The new reference on multi stages turbines.

NG

A new nomenclature for NG multi stage steam turbines.

The NG multi stage steam turbines are now grouped in three different series:

H Series, of the back pressure or condensing types, for high inlet steam conditions, limited to 86 bar / 520 deg C.

M Series, of the back pressure or condensing types, for medium inlet steam conditions, limited to 45 bar / 450 deg C.

L Series, of the condensing type only, for low inlet steam conditions, limited to 12 bar / 350 deg C.

All the models are designated by a sequentially structured composition of letters and numbers.

Thus, the first letter indicates the inlet pressure class of the turbine: H for "high", M for "medium" and L for "low". The second letter indicates the turbine type: B for "back pressure" and C for "condensing". The numbers indicate the mean diameter of the wheels in round figures.

Finally, the suffix E indicates the provision of a controlled extraction, which is applicable on the H Series only.

L SERIES

Type	Condensing					
Model	**LC 500**	**LC 650**	**LC 800**	**LC 1000**	**LC 1250**	**LC 1500**
Maximum power	4.000 kW	7.000 kW	10.000 kW	15.000 kW	20.000 kW	25.000 kW
Rated speed	10.250 rpm	8.500 rpm	6.500 rpm	5.800 rpm	4.750 rpm	3.600 rpm
Max. inlet pressure	12 bar a	12 bar a	12 bar a	12 bar a	12 bar a	12 bar a
Max. inlet temperature	350°C	350°C	350°C	350°C	350°C	350°C
Max. exhaust pressure	vacuum	vacuum	vacuum	vacuum	vacuum	vacuum
Inlet flange	2x150 mm	2x200 mm	2x250 mm	2x300 mm	2x350 mm	2x400 mm
Exhaust flange	750 mm	1040 mm	1.390 mm	1.650 mm	1.930 mm	2.110 mm
Max. number of stages	7	7	7	7	7	7

Type	Condensing with double exhaust flow					
Model	**LC 500/500**	**LC 650/650**	**LC 800/800**	**LC 1000/1000**	**LC 1250/1250**	**LC 1500/1500**
Maximum power	7.000 kW	12.000 kW	20.000 kW	30.000 kW	40.000 kW	50.000 kW
Rated speed	10.250 rpm	8.500 rpm	6.500 rpm	5.800 rpm	4.750 rpm	3.600 rpm
Max. inlet pressure	12 bar a	12 bar a	12 bar a	12 bar a	12 bar a	12 bar a
Max. inlet temperature	350°C	350°C	350°C	350°C	350°C	350°C
Max. exhaust pressure	vacuum	vacuum	vacuum	vacuum	vacuum	vacuum
Inlet flange	2x150 mm	2x200 mm	2x250 mm	2x300 mm	2x350 mm	2x400 mm
Exhaust flange	2x750 mm	2x1.040 mm	2x1.390 mm	2x1.650 mm	2x1.930 mm	2x2.110 mm
Max. number of stages	12	12	12	12	12	12

M SERIES

Type	Backpressure					
Model	**MB 350**	**MB 420**	**MB 510**	**MB 630**	**MB 750**	**MB 900**
Maximum power	7.000 kW	10.000 kW	15.000 kW	22.000 kW	27.000 kW	32.000 kW
Rated speed	11.500 rpm	9.500 rpm	8.000 rpm	6.500 rpm	5.800 rpm	4.750 rpm
Max. inlet pressure	45 bar a	45 bar a	45 bar a	45 bar a	45 bar a	45 bar a
Max. inlet temperature	450°C	450°C	450°C	450°C	450°C	450°C
Max. exhaust pressure	15 bar a	15 bar a	15 bar a	15 bar a	8 bar a	8 bar a
Inlet flange	2x150 mm	2x175 mm	2x200 mm	2x250 mm	2x300 mm	2x350 mm
Exhaust flange	400 mm	500 mm	600 mm	750 mm	840 mm	915 mm
Max. number of stages	6	6	6	6	6	6

Type	Condensing					
Model	**MC 500**	**MC 650**	**MC 800**	**MC 1000**	**MC 1250**	**MC 1500**
Maximum power	5.000 kW	8.000 kW	14.000 kW	21.000 kW	28.000 kW	36.000 kW
Rated speed	10.250 rpm	8.500 rpm	6.500 rpm	5.800 rpm	4.750 rpm	3.600 rpm
Max. inlet pressure	45 bar a	45 bar a	45 bar a	45 bar a	45 bar a	45 bar a
Max. inlet temperature	450°C	450°C	450°C	450°C	450°C	450°C
Max. exhaust pressure	vacuum	vacuum	vacuum	vacuum	vacuum	vacuum
Inlet flange	2x150 mm	2x175 mm	2x200 mm	2x250 mm	2x300 mm	2x350 mm
Exhaust flange	750 mm	1.040 mm	1.390 mm	1.650 mm	1.930 mm	2.110 mm
Max. number of stages	9	9	9	9	9	9

Type	Condensing with double exhaust flow					
Modelo	**MC 500/500**	**MC 650/650**	**MC 800/800**	**MC1000/1000**	**MC1250/1250**	**MC 1500/1500**
Maximum power	10.000 kW	17.000 kW	27.000 kW	42.000 kW	55.000 kW	70.000 kW
Rated speed	10.250 rpm	8.500 rpm	6.500 rpm	5.800 rpm	4.750 rpm	3.600 rpm
Max. inlet pressure	45 bar a	45 bar a	45 bar a	45 bar a	45 bar a	45 bar a
Max. inlet temperature	450°C	450°C	450°C	450°C	450°C	450°C
Max. exhaust pressure	vacuum	vacuum	vacuum	vacuum	vacuum	vacuum
Inlet flange	2x150 mm	2x175 mm	2x200 mm	2x250 mm	2x300 mm	2x350 mm
Exhaust flange	2x750 mm	2x1.040 mm	2x1.390 mm	2x1.650 mm	2x1.930 mm	2x2.110 mm
Max. number of stages	16	16	16	16	16	16

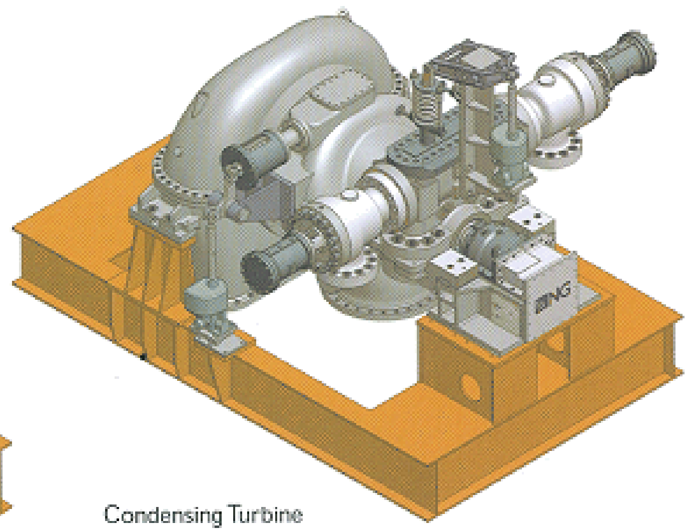
H SERIES

Type	Backpressure					
Model	**HB 350**	**HB 420**	**HB 510**	**HB 630**	**HB 750**	**HB 900**
Maximum power	12.000 kW	17.000 kW	25.000 kW	32.000 kW	40.000 kW	48.000 kW
Rated speed	11.500 rpm	9.500 rpm	8.000 rpm	6.500 rpm	5.800 rpm	4.750 rpm
Max. inlet pressure	86 bar a	86 bar a	86 bar a	86 bar a	86 bar a	86 bar a
Max. inlet temperature	520°C	520°C	520°C	520°C	520°C	520°C
Max. exhaust pressure	15 bar a	15 bar a	15 bar a	15 bar a	8 bar a	8 bar a
Inlet flange	2x150 mm	2x175 mm	2x200 mm	2x225 mm	2x250 mm	2x300 mm
Exhaust flange	400 mm	500 mm	600 mm	750 mm	840 mm	915 mm
Max. number of stages	12	12	12	12	12	12

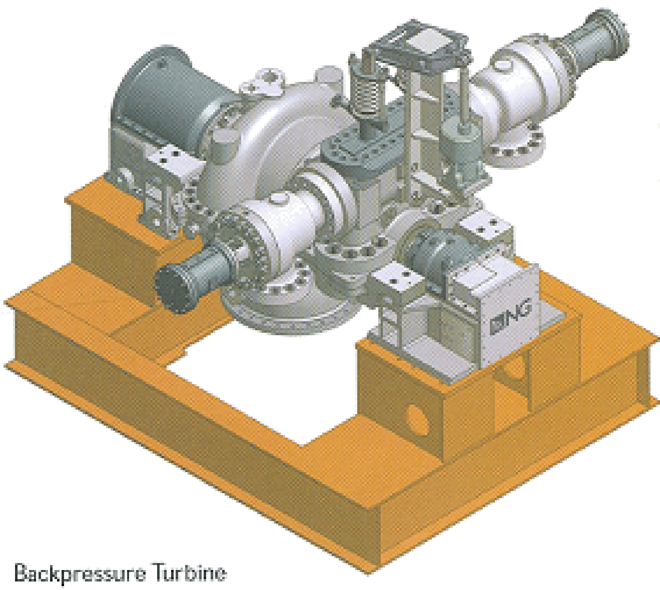
Type	Condensing					
Model	**HC 500**	**HC 650**	**HC 800**	**HC 1000**	**HC 1250**	**HC 1500**
Maximum power	18.000 kW	25.000 kW	35.000 kW	42.000 kW	50.000 kW	60.000 kW
Rated speed	10.250 rpm	8.500 rpm	6.500 rpm	5.800 rpm	4.750 rpm	3.600 rpm
Max. inlet pressure	86 bar a	86 bar a	86 bar a	86 bar a	86 bar a	86 bar a
Max. inlet temperature	520°C	520°C	520°C	520°C	520°C	520°C
Max. exhaust pressure	vacuum	vacuum	vacuum	vacuum	vacuum	vacuum
Inlet flange	2x150 mm	2x175 mm	2x200 mm	2x225 mm	2x250 mm	2x300 mm
Exhaust flange	750 mm	1.040 mm	1.390 mm	1.650 mm	1.930 mm	2.110 mm
Max. number of stages	15	15	15	15	15	15

Type	Condensing with double exhaust flow					
Model	**HC 500/500**	**HC 650/650**	**HC 800/800**	**HC 1000/1000**	**HC 1250/1250**	**HC 1500/1500**
Maximum power	16.000 kW	24.000 kW	38.000 kW	52.000 kW	60.000 kW	75.000 kW
Rated speed	10.250 rpm	8.500 rpm	6.500 rpm	5.800 rpm	4.750 rpm	3.600 rpm
Max. inlet pressure	86 bar a	86 bar a	86 bar a	86 bar a	86 bar a	86 bar a
Max. inlet temperature	520°C	520°C	520°C	520°C	520°C	520°C
Max. exhaust pressure	vacuum	vacuum	vacuum	vacuum	vacuum	vacuum
Inlet flange	2x150 mm	2x175 mm	2x200 mm	2x225 mm	2x250 mm	2x300 mm
Exhaust flange	2x750 mm	2x1.040 mm	2x1.390 mm	2x1.650 mm	2x1.930 mm	2x2.110 mm
Max. number of stages	22	22	22	22	22	22

NG multi stage steam turbines. What used to be a standard in the market, has became the main reference.



Condensing Turbine



Backpressure Turbine

After attaining over than 1,100,000 kW of installed output all over the world, only with the steam turbines of the H Series, NG now incorporates for the new supplies of this series a set of technologic evolutions, which make even better a design already recognized world wide.

These evolutions, which NG always incorporates in its products, make the steam turbines of the H series even more differentiated in the market broadening their operational safety and reliability and also improving their thermodynamic efficiency.

The developments are the outcome from the latest results obtained in our recently created Research Center, permitting, among other things, to analyze any rotor blade vibration by means of real experimentation, identifying any undesirable resonance in the operating range of frequencies.

This assures that any possibility of failure due to a phenomenon of this nature to be already eliminated during the turbine manufacturing stage. This verification, associated with sophisticated software for advanced finite elements analysis, has permitted the development of new aerodynamic profiles, which increases the thermodynamic efficiency of the turbine and eliminates any possibility of blade failure during operation.

The resources, tools and knowledge applied by our specialized engineers and technicians put NG in the world technologic vanguard for this type of machine. These new technologic resources have permitted NG to broaden the imaginable limits in the admission and extraction steam flow rates, mainly when a low pressure extraction, 2.5 bar, for example, is considered, situation most required on the sugar mill production processes and each time more necessary on the high power generation projects.

In presenting a new nomenclature, which marks this new technologic stage, NG has now a wide range of steam turbine sizes, with over 60 different models, for the economical and reliable power generation. It is the most complete and comprised line of multi stage steam turbines offered by a genuine Brazilian manufacturer, ISO 9001 - 2000 qualified, with advanced technology, recognized and adopted world wide by the various industrial sectors, in practically all continents, with emphasis on the Americas, Europe and Asia.

Whenever a steam turbine is required, of the back pressure or condensing types, with or without controlled extraction, for low, medium or high pressure, NG always has the right machine to meet the requirements of the most varied industrial processes and cogeneration systems.