SIEMENS
Ingenuity for life

Solution for any size of burner

Control Products & Systems OEM

www.siemens.com/buildingtechnologies-oem

Perfect solutions for any type of application

Using the experience and know-how in the field of forced draft oil and gas burners, Siemens has become a leading and reliable partner for burner manufacturers over the past few decades. We offer matching high-quality components for a very broad application area. The extensive mix of mechanics, electronics and sensors is unique in the marketplace.

What's more, we offer you the most comprehensive product portfolio in this market segment. The security and reliability of the products form the basis of our success. New requirements placed on high-efficiency burners, low emission levels and the use of bio fuels demand innovative solutions.

Together with our partners and with research institutes, Siemens pursues active research and develops solutions for the future.

The right products for any application area

Always the right solution at hand – products and systems from Siemens for the heating market

We specialize in the development, production and global marketing of reliable and innovative products and systems for use on forced draft burners, heating boilers and alternative heating systems. Our comprehensive product portfolio includes system solutions, burner controls, actuators, flame detectors, sensors, control systems, valves and related test equipment.

Thanks to specialization and decades of experience in these fields, our products and systems offer optimum solutions for all market segments ranging from single- and multi-family houses (residential buildings) to commercial buildings and a host of industrial applications.

All from a single source – teamwork optimized processes and quality

Efficient teamwork has a major impact on our way of thinking, in our actions and innovation processes. In the OEM team of Siemens, the joint efforts of qualified and motivated staff and the exchange of experience have been decisive for success. We continually rely on teamwork, both within the company and in close cooperation with our customers and suppliers.

In the fields of heat generation and heat distribution, Siemens is a preferred controls supplier to leading OEMs throughout the world – thanks to our working methods, the quality and reliability of the products, our customer approach and business processes which have been matched to the specific needs of the OEM market. Employing advanced production processes, such as Kanban or just-in-time, we are able to respond quickly to the latest customer needs.

As a global market leader, we are also part of your market. This means that we not only work for you, but also think like you. For certain!

	Residential Buildings	Commercial Buildings	Industry
Wall-hung boilers	■		
Floor-standing boilers	■		
Alternative heating systems	■		
Forced draft burners (small)	■		
Forced draft burners (medium / large)		■	
Industrial burners			■

| Burner controls | Diagnostic tools | Plug-in bases | Damper actuators | Operating units | Flame detectors |

Efficient components for small burners

Extensive application area

Siemens offers a broad range of com-po-nents for use with forced draft oil and gas burners. The application area is extensive and covered by a compre-hensive range of products.

The products we market are suited not only for burners used on residential and commercial applications but also for industrial burners. This includes 1-stage, 2-stage and modulating burners.

### Standard product range from Siemens

LME burner controls for gas and LMO for oil ensure reliable burner opera-tion. These products have proven their worth in millions of installations and set market standards.

Every LME and LMO burner control features a multi-color LED for status indication: Green for operation, yellow for burner startup, and red for lockout. To simplify diagnostics, the fault code can be output via the LED.

Whether plug-in base or ready mount-ed and wired unit – it's the customer's choice. Actuators in different versions control the air dampers in multi-stage or modulating mode. Flame detectors for intermittent operation are used in connection with yellow- or blue-flame burners. And due to processes like Kanban or Just-in-time we quickly respond to customer requests.

HIGHLIGHTS

- Program versions for forced draft and atmospheric burners
- Programmable times
- Multicolor LED for status information and fault status messages
- Burner control´s fault history can be read out via software too
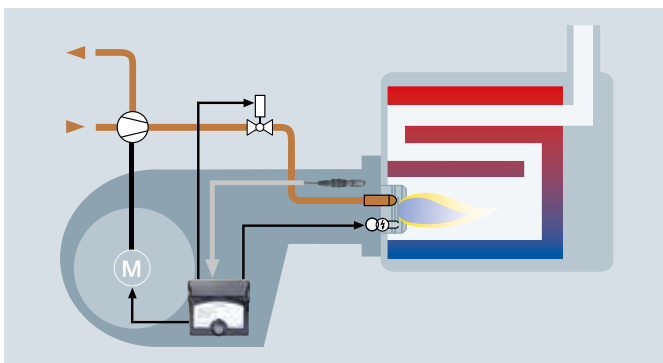
| Burner management systems | Burner controls | Infrared flame detectors | Damper actuators | UV flame detectors | Universal controllers | Gas valves/ actuators |

Powerful solutions for large facilities

Largest capacities

Capacity ranges from small to large 30 MW burners can be realized with our components.

Every burner application – be it in connection with water boilers, steam boilers, thermo oil, or industrial process plants – can be covered by one of our products.

Compact systems for standard and high-end applications

Burner controls are available for any type of application, be it with basic sequence control and a fixed time program or complex ratio control including up to 6 actuators. Secure and reliable burner controls and flame detectors for intermittent or continuous operation with matching components, such as actuators, valves and controllers, ensure optimum interplay.

Perfect interplay

Standard burner controls, such as the LME7, can be employed with a large number of different actuators driven by synchronous motors.

Accurately working damper actuators in combination with combustion optimization via O2 trim control and LMV5 ratio control ensure low emission levels and high efficiency. Flexible parameter settings make it possible to choose from an array of different configurations. The ease with which the compact LMV2/3 ratio control can be integrated into the burner is impressive. Thanks to a "red flag" mode, commissioning really is very easy. The program guides the user through the setting of the key parameters.

HIGHLIGHTS

- Integrated functions such as VSD control, gas valve proving and load controller
- Display of operating states, program phases and fault codes
- Combustion optimization via O2 trim control
- Gas valve sizes up to DN 150
- Damper actuators up to 60 Nm

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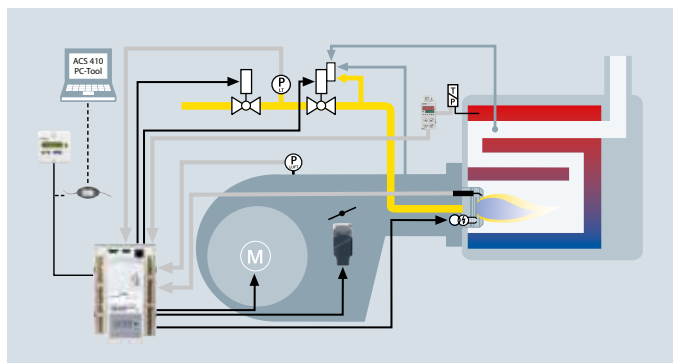
Optimally matched components for all tasks

	Type of fuel	Burner capacity (typically)	Control outputs for fuel valves	Intermittent operation (flame detectors)	Connection facility for oil preheater	Connection facility for pilot burner	Connection facility for fan	Air pressure supervision	Air damper control	Parameterizable times	Connection facility for display
				FIELD OF USE							
LME11	Gas (Oil)	< 120 kW	▭✕	QRA2+ AGQ3, ION			■	■			
LME21/ 22	Gas (Oil)	> 120 kW	▭✕ x2	QRA2+ AGQ3, ION			■	■	■		
LME23	Gas (Oil)	> 120 kW	▭✕ x2	QRC			■	■	■		
LME39	Gas (Oil)	> 120 kW	▭✕ x2	QRA2+ AGQ3, ION		☞	■ [1]	■	■	■	BCI
LME41/44	Gas	> 120 kW	▭✕ x2	QRA2+ AGQ3, ION		☞	Atmo				
LMO14	Oil	< 30 kg/h	▭✕	QRB QRC	■		■				
LMO24	Oil	< 30 kg/h	▭✕ x2	QRB QRC	■		■				
LMO39	Oil	> 30 kg/h	▭✕ x2	QRB QRC	■		■ [1]			■	BCI
LMO44	Oil	> 30 kg/h	▭✕ x2	QRB QRC	■		■				
LMO64	Oil	< 30 kg/h	▭✕	QRB QRC	■		■ [1]				

BURNER CONTROLS

	Type of fuel	Burner capacity (typically)	Control outputs for fuel valves	Intermittent operation (flame detectors)	Continuous operation (flame detectors)	Connection facility for pilot burner	Dual-fuel operation	Modbus interface	Gas valve proving	Parameterizable times	Connection facility for display
ANWENDUNGSMÖGLICHKEITEN											
BURNER CONTROLS LME7	Gas Öl	> 350 kW (30 kg/h)	⊡✗ x2	QRA2 QRA4 QRA10/ ION	QRA7 QRI ION	☞	■		■	■	BCI
BURNER MANAGEMENT SYSTEMS LMV26/36	Gas Oil	> 350 kW (30 kg/h)	⊡✗ x3	QRA2/4 QRA10 QRB QRC	ION 4)	☞	■	■	■	■	BCI
LMV27	Gas Oil	> 350 kW (30 kg/h)	⊡✗ x3	QRA2/4 QRA10 QRB QRC		☞		■	■	■	BCI
LMV37	Gas Oil	> 350 kW (30 kg/h)	⊡✗ x3	QRA2/4 QRA10 QRB QRC	ION	☞		■	■	■	BCI
LMV50 2)	Gas Oil	> 350 kW (30 kg/h)	⊡✗ x9	QRA2/4 QRA10	QRA7 QRI ION	☞	■	■	■	■	CAN
LMV51	Gas Oil	> 350 kW (30 kg/h)	⊡✗ x9	QRA2/4 QRA10	QRA7 QRI ION	☞	■	■	■	■	CAN
LMV52 3)	Gas Oil	> 350 kW (30 kg/h)	⊡✗ x9	QRA2/4 QRA10	QRA7 QRI ION	☞	■	■	■	■	CAN
FLAME DETECTOR LFS1.1	Oil	> 30 kg/h			RAR					■	BCI
LFS1.2	Gas Oil	> 350 kW		QRA2 QRA4 QRA10	ION					■	BCI

Legend:

⊡✗ Control outputs for fuel valve

ION Ionisation flame detector

BCI Burner communication interface

CAN CAN-Bus

☞ Connection facility for pilot burner

1) Postpurge function

2) Industrial application

3) Flue gas recirculation

4) for LMV36 without AGM60

Robust detectors and sensors for perfect combustion

Oil or gas burner, blue or yellow flame – Siemens sensors are supplied ready for immediate use in all areas.

Highly specialized flame detectors for any type of process

To ensure perfect process control, we have focussed for many years on the development of highly sensitive flame detectors.

For the supervision of yellow-burning oil flames, RAR silicon photocell detectors and QRB photo diode sensors are available.

For small- and medium-capacity blue-flame oil and gas burners, the QRC detector with UV diode is used.

The range of flame detectors also includes QRA detectors with UV cell, highly sensitive QRI infrared detectors, plus the ionization current principle for intermittent or continuous operation.

Sensor for combustion optimization

The range of detectors and sensors is rounded off by the QGO, an O2 sensor used for determining the residual oxygen content in flue gases.

HIGHLIGHTS

- Matched to the range of burner controls
- Optimal combination also with flame safeguards from Siemens.
- Universal flame detectors for continuous operation on the basis of UV or IR sensitivity
- Combustion optimization with O2 sensor
- Ready to use, no settings required

		Oil	Gas	Yellow flame	Blue flame	Housing	Degree of protection	Type of flame detector	Matching burner controls and burner management systems
		FIELD OF USE							**FOR USE WITH**
FLAME DETECTOR (INTERMITTENT OPERATION)	QRB4	■		■		Plastic	IP54	Photo diode	LMO, LME7 LMV2/3
	QRC1	■	■	■	■	Plastic	IP40	UV diode	LMO, LME23, LMV2/3, LME7
	QRA10	■	■	■	■	Metal	IP54 IP65 (Kit)	UV cell	LFL, LMV2/3, LME7, LFS1.2
	QRA2	■	■	■	■	Plastic	IP40	UV cell	LFL, LMV2/3, LME7, LFS1.2
	QRA2+ AGQ	■	■	■	■	Plastic	IP40	UV cell	LMV5, LME21/22/39/4
	QRA4	■	■	■	■	Metal	IP54	UV cell	LFL, LMV2/3, LME7, LFS1.2
FLAME DETECTORS (CONTIN. OPER.)	QRA53/55 QRA73/75	■	■	■	■	Plastic	IP54 IP65	UV cell	LGK (QRA53/55) LMV5 (QRA73/75)
	QRI	■	■	■	■	Plastic	IP54	IR flicker	LMV5
	RAR	■		■		Plastic	IP40	Photocell	LOK, LFS1.1
O$_2$ SENSOR	QGO20	■	■			Metal	IP40	ZrO$_2$	LMV52 + PLL52

Accurate damper actuators for any type of application

Comprehensive range

A total of 10 lines of actuators are available offering solutions for any size of burner and almost any type of application.

The SQN1, SQM33 and SQM45/48/91 actuators are specifically matched to the requirements of our burner management systems. Special features include the communication facility for systems and the high accuracy and small hysteresis accomplished by the control. The torque range is from 1.2 to 60 Nm.

Universal use

Extremely versatile are the universal actuators SQN3, SQN7 and SQN9, delivering torques up to 3 Nm, and the more powerful versions SQM1/2, SQM40/41 and SQM5, delivering a maximum torque of 40 Nm. There is a large number of mounting options and drive shaft versions available.

All types of actuator are suited for universal mounting and are protected from dirt and humidity. Some models feature analog inputs and outputs.

The design of these actuators is the result of many years of experience, meaning that they are capable of satisfying demanding requirements.

HIGHLIGHTS

- Wide range thanks to 10 product lines delivering torques from 1.2 to 60 Nm
- Different types of drive shaft available
- High accuracy, small hysteresis
- Electronic versions with analog inputs
- Degree of protection IP54 or IP66

Siemens can supply the right drive for every system. Solutions are available for boiler ratings up to 35 MW across a total of ten ranges.

|		Stepper motor	Synchronous motor	Torque (Nm)	Analog input	Potentiometer	Drive shaft version	End of drive shaft	Angular rotation	Degree of protection	Approvals	Matching burner controls, damper actuators and burner management systems
						FIELD OF USE						FOR USE WITH
DAMPER ACTUATORS	SQN9		■	2.4		Option	1	▭-	0...90°	IP40	CE	LAL, LOK, LFL, LGK, LME, LME7, LMO
	SQN7		■	1.5 2.5		Option	5	▭-	0...130°	IP40	CE	LAL, LOK, LFL, LGK, LME, LME7, LMO
	SQN72		■	1.5 2.5		Option	2	▭-	0...130°	IP54	CE	LAL, LOK, LFL, LGK, LME, LME7, LMO
	SQN3 SQN4		■	3.0 6.0		Option	4	▭-	0...160°	IP40	CE	LAL, LOK, LFL, LGK, LME, LME7,LMO
	SQM40/41		■	2.5; 5; 10; 18	■	Build-in	4	▭-	0...135°	IP66	CE, UL, CSA, GL	LAL, LOK, LFL, LGK, LME, LME7,LMO
	SQM5		■	10; 15; 20; 25; 30; 40	■	Option	6	-▭-	0...130°	IP54	CE, UL, CSA, BV	LAL, LOK, LFL, LGK, LME7
	SQN1	■		1.0			1	▭-	0...90°	IP40	CE	LMV2/3
	SQM33	■		1.2 3.0 10.0			1	▭-	0...90°	IP54	CE, UL, CSA	LMV2/3
	SQM45/48	■		3.0 20.0 35.0			2	▭-	0...90°	IP54	CE, UL, CSA	LMV5
	SQM9	■		60.0			1	▭-	0...90°	IP66	CE, UL	LMV5
DAMPERS	VKP ½"...2"			≥1			2		0...90°		CE	SQM13, SQN30, SQN72, SQM33, SQM40, SQM45, SQM50
	VKG10/20* DN32... DN80			≥1			2		0...90°		CE	SQM13, SQN30, SQN72, SQM33, SQM40, SQM45, SQM50
	VKF10/11** with mounting plate			≥2.5			2		5...90°		CE	SQM33/40/45 SQN7xxx1 (with ASK33.5) SQM50 (with AGA58.5 and ASK33.3)

* VKG20: 1- fold reduced   ** VKF10: swing thru; VKF11: mechanical stop (~5°)

All actuators require left-handed drives (counter-clockwise), exception VKG (both directions of rotation)

All dampers allow the installation of motors with D-shafts: D-shaft ø 10/8.5; D-shaft ø 8/7 via reducing sleeve

Legend: ▭- Drive shaft on one side   -▭- Drive shaft on both sides   Potentiometer   * VKG20: reduced diameter

From simple plug-in bases to extensive wiring solutions
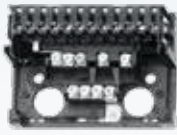
Plug-in base

Plug-in base with cover
and wiring

Complete solution
including wiring

The right connection
at any time

Connection technique and more

The product range is rounded off by
bases and consoles for use with the
burner controls, coded connectors for
plug-in bases and our systems with
RAST5 connection facility.

AGK11 bases with screw terminals or
plug-in bases are supplied in black for
small burner controls which – via
thermostat – also supply mains volt-
age to the units, and in grey for burner
controls featuring a permanent phase
and triggering burner start via a ther-
mostat.

The coded and marked RAST5 connec-
tors cannot be plugged into wrong
places should it become necessary to
replace a burner control.

Customized solutions

You want not only a base but a com-
plete solution from a single source?
Please contact us, we can deliver ready
wired solutions.

Ease of use

The AZL operator units are used in
connection with the LMV5 burner
management system and the LMV2/3,
LME7 and LME/LMO39 burner controls
and are designed for direct connection
to the burner, or for installation in the
control panel close to the burner.

They are used for display, operation
and allow the setting of parameters for
specific safety- and non-safety-related
burner functions. The most important
plant data and fault codes can be
interrogated and displayed.

HIGHLIGHTS

- Operating units with clear-text display
- AGK plug-in bases or bases with screw terminals for LMO/LME
- Ready wired consoles
- Coded RAST5 connectors, protected from interchange

Communication at the highest level

			Matching software	Triggering fault history/counter reading	Changing parameters	Display of current parameter state	Setting the ratio curves	Recording of status and trend data	Backup/restore of complete data sets	Modbus	Matching burner controls and burner management systems
				FIELD OF USE							FOR USE WITH
INTERFACE		OCI400	ACS410	■		■		■	■		LMO1-6, LME1-6
		OCI410	ACS410	■	■	■	■	■	■		LME39, LME7, LMO39, LMV2/3
SOFTWARE		ACS410		■	■	■	■	■	■		LMO1-6, LME1-7, LMV2/3
		ACS411		■	■	■			■		RWF5
		ACS450		■	■	■	■		■		LMV5
ACCESSORY		OCI412.10		■	■	■				■	LME39, LME7, LMO39, LMV2/3

Always the right connection
Our range of interfaces and software enable you to made the right connections. Both interface and software are suited for use with our standalone LME burner controls and LMV2/3 and LMV5 burner management systems.

The data read out by the burner components via OCI interface are transfered to the computer where they are handled by the ACS410 or ACS450 software from Siemens. The current operating states, settings, parameters, fault history, etc. are read out. The data logger shows the changes of the inputs and outputs over time.

An important feature in the backup/restore facility, which is used to retrieve former parameter settings to be transfered back to the burner control.

Another key feature of the comprehensive software functions is the operation of printing customized reports.

What's more ...

An array of choices

The burner controls, burner management systems, sensors, detectors, actuators and valves we supply are the key components for use with burners. However, additional products, such as pressure switches and pilot valves, are required also.

We see ourselves as a system provider. For this reason, we constantly extend the product portfolio we market – accessory items needed for burner operation.

The accessories we supply satisfy the same demanding requirements as our key products. We also specify and test such products in compliance with Siemens standards and will further extend our product portfolio in the future.

Proportional controlling element

When combined with SQN/SQM actuators, our VKP40 proportional controlling element provides the ideal valve for wide modulation ranges.

Pressure switches

To complement gas control systems, the QPL pressure switches can be used for monitoring gas shortages or for detecting excessive pressures.

Universal process control

The particularly versatile RWF50 and RWF55 universal controllers have been designed for controlling temperature and pressure. The controllers are compatible for use in all manner of different applications. Some models feature the latest communication modules (Modbus, ProfiBus).

Siemens can supply everything you need for a compact package. The right products for the system can be put together from our portfolio in line with your requirements and applications. Whether your system is large or small, we are sure to be able to meet your every need.

Equipment combinations

|		Nominal size	Permissible inlet pressure (mbar)	Connections	Bio-/recycling gases	Design	Open/closed	Open/closed with pressure governor	Open/closed with pressure governor adjustable via electro-motoric actuator	Open/closed with differential pressure governor	Open/closed with pressure ratio controller
						FIELD OF USE					
	SKP15				■		■				
	SKP25				■ [1]			■	AGA30.7 SAS		
	SKP55				■ [1]					■	
	SKP75				■ [1]						■
	VGD20	1" ... 2"	60 KPa	⊕		⊥⊥					
	VGD40	DN 40 ... DN 150	70 ... 100 KPa	⊕	■	⊥⊥					
	VRD40	DN 40 ... DN 150	70 ... 100 KPa	⊕	■ [2]	⊥⊥					
	VGG	½" ...3"	...120 KPa	⊕		⊥					
	VGF	DN 50 ... DN 80	60 KPa	⊕	■	⊥					
	VRF	DN 50 / DN 80	60 KPa	⊕	■ [2]	⊥					

VALVES AND VALVE ACTUATORS

All types of valve and electrohydraulic valve actuator can be combined and are approved, including approval for the U.S. market

Legende:
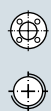
⊕ Flanged connections
⊕ Threaded connections
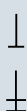
⊥ Seat
⊥⊥ Double seat

1) On request

2) Non-ferrous metal-free: VRD40 and VRF with SKP15 suitable up to 1 % H_2S, 1% NH3

When building technology creates perfect places –
that's Ingenuity for life.

Never too cold. Never too warm.
Always safe. Always secure.

With our knowledge and technology, our products,
our solutions and our services, we turn places into
perfect places.

We create perfect places for their users' needs –
for every stage of life.

#CreatingPerfectPlaces
www.siemens.com/perfect-places