensuring an International Service to its customers.

Thanks to the large stock of electric motors (our offices and warehouse cover over 10,000 m<sup>2</sup>) from 0.12 to 800 kW in the various polarities and a widespread distribution service, **FELM** guarantees good product availability and rapid delivery in Italy and across Europe.





## About us:

Special attention is dedicated to the production process in the factory, from the careful selection of the materials, copper, insulation, the execution of the windings, to the control of the impregnation and polymerization processes (VPI Vacuum Pressure Impregnation).

The high levels of quality offered by FELM are proven by the **ISO 9001** and **ISO 14001 for the Environmental Management System**

**Production** of standard electric motors and special motors made to customer specifications.

**Commercialization** of electric motors and relative electrical or electronic accessories.

Bearings are specially selected to guarantee best performance and product quality and a working life above the average.





## About us:

Range of electric motors:

Low Voltage standards IC 411, IC 611

New European classes of motor performance- **IE codes**

In according to IEC 60034-30 that defines the new classes

**IE1** = standard performance (comparable to **EFF2**)

**IE2** = high performance (comparable to **EFF1**)

**IE3** = Premium Efficiency

Medium voltage 3, 6, 11 kV. - IC 411, IC 611, IC 86W

Suitable for inverter use (400 V, 690 V, 3 and 6 KV)

Slip Ring motors with wound rotor

Flame proof: Ex d, e, n

EISA NEMA Premium

GOST, Marine Classifying authority

(RINA, Lloyd Register, DNV, ABS, BV, etc)



*Our flexibility to meet any challenge*



## Our Numbers:

Limited company operating in the A.C. Motors market since 1960 and is exclusive for Italy of different International suppliers.

FELM warehouses extend for more than **10.000 sqm.**

Products value in the stock: more than **4 Million Euro.**

Yearly turnover: **19.5 Million Euro**

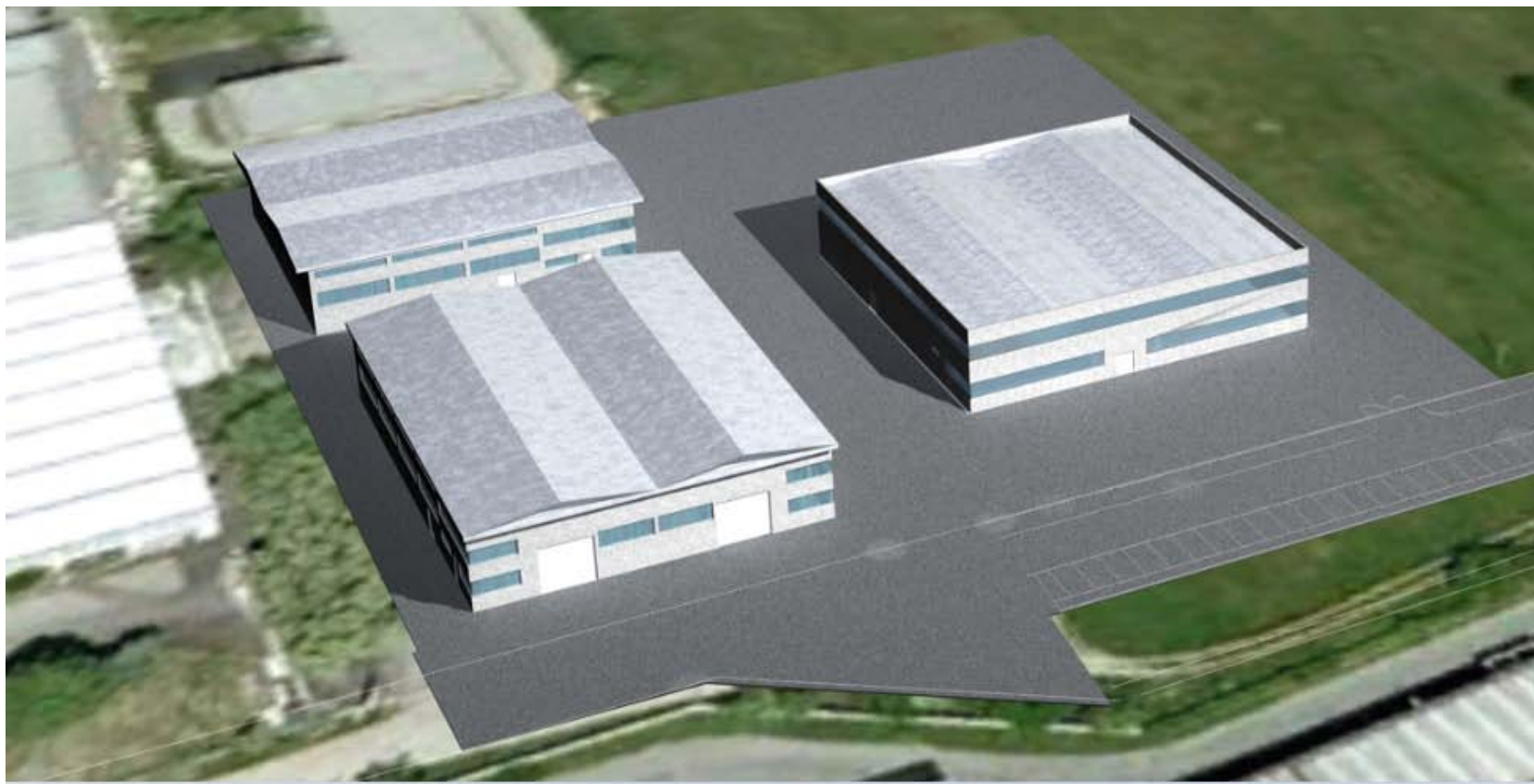


Technical staff and the own Maintenance Repair workshop answer to the most sophisticated customers requirement.



**The New Location in Inveruno**

**Ready on 2015**





**The New Location in Inveruno**

**Ready on 2011**

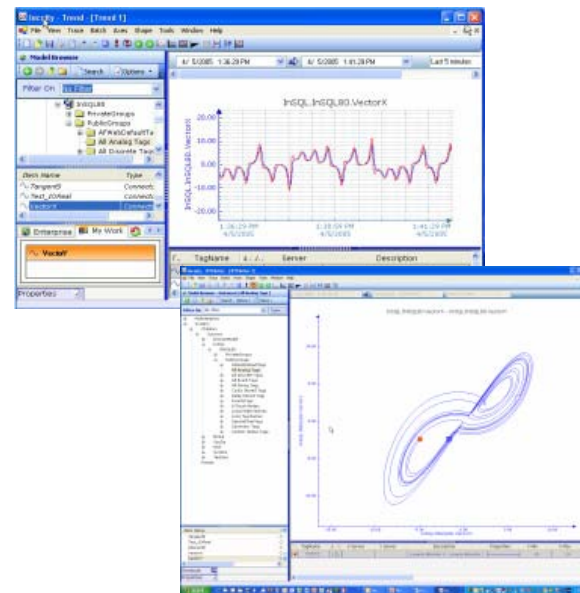


## Technical office and Service

Composed by persons with various experiences matured in manufacturing prestigious companies of electric motors: Leroy Somer, Marelli, Alsthom, ABB.

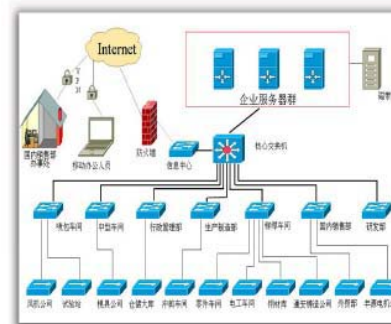
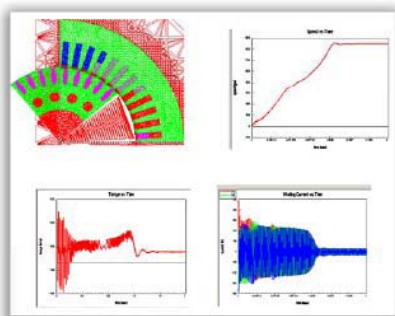
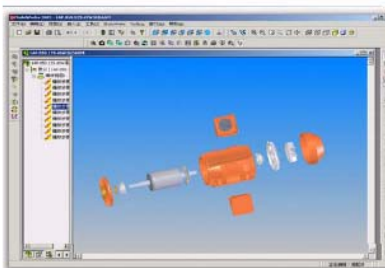
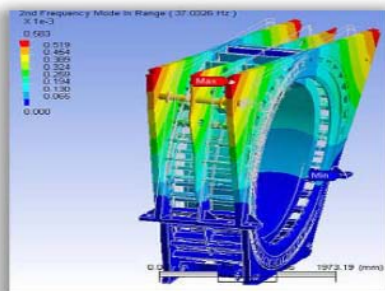
Software Programs:

PDF, AutoCAD, DWG and motors program calculation.

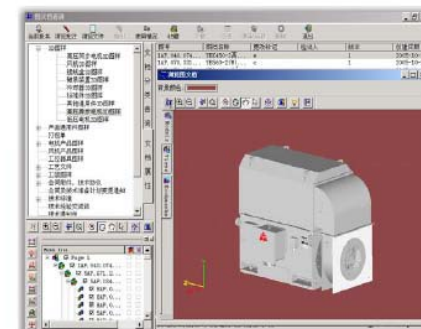


### FEA/CAD/CAE

- 3-D CAD (Solidworks)
- Electromagnetic design (Ansoft)
- Mechanical Design (Ansys)



Network Topogram



PDM

## ***Workshop & Partners***

- **WORKSHOP**

Equipped for modifications on the Electric motors until 500kw:  
force-ventilation, application PT100, Heaters elements on the windings,  
isolated Bearing for inverter use and small mechanical modifications

- **TESA** - specialize in the Lathe-turner's work and Press for steel sheets work processing.
- **Falcetta** - specialize on Repair and Motors Winding for D.C. and Sleeve Ring Motors
- **Electromotor** - specialize on Repair and L.V. and H.V. Motors Windings from 300 to 3 MW.
- **Re** - specialize on Repair and Low Voltage Motors Winding from 1 to 300 kW.
- **Casiraghi** - specialize on Repair and Low Voltage Motors Winding up to 110 kW, and brake motors up to 55 kW.
- **Sicei** - specialize on workmanship of special shafts.



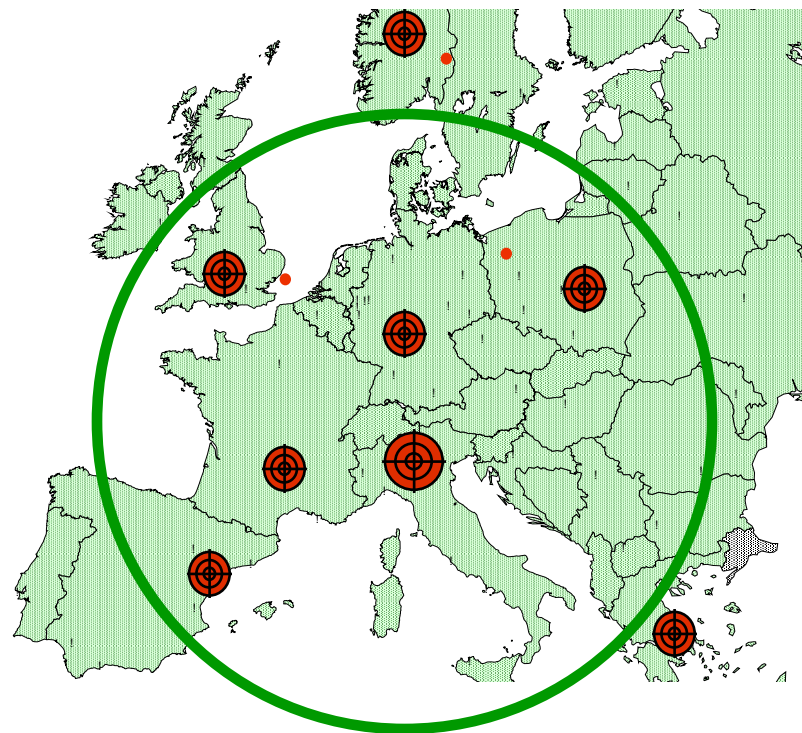
## ***Workshop & Partners***

- **Sicei** - specialize on workmanship of special shafts.
- **Rondena** - Heavy mechanical workmanship of shafts and sheet
- **TGE** - Laboratory of the Vibrations analysis.
- **T.O.S.I.** - Laboratory of the Materials and Welding analysis
- **Helmke Molhouse** - Low and High Voltage Tests room up to 4,50 MW.
- **Emas Italy** - Low and High Voltage Test room up to 1 MW



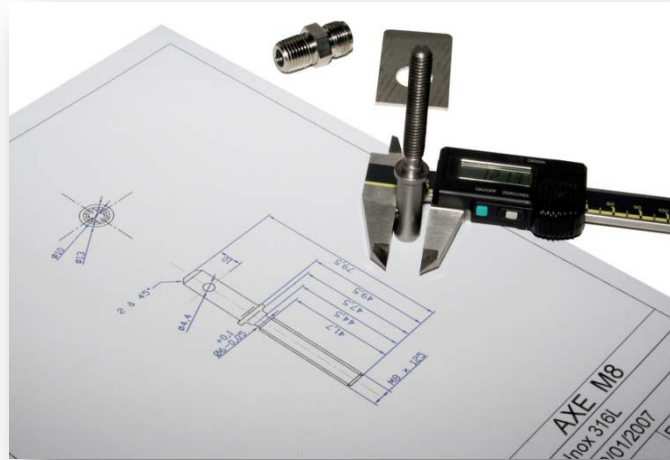
## Workshop & Partners

- **Zust Ambrosetti** - International Carrier and Forwarding Agent.  
Two shipping per day from Central stock to Customers and Distributor:  
Europe, North Africa and Gulf Area



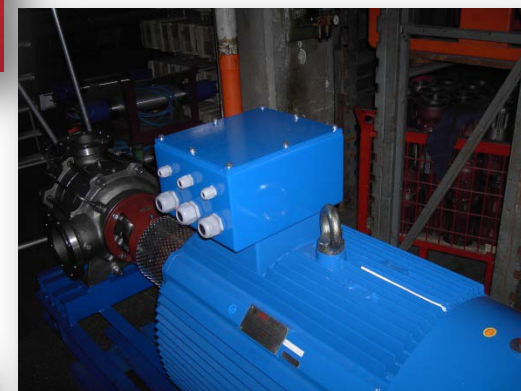
# Workshop

Equipped for modifications on the Electric motors until 1000kw:  
force-ventilation, application PT100 and Heaters elements on the windings,  
isolated bearing for inverter use and mechanical modifications.  
Specialize on workmanship of special shafts and heavy mechanical workmanship  
of shafts and sheet.



# Motor customization

- Shape arrangement
- Forced ventilation
- Special cable connection
- Special customer request
- Special painting
- Bearings arrangement
- Accessories
- Selection of material for heavy environmental



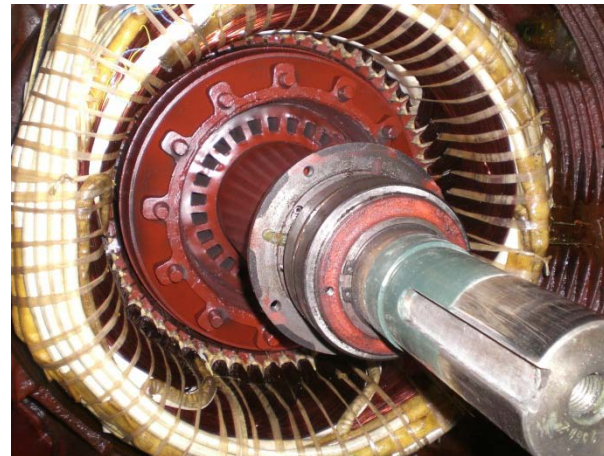
## Workshop repair



Specialize on Repair and Motors Winding for D.C. and Sleeve Ring Motors.  
Specialize on Repair H.V. Motors Windings from 300 to 3 MW.



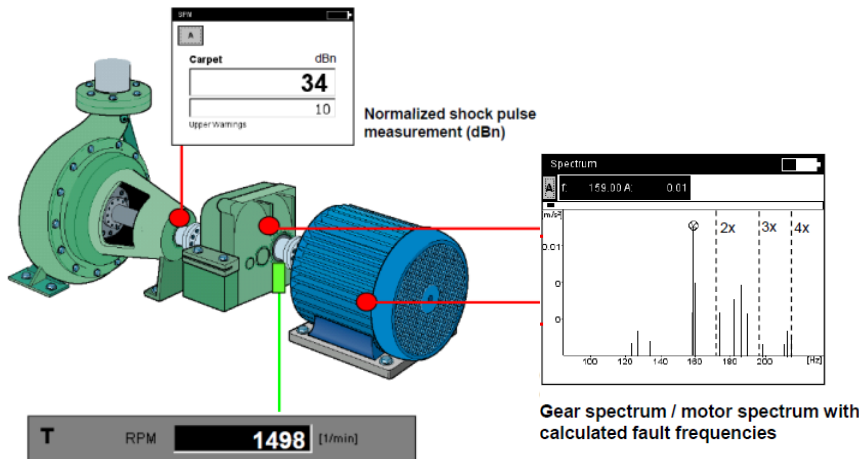
Specialize on Repair and Low Voltage Motors Winding up to 1000 kW, and brake motors up to 55 kW.





# Analysis on site

- Preliminary analysis.
- Predictive monitoring.
- Vibration frequency analysis.
- Sound pressure measurement.
- Sound pressure octave band analysis.
- Check of alignment motor - driven machine.
- Wave shape analysis.
- Check of dielectric strength.
- Insulation resistance measurement.
- Polarization index measurement.
- Diagnostic functionally to confirm unbalance.
- Balancing - built-in ISO balancing grades.
- Balancing in Velocity, Acceleration or Displacement.
- Different types of balancing corrections: Degrees, fixed mass or location, tape measure, "negative mass"



*Our flexibility to meet any challenge*



**Our Products:**

**Frames 140~449T**

EISA NEMA Premium Efficient



**High Efficiency Motors IE2 & IE3**



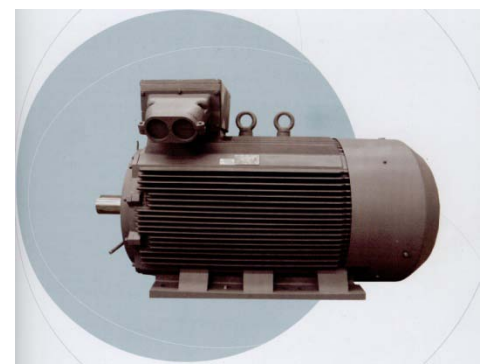
**Low Voltage Motors range**

Aluminium housing: 0,12 to 30 kW

Cast iron housing: 0,12 to 1500 kW.

Internal cooling IC 01 – IP23

External cooling TEFC – IC 411/IC416 – IP55



*Our flexibility to meet any challenge*



## **High Voltage Motors**

### **Squirrel-cage Motors**

Cast iron and Steel Frames

Out-put range 200 – 7.000 kW.

Frames size 315 to 1000

### **Slip-ring Motors**

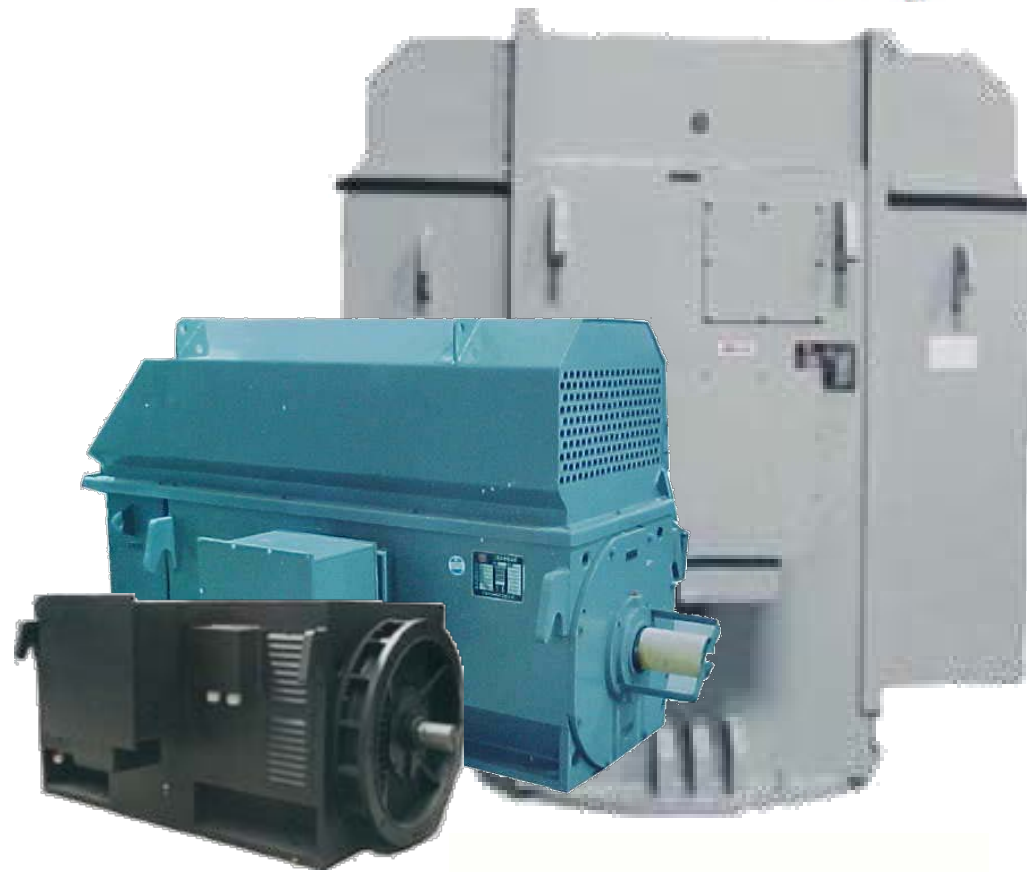
out-put range 200 – 2.500 kW.

### **Cooling methods**

Internal cooling IC 01 – IP23

External cooling TEFC – IC 411 – IP55

Cooling IC 611 – Totally Enclosed Air to Air Cooled



## Three-Phase Explosion Proof LV & HV Motors Flameproof Enclosure

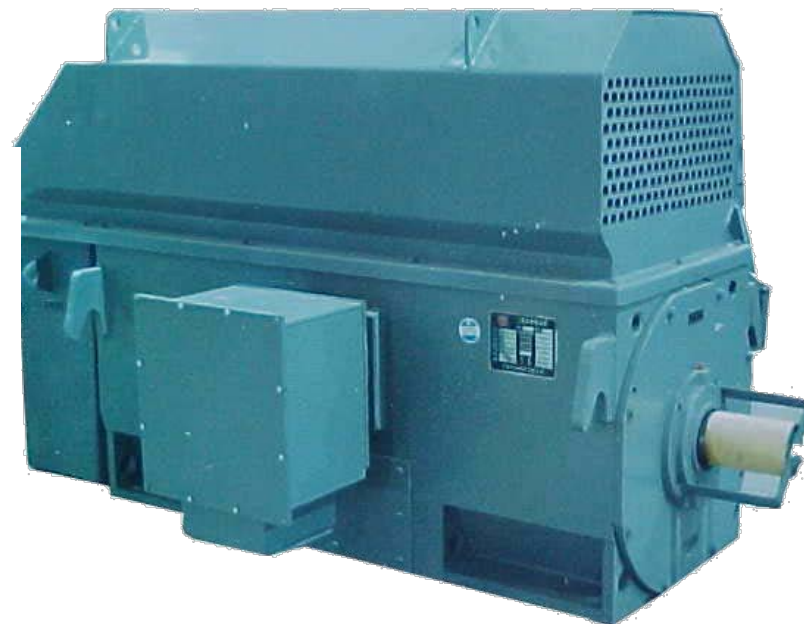
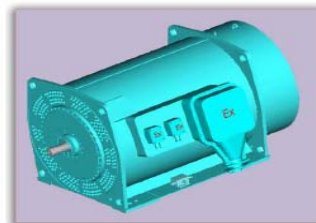
### Explosion protection certifications :

- PTB for Europe
- GOST for Russia
- NEPSI for China
- Test Safe for Australia
- IECEx Scheme for the world

**Out-put range : 0,18 – 3.000kW**



**Ex d motors**



***Our flexibility to meet any challenge***



## **A.C. Motors inverter duty**

Low Voltage 230 – 400 – 690 - 50Hz

High Voltage 3.3 – 6.0 – 6.6

Protection IP20

Range : 0,37 – 3000 kw



## Sales network – organisation Italy

### **Headquarter in Inveruno (Mi)**

- . Warehouse // stock
- . Assembly plant
- . Technical office
- . Service Centre

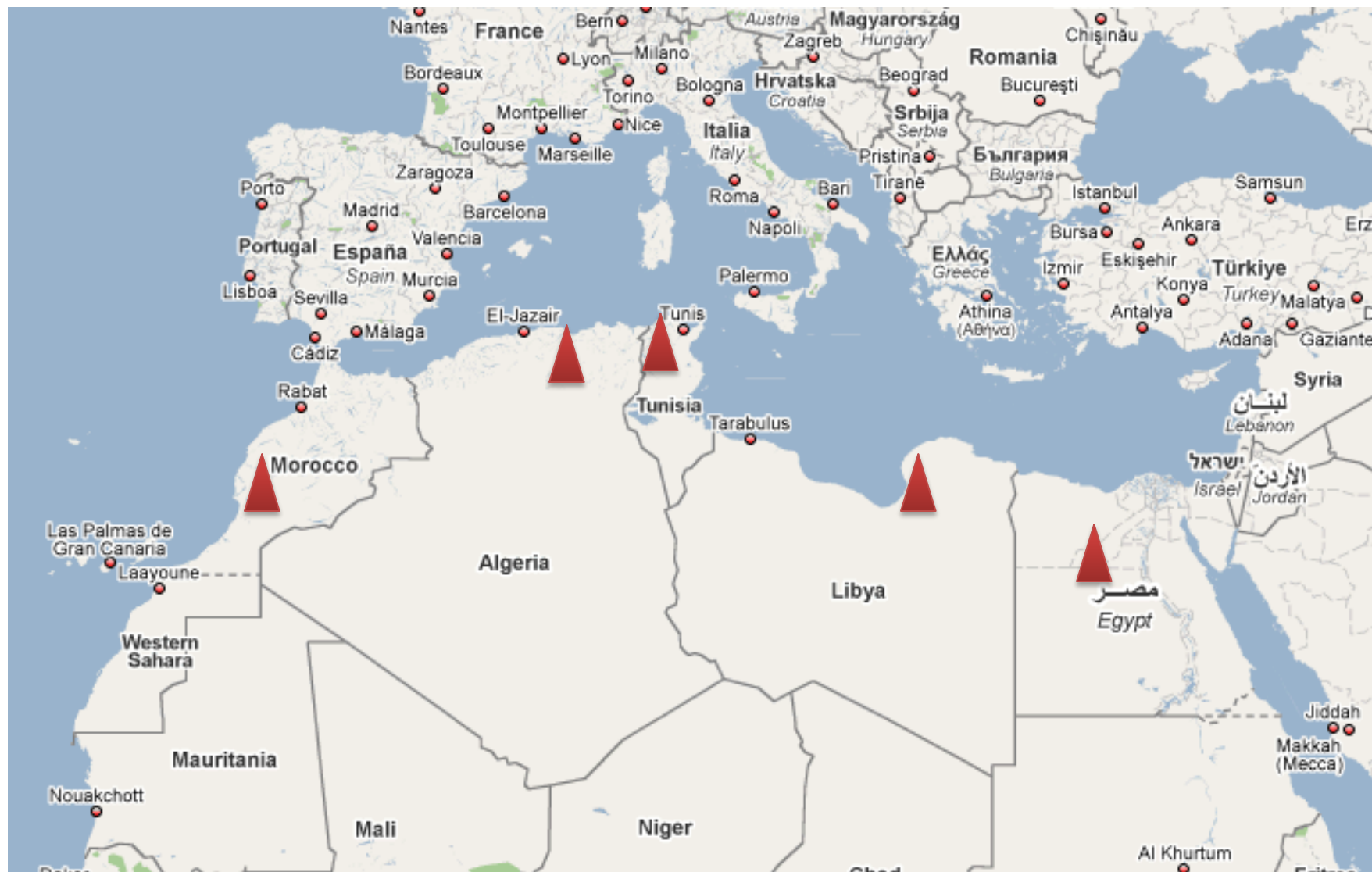
### **10 Sales point**



# Sales network – organisation Europe

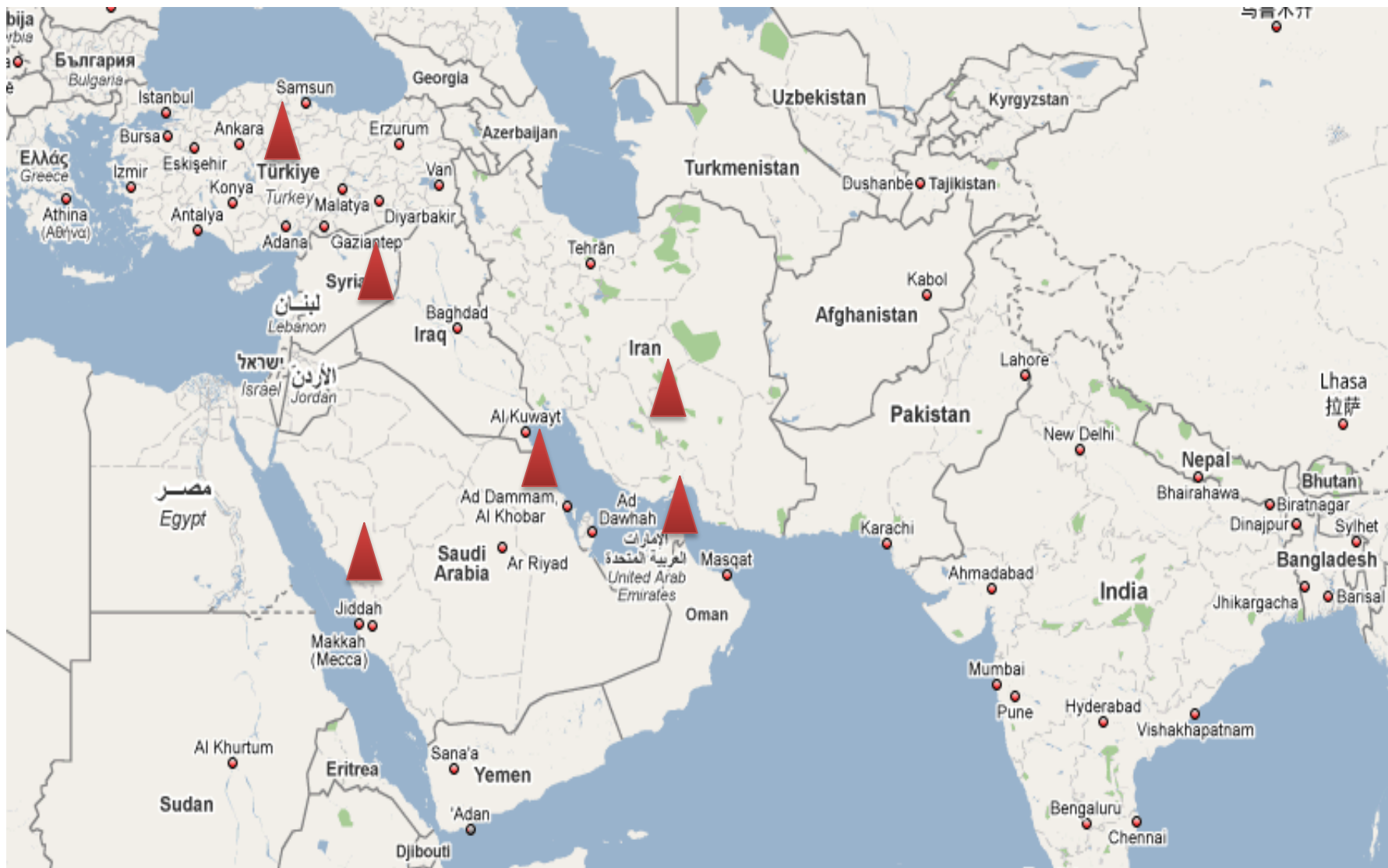


## Sales network – organisation North Africa and Gulf Area





## Sales network – organisation Middle East & Gulf Area



# Word Wide Service Network



## CONTACTS

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e-mail: [home@felm.it](mailto:home@felm.it)

P.iva 01717180127 Registro imprese di VARESE  
REA Varese 202374 Cap. Sociale € 46.800,00 i.v.

[Click here to visualize how to reach us.](#)

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### AVAILABLE 24/24 EVERY DAY

### We operate on all the continents:

thanks to our partner we can guaranteeing a complete international service.

In the name of Felm Srl, we would like to take this opportunity to thank all the Members for the starting and improving cooperation



**Good luck for your activities**