MANUFACTURER

FAGOR

FAGOR AUTOMATION

CNC 8060 FL

CNC 8060 FL

the power of simplicity

The modern solution for standard lathe and milling applications with the powerful CNC 8060/65 family.

With the CNC 8060/65 family a new horizon is open to the new state of the art, High Speed Machining algorithms that combine both performance and accuracy.

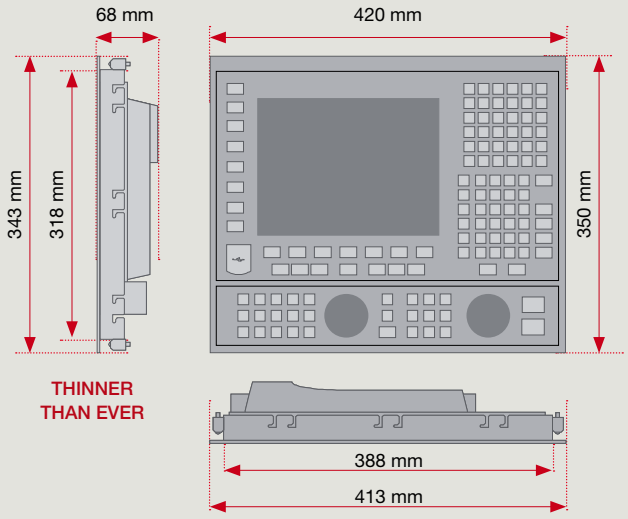
The two ways of programming adapt to user's machining needs with the ISO-G code language (optimizing machining time) and the ICON conversational language for small production runs (reducing programming time)

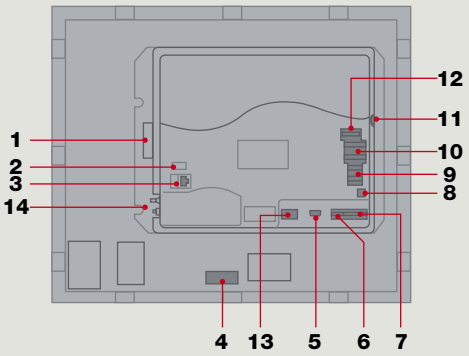
The CNC 8060 FL model is the logical evolution from CNC 8055 family to the top CNC 8060/65 family, and now it is easier than ever thanks to its size compatible format and working philosophy.

Technical characteristics

Axes + spindles	Up to 5
Interpolated axes	4
Communication Bus	Sercos, CAN I/Os
Interfaces	Ethernet, RS232/485, USB
Monitor	10" Jog Integrated
Optimized cabinet	Up to 60% reduction with MAB
CNC 8055 size compatible	

Best performance in the same place





Connectors specifically designed for a quick and easy installation without the need for tools, making it easier to set up the equipment.

The CNC 8060 offers as standard:

1	Compact flash expansion.
2	Front and rear USB ports.
3	Ethernet.
4	Handwheel input (only CN60-10K model).
5	Local feedback input.
6	General purpose ±10 V analog output (16 bits).
7	Probe input.
8	Relay for the emergency chain.
9	Local digital outputs.
10	Local digital inputs.
11	Protection fuse.
12	24 V supply input.
13	CAN I/Os bus.
14	Sercos II bus.

Built for tough industrial environments

The keyboards and monitors for CNC 8060 are designed to guarantee maximum sealing protection in any industrial environment.

The rear mounting mechanism provides protection against dirt and liquids and complies with IP65 (NEMA 12) sealing standard.

The advance hardware design ensures long maintenance free life as the use of batteries and fans is eliminated.

This sleek design minimizes heat dissipation and hence can be housed inside smaller enclosures without requiring any cooling fans.

Optimizing machine effici

Setting up an advance CNC machine tool can be both challenging and very time consuming due to lack of right setup tools.

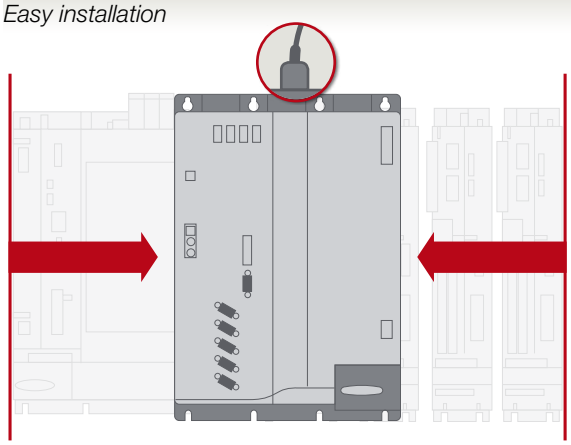
Fagor Automation offers a large library of setup tools including on board oscilloscope, Ball bar test, Bode Diagram and servo tuning software like Finetune etc.

faster and more economical setup mode

Installation

The CNC 8060 FL solution with the MAB servo drive system drastically reduces the number of components and cables for a quick and easy installation.

Easy installation



Fast and accurate commissioning

PLC Setup wizard

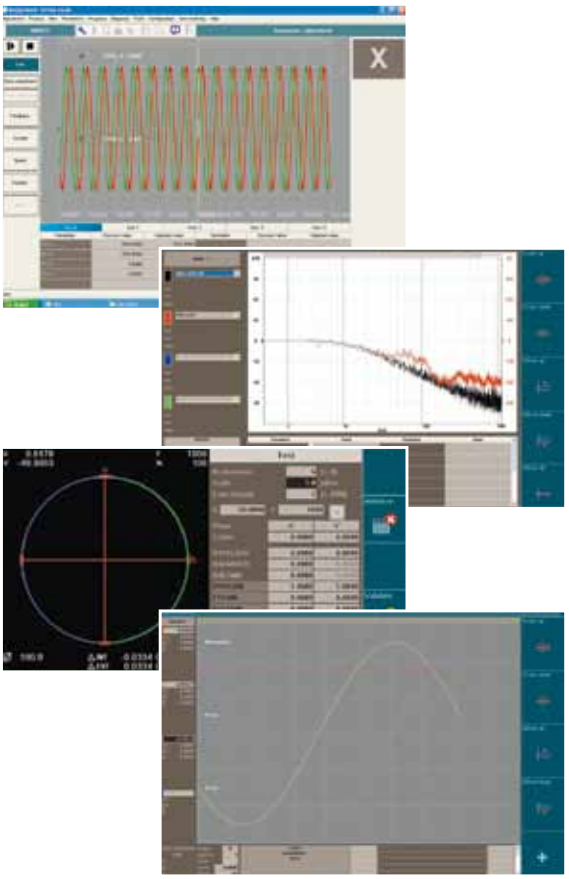
Fagor Automation offers a quick setup wizard for easier integration of its complete system hence substantially reducing the machine build-time. Based on the machine configuration the OEM is guided thru automatic selection of PLC program and some basic machine parameters allowing you to move the axes instantaneously.

Servos auto tuning

The FineTune program automatically optimizes the various servo control loops of the machine to obtain the highest performance as demanded by the machine manufacturers

Combining FineTune with Bode diagram, circularity test and the powerful oscilloscope, the commissioning process has never been so accurate and easy, without being an expert.

Fast and accurate commissioning



CNC 8060/65

A single family for all machines

The CNC 8060 and CNC 8065 are fully compatible in programs, commissioning process, PLC, and allow an easy process of commissioning in all the machines and CNCs.

ency

maintenance tools

Tele-diagnosis

Tele-diagnosis

The CNC 8060 offers tele-diagnosis software as standard allowing the OEM to connect to the machine user via internet to inspect, troubleshoot and repair the machine tool.

This feature allows the machine builder to provide quick technical assistance without having to send a technician to user's site hence eliminating unnecessary and expensive travel in many cases.

Incidence alert

Black box

The CNC 8060 "black box" registers and saves all machine movements, operations and commands.

The analysis of this data is a very useful tool in determining the cause of any machine incident.

Incidence alert

Machining of large complex parts or batch production takes a long time and doesn't require operator presence at all times. Under such circumstances an incidence may occurs which could prevent the machine to continue working, affecting productivity.

The "Process Informer" feature can send text messages (SMS) and emails informing the machine user on its status hence allowing him to take immediate corrective action.

the latest technology for your users

Fagor Automation CNCs offer truly intuitive operation, based on pop-up type browsing and an interface that the operator can easily adapt to his work environment. Designed with the environment in mind, their software includes online calculator and their operating manuals.

- Best performance with nanometric accuracy
- PC Simulator for programs and quotations
- Simulation channel
- Advanced tool management
- HMI user customization

Completely integrated solu

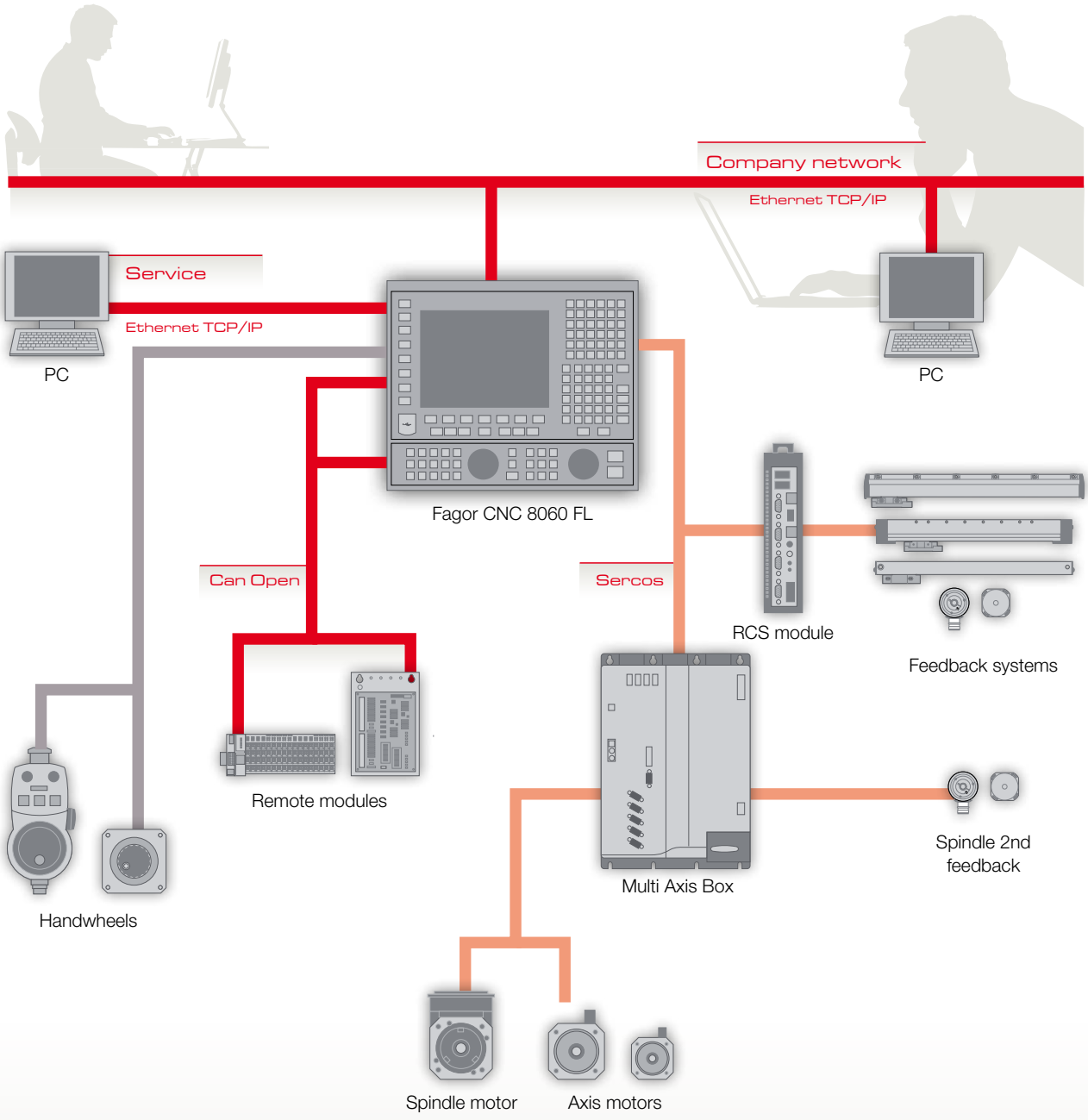
A unique Integrated platform for all your needs

Fagor Automation's unique integrated platform brings together every electronic element of your machine, the CNC , digital servo motors and drives, linear and angular feedback and ensures seamless integration, guaranteeing robust machine design and extreme performance to obtain maximum efficiency.

All elements working in perfect harmony and intelligently designed to exceed user's expectations.

Compact Multi Axis Box designed to optimize the cabinet layout and size.

CNC model with jog panel integrated to make it easier to install.



tion

CNC 8060 FL. Technical characteristics

Hardware

	Mill	Lathe
Monitor size (jog integrated)	10"	10"
Basic axis configuration	3	2
Maximum axis configuration	4	4
Maximum configuration of interpolated axes	4	4
Maximum configuration of spindles	1	2 (1)
Maximum configuration of spindles + axes	5	5
Maximum configuration of execution channels	1	1
Minimum user memory	500 Mb	500 Mb
Ethernet	○	○
USB connections	2	2
Block processing time	2 ms	2 ms
Maximum local digital I/O	16/8	16/8
Max. expansion remote digital I/O	1024/1024	1024/1024
Digital servo drives	MAB	MAB
Analog servo drives	△	△
Compact Flash expansion (2)	○	○

Generic features

Look-ahead blocks	100	100
Maximum number of tools	1000	1000
Languages supported	12 (3)	12 (3)
Serial line that may be configured as RS232, RS422 or RS485	△	△

Setup tools

Finetune software (Auto-adjustment)	○	○
Bode diagram	○	○
Oscilloscope	○	○
Ball bar test	○	○
Tele-diagnosis	○	○
Bidirectional leadscrew compensation	○	○
Cross compensation	○	○
Gantry axes	○	○
Tandem axes / spindles	△	△
C Axis	△	△
Combined feedback	○	○

Adaptation to the machine

	Mill	Lathe
Work in non-orthogonal planes	○	○
Customizable interface	○	○
OEM/user cycles	△	△
Infinite rotary axis	○	○
Independent channel axes	○	○
Axis parking	○	○
Polynomial interpolation	○	○
Number of probes (switching)	2	2
Hirth axes	○	○

PLC

Inputs/Outputs	1024/1024	1024/1024
Marks	8192	8192
Number of PLC messages	1024	1024
Number of PLC errors	1024	1024
Registers	1024	1024
Timers	512	512
Counters	256	256
Spindle control via PLC (positioning, oscillation)	○	○

Programming / Browsing

Pop-up browsing	○	○
Simultaneous execution and simulation	○	○
Program encryption	○	○
Interruption subroutines	○	○
Coordinate system rotation (pattern rotation)	○	○
Manual intervention during machining	○	○
Feedrate override	0...200%	0...200%
Maximum feedrate (mm/min)	500000	500000
Acceleration with jerk control	○	○
Maximum spindle speed	200000	200000
Spindle speed override	0...200%	0...200%
Spindle ranges (gears)	4	4
Automatic gear management	○	○
Spindle orientation	○	○
Maximum subroutine levels	20	20
Maximum interrupt routines	4	4

○ Standard

△ Optional

(1) Spindle + complete live tool.

(2) Use SLC grade industrial Compact Flash.
Fagor Automation shall not be held responsible for any problems caused by using other lower-quality Compact Flash.

(3) English, Spanish, Italian, German, French, Basque, Portuguese, Chinese, Russian, Czech, Korean and Dutch.

Completely integrated solu

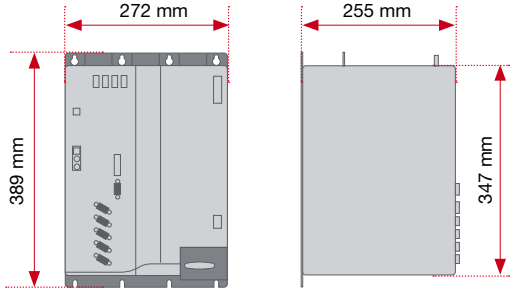
Multi Axis Box drives

System tailored to your machine

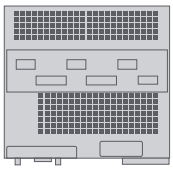
The CNC 8060 FL is optimized to work with MAB drives that integrate all in a single unit optimizing the cabinet design.

The MAB drive family offers the best model for each machine configuration:

- FM7 spindles up to 15 kW.
- Up to 4* axis motor up to 23 Nm.
- Second feedback for spindles.
- One of the axis can be used for live tool purpose.



* With additional drive



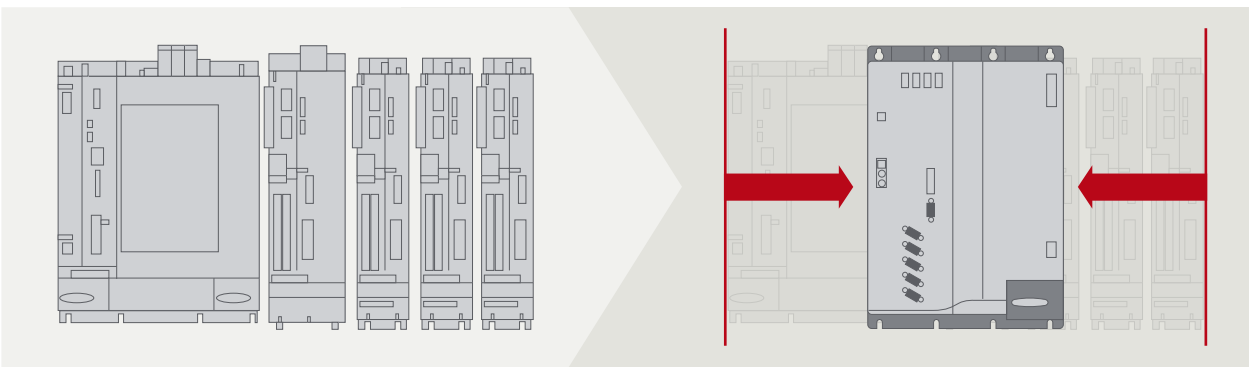
Available models

MODEL	Mains power	Spindle	Axis 1	Axis 2	Axis 3	Extra AXD
	kW	Arms	Arms	Arms	Arms	Max. Arms
Spindle + 2 axes Non-regenerative						
MAB-075-2	15	20	7.5	7.5	-	-
MAB-150-2	29	40	17.5	17.5	-	-
Spindle + 2 axes Regenerative						
MAB-R-075-2	15	20	7.5	7.5	-	-
MAB-R-150-2	29	40	17.5	17.5	-	-
Spindle + 3/4 axes Non-regenerative						
MAB-075-3	23	20	7.5	7.5	7.5	17.5
MAB—150-3	32	40	17.5	17.5	17.5	17.5
Spindle + 3/4 axes Regenerative						
MAB-R-075-3	23	20	7.5	7.5	7.5	17.5
MAB-R-150-3	32	40	17.5	17.5	17.5	17.5

Compact solution

Between 15 % and 60 % more compact

Power supply + Spindle + 3 Axes



tion

Motors and Spindles for MAB drives

Spindles

FM7 asynchronous motors may be used on all kinds of machine-tool spindles, providing the high reliability and best efficiency that the application may demand.

- E01 series Spindle motors with Delta (triangle) winding.
- E03 series Spindle motors with Y-Delta (star-triangle) winding.
- HS3 series Direct drive motors (without pulleys), with hollow shaft for cooling the tool from the spindle and Y/Delta (star /triangle) winding.

FM7 E01 - FM9 E01 series

	Rated power S1 (kW)	Rated power S6, 40% (kW)	Rated torque S1 (Mn)	Rated current (Arms)	Base speed (rpm)	Maximum speed (rpm)	Inertia [kg cm²]
FM7 A037-xx-E01	3.7	5.5	23.5	12.4	1,500	9,000	140
FM7 A055-xx-E01	5.5	7.7	35	14.6	1,500	9,000	210
FM7 A075-xx-E01	7.5	11	47.7	19.8	1,500	9,000	260
FM7 A090-xx-E01	9	13	57.4	25.1	1,500	9,000	330
FM7 A110-xx-E01	11	15.5	70	27.9	1,500	9,000	690
FM7 A150-xx-E01	15	22	95.5	39.3	1,500	8,000	690

FM7 E03 - FM7 HS3 series

	Rated power S1 (kW)	Rated power S6, 40% (kW)		Rated torque S1 (Mn)		Rated current (Arms)		Base speed (rpm)		Maximum speed (rpm)	Inertia [kg cm²]
		⅄	△	⅄	△	⅄	△	⅄	△		
FM7-D055-S1D0-E03	5.5	7.7	10	35	13.1	20.3	20.7	1,500	4,000	15,000	210
FM7-D075-S1D0-E03	7.5	11	13	47.7	17.9	26.5	25.8	1,500	4,000	15,000	260
FM7-D110-S1D0-E03	11	15.5	20	70	26.3	38	40	1,500	4,000	12,000	690
FM7-D150-S1D0-E03 (*)	15	22	26	95.5	35.8	46.4	45.7	1,500	4,000	12,000	690

(*) Power may be limited.

Axis motors

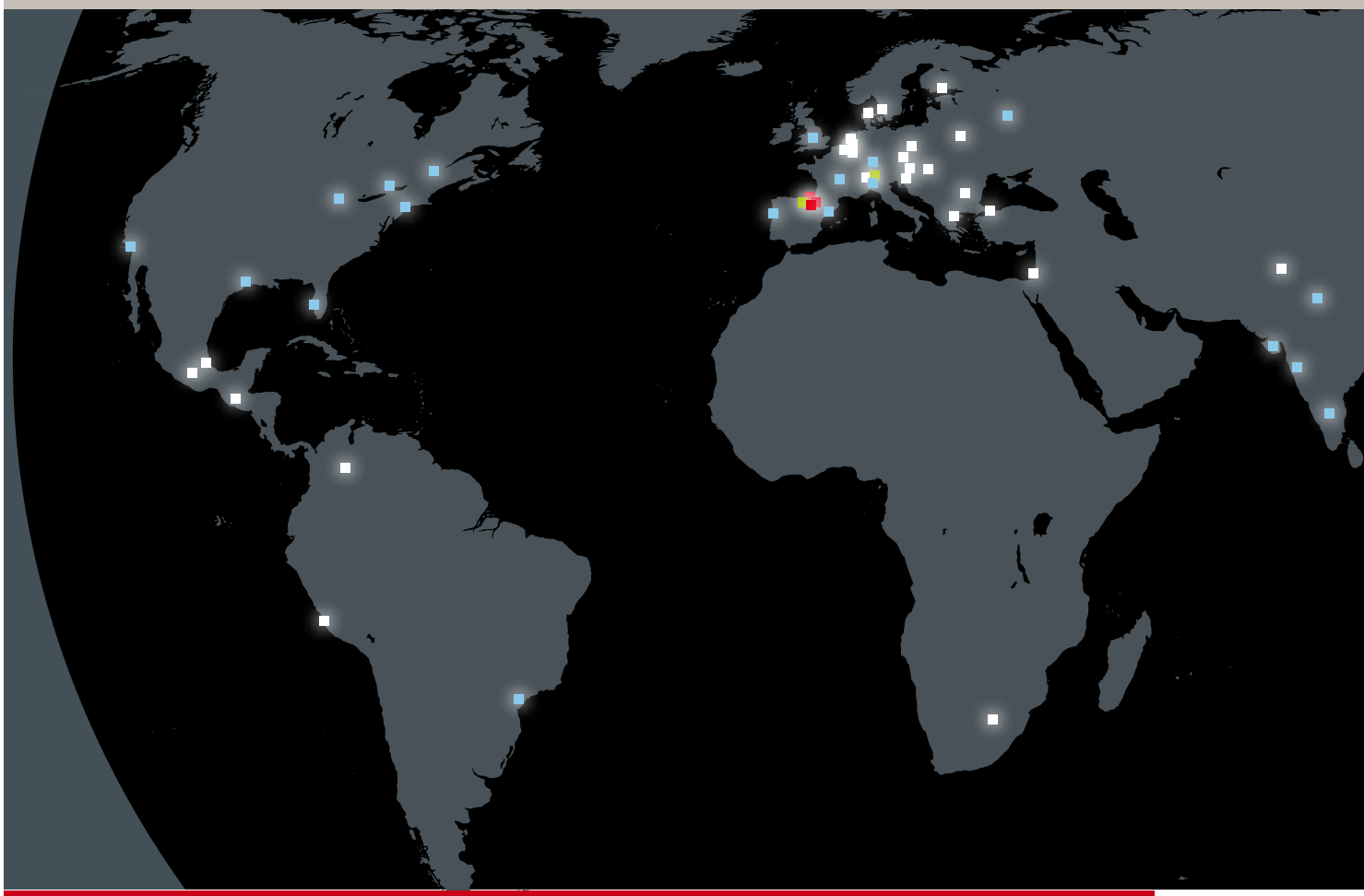
FKM series

FKM motors are permanent-magnet synchronous motors that may be adapted to any application and meet the ever growing demands of new-generation state-of-the-art machines.

FKM series

MODEL	Stall torque [Nm]	Peak torque [Nm]	Stall current [Arms] / Peak current [Arms]						IInertia / with brake [kg cm²]
			2000 rpm	3000 rpm	4000 rpm	4500 rpm	5000 rpm	6000 rpm	
FKM 21	1.7	7						2.8 / 11	1.6 / 1.72
FKM 22	3.2	13		2.4 / 10			4.0 / 16	4.5 / 18	2.9 / 3.02
FKM 42	6.3	25		4.6 / 19		6.9 / 28		8.5 / 34	8.5 / 9.04
FKM 44	11.6	47	4.6 / 19	8.2 / 33	10.7 / 43				16.7 / 17.24
FKM 62	8.9	35		7.1 / 28	9.3 / 37			13.1 / 52	16 / 17.5
FKM 64	16.5	66	6.5 / 26	12.1 / 48	16.2 / 64				29.5 / 30.65
FKM 66	23.5	94	10.5 / 42	16.4 / 66					43 / 44.15

Global support network



We'll assist you wherever you are

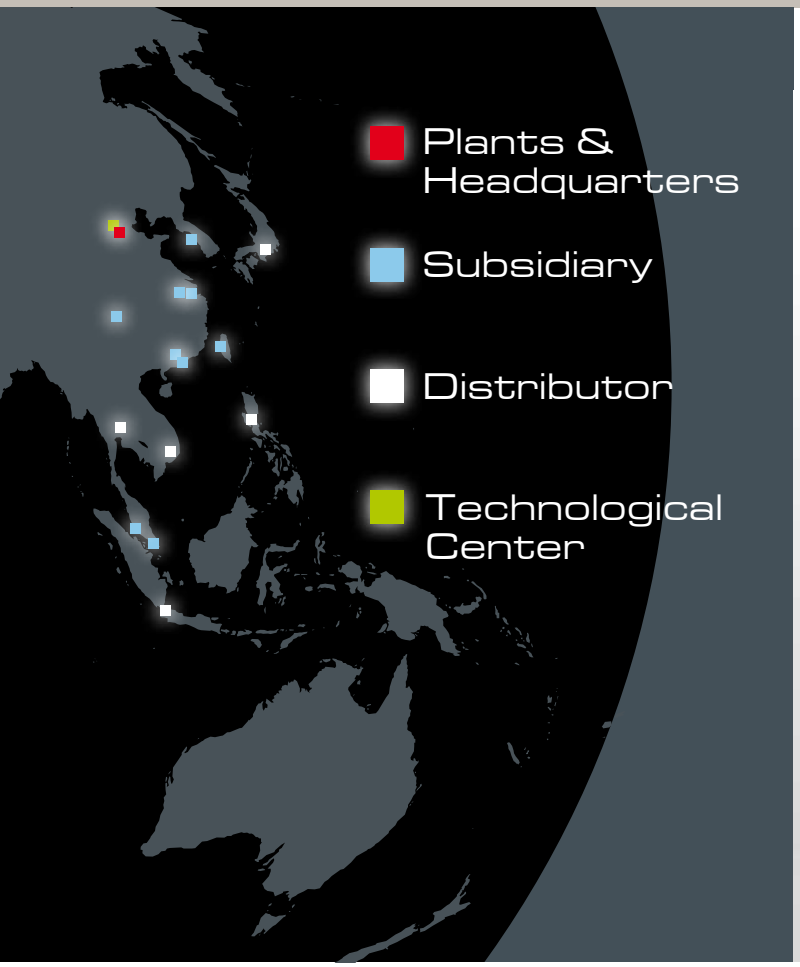
Our worldwide network ensures quick response time to any technical support you may require with our products at any time.

Our global network consists of more than 30 branch offices and 40 distributors.

Continuous innovation to meet our customer's needs

A major part of Fagor Automation's successful history is due to our constant investment commitment in company's infrastructure and R&D+i (Research, Development and innovation).This allows us to continuously develop leading products for the marketplace.

Our technological centers (AOTEK) in Mondragon (Spain), in Ivrea (Italy) and Beijing (China) have also participated together with other domestic and international research centers and universities on many prestigious technological projects like POWER-OM, ReBORN, CHAMELEON, IMPELER etc.



Personalized attention

Fagor Automation's sales and application team works very closely with their customers ensuring that the best solution is chosen for every application.

A team of highly specialized engineers from Fagor Automation works on site with the customers during the setup of the product ensuring best performance from the product and making adjustments to obtain highest machining quality.

Unparalleled commitment to customer support

In a more and more competitive world, machine down time is expensive and hence it is critical to partner with an organization which values customer support as its highest priority.

Fagor Automation offers high quality pre and post sales assistance through qualified personnel to meet all your requirements.

MONDRAGON
HUMANITY AT WORK
Finance Industry Retail Knowledge

FAGOR

FAGOR AUTOMATION

Fagor Automation, S. Coop.
Bº San Andrés, 19
E-20500 Arrasate - Mondragón
SPAIN
Tel.: +34 943 039 800
Fax: +34 943 791 712
E-mail: info@fagorautomation.es

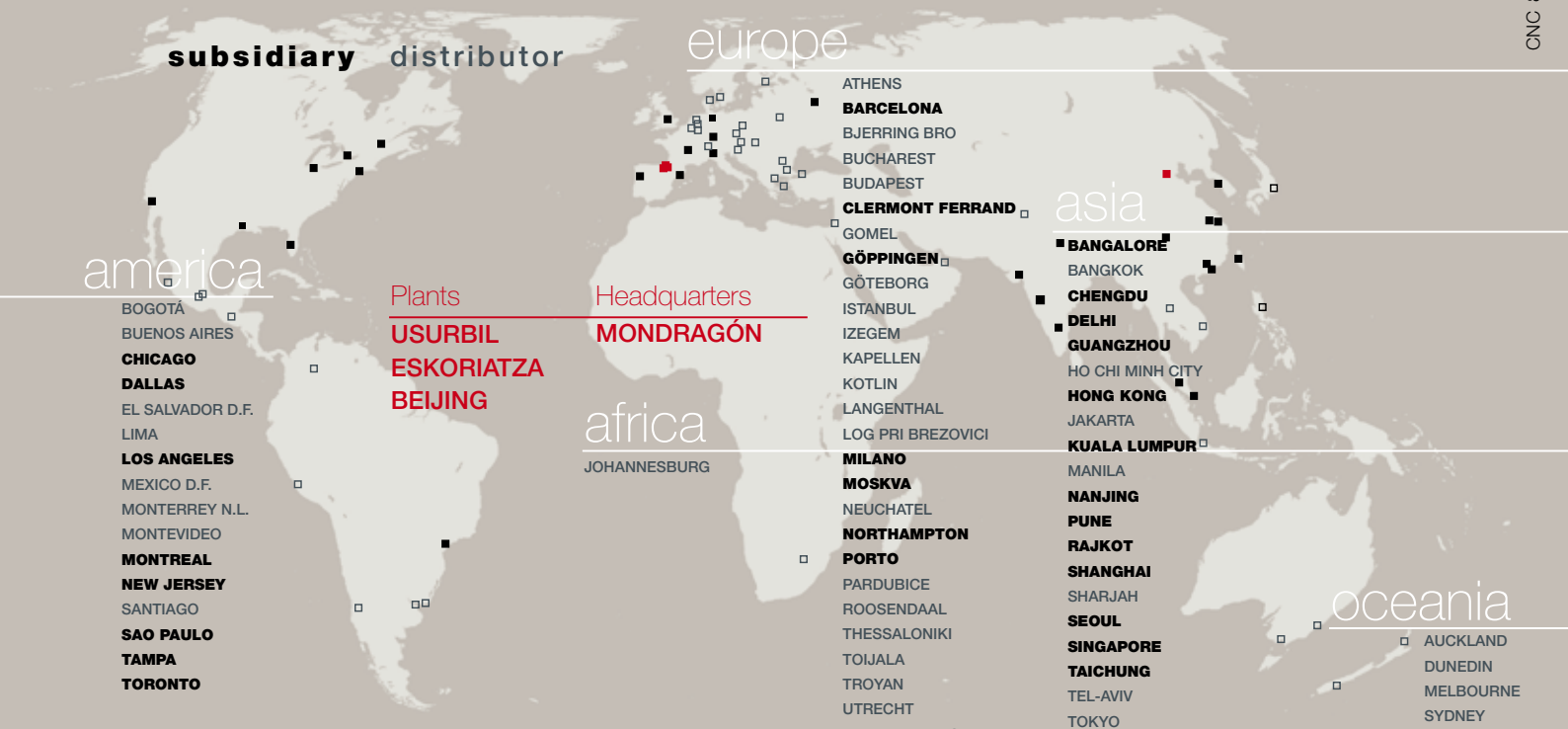
AENOR ER Empresa Registrada ER-073/1994

IQNet

Fagor Automation holds the ISO 9001 Quality System Certificate and the CE Certificate for all products manufactured.

www.fagorautomation.com

CNC 8060 FL EN 0117



worldwide automation