World's Most Efficient!

Mazda LIMITED

Generation of more Megawatts a dream ?

TRY OUR STEAM JET AIR EJECTOR VACUUM SYSTEMS.

Croll-Reynolds Steam Jet Evactor Systems,model No. CR Series-200S above and 300S below for Turbine Extraction manufactured in India by Mazda Limited.

We are proud to be part of the Croll Reynolds family and we build more turbine extraction systems for power plants than anyone else in the country and only one Indian Ejector Company that can cater to the global markets.

In the power production business, power plants are finding value in hidden capacity-additional megawatts of uprating or kilowatt-hours of production that can be squeezed from an existing unit. A local utility plant recently gained stealth capacity by replacing an old vacuum system with Croll-Reynolds Vacuum Evactor.

The plant had been derated by approximately 10 MW because of poor air removal from its steam-turbine condenser. Mazda Limited, Ahmedabad studied the problem and concluded that condenser Vacuum could be improved by at least 15 mm Hg using its model no. CR Series-200S.

When CR Series was installed and started up, it improved condenser vacuum drastically than the original test condition. The power plant thereby picked up 5 MW of hidden capacity and the cost of CR Series-200S was recovered in less than a month and the savings will go on as long as the plant remains in services.

Our SJAE Systems supplied for large Power Plants include the following:

2 x 250 MW	Neyvelli Ignite Cooperation
2 x 250 MW	Neyvelli Ignite Cooperation
1 x 228 MW	Jegurupadu
1 x 150 MW	Tata Electricity, Trombay
1 x 110 MW	TNEB, Ennore
2 x 75 MW	Hindalco Industries, Renusagar
1 x 50 MW	L & T Cement, Kovaya Amreli

In addition, our SJAE Systems from India are regularly exported to Alstom Brazil, Fluidel Italy, Nuovo Pignone Italy, etc.,

Organisations / Consultants with whom we deal :

Turbine manufacturers	Surface Condenser manufacturers	Consultants
Alstom Projects India Ltd.,	GEI Godavari	Avant Garade
Demag Delaval (Siemens)	L & T	Development Consultants
Triveni Engineering & Industries	GEA Cooling Tower	Tata Consulting Engineers
BHW Kessels International Corp.,	Paharpur	Mitcon Ltd.,
TD Power Systems Pvt. Ltd.,	GEI Hamon	Fichtner Consulting Engineers
Greenesol Power Systems	Kanara Engg / CICB	IDEA

Removal of non-condensables from Turbine condensers

The efficiency of a Steam-turbine is mainly determined by the pressure of the steam at its outlet. The Turbine Surface Condenser is therefore maintained under vacuum. To enable this, the Steam Jet Ejector Vacuum System must be capable of removing all non condensable and associated water vapour from the Surface Condenser to produce the minimum steam condensing pressure consistent with physical dimensions and heat transfer and to provide for deaeration of the condensate. The sources of non condensables include air leakage through all system components operating below atmospheric pressure, gases released from feedwater drains and vents admitted to the condenser, gases released for make-up admitted to the condenser, condensate surge tank when utilized in a closed cycle and disassociation of feedwater into oxygen, hydrogen and non condensables.

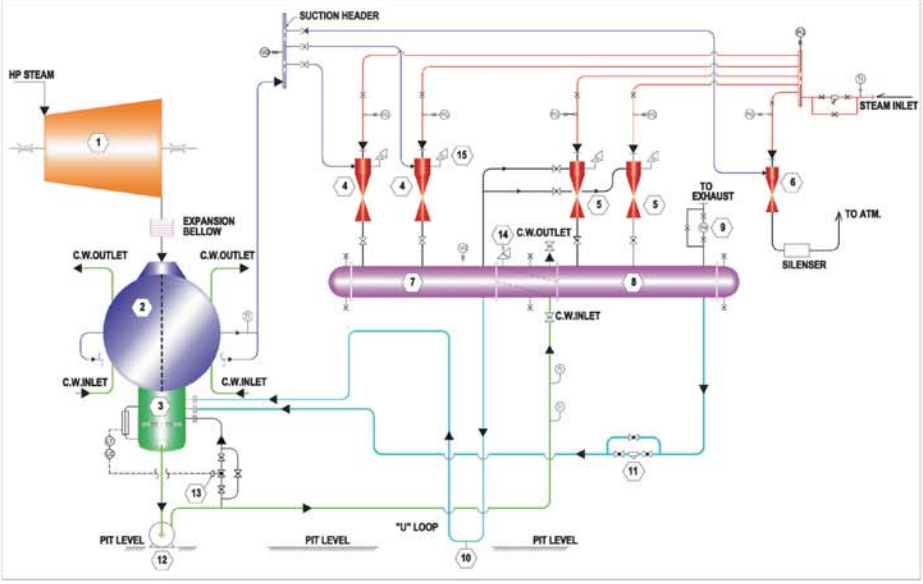
The recommended design pressure of the Steam Jet Air Ejector (SJAE) System is as follows:

1) For electric generation service :	The design pressure is 0.035 ata (25.4 mm Hg (a)) or the condenser design pressure whichever is lower.
(2) For Pumps, compressors and other : mechanical drives	The design pressure is that for which the condenser is designed minus 0.035 ata (25.4 mm Hg (a)).

Usually, the SJAE system is of Twin Element type i.e. of duplex design having two identical Ejectors per stage, one of which, being in operation at any one time and the other as stand-by. The Inter and After Condensers are generally Single Element type.

The System also includes a Hogger / Start-up Ejector with Silencer for fast pre evacuation and which is in operation only till the desired vacuum has been achieved. Thereafter, the two stage holding ejectors take over.

In this field of application, combination units with Ejector and Surface Condenser coupled Liquid Ring Vacuum Pump are also becoming popular.



No.	DESCRIPTION
1)	TURBINE
2)	TURBINE CONDENSER
3)	HOTWELL
4)	1st STAGE EJ 200%
5)	2nd STAGE EJ 200%
6)	HOGGER EJECTOR WITH SILENCER (OPTIONAL)
7)	INTER CONDENSER 100%
8)	AFTER CONDENSER 100%
9)	ROTAMETER
10)	U LOOP
11)	CONDENSATE TRAP ASS'Y
12)	CONDENSATE PUMP
13)	CONTROL VALVE
14)	THERMAL RELIEF VALVE
15)	SAFETY RELIEF VALVE

st Efficient!

At our Research and Test Facility, quality is assured and performance is proven

In an effort to provide its customers with World Class SJAE Systems Croll-Reynolds and Mazda have installed one of the world's largest state-of-the-art-Research and Test facility at its plant in Ahmedabad. With this test facility, Mazda has the ability to simulate operating conditions and analyze all anticipated variables that may be encountered under actual operating conditions.

Some of the critical performance factors that Mazda is able to analyze at the test center include Ejector suction flow capacity, Ejector stability under varying steam and water pressures and temperature conditions. Croll Reynolds and Mazda guarantees that when the system is operating, it will meet all capacity, steam consumption and power limit specifications according to Heat Exchanger Institute Standards and ASME PTC 24. The center also gives Mazda the capability to more accurately measure flow generated noise during testing of Ejector discharging to atmosphere.

As a part of the commitment to customer support, pick up and break up pressure records are maintained on every system installation. Record include: system and component specification, detailed list of parts and construction, materials and performance data.

Mazda's Test Centre includes Boilers having a total steam generation capacity of 10,000 Kg/hr at 17.5 Kg/cm2 (g), Cooling Towers of 1200 TR total capacity, Surface Condensers of 300 m2, Control Valves, Condensate Recovery Systems and large capacity Circulation Pumps.

Field Service

Mazda Limited has a steam of trained engineers available at short notice to visit any of the company's or associated company's installations. Although our engineers are generally based in India, they travel world-wide as required. Helpful service can also be obtained through many of our agents and representatives' offices, a number of which, have available field engineering staff. The range of services available include installation advice, pre-commissioning checks, commissioning service, routine-on-stream adjustment, overhauls, inspection and technical reports, etc.

TYPICAL PERFORMANCE CURVE OF 1ST STAGE HOLDING EJECTOR

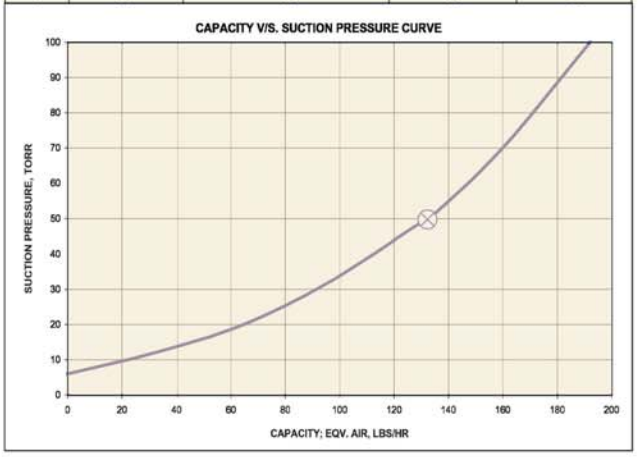
Date: 03/24/2003

Customer Name: PO Number : System Tag No.: Project	**CURVE#** 81251-1-Y1 Model# 2- #242-S8-S8 EJECTORS Stage Y

Design conditions:
Suction : 133 LBS/HR EQV. AIR @ 63.5 TORR SUCTION PRESSURE TO 254 TORR DISCHARGE PRESSURE
Motive : MOTIVE STEAM @ 3.87 KG/CM2(G) & SAT.

OBSERVATIONS:

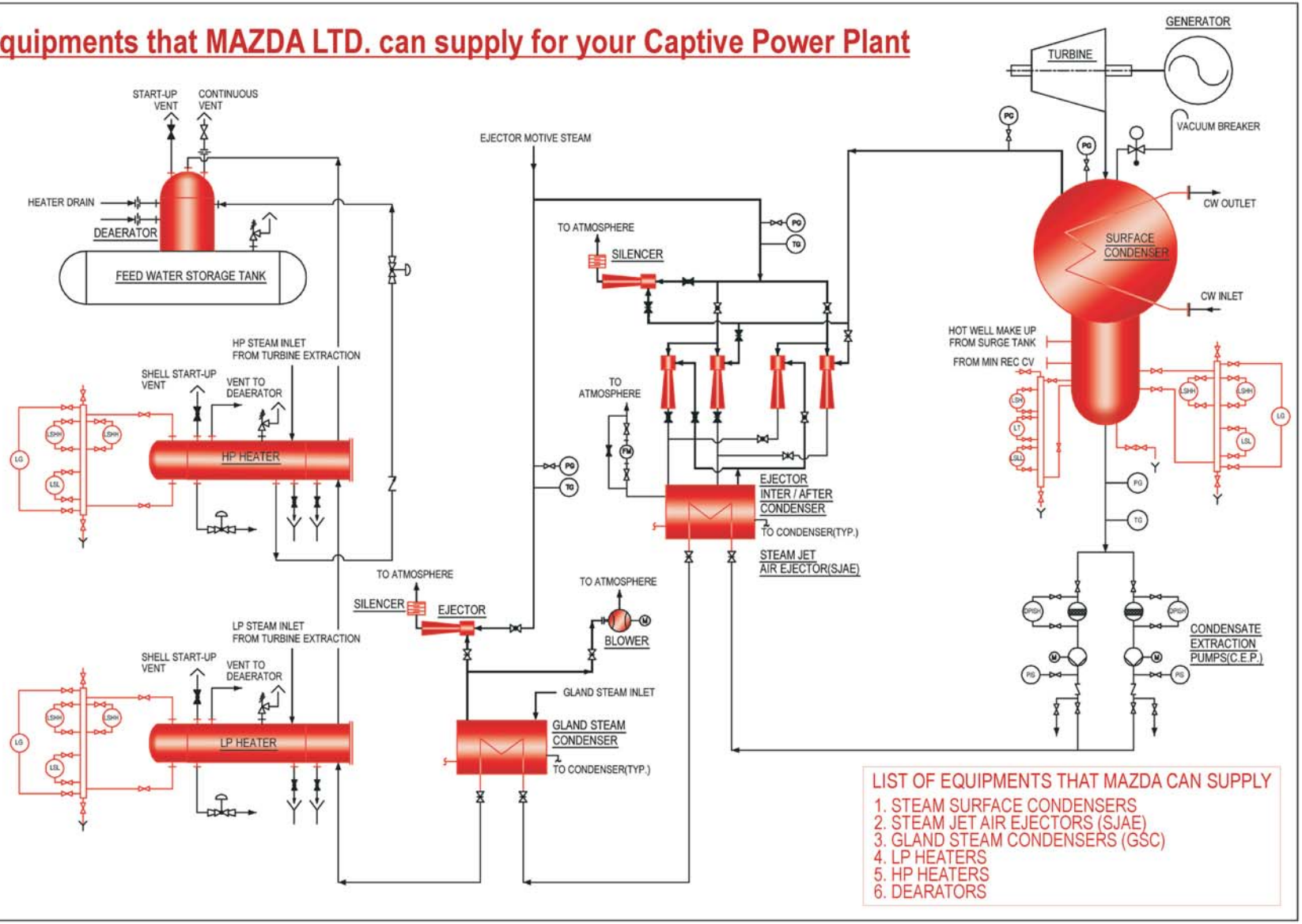
Sr. No.	MOTIVE PRESS.	SUCTION CAPACITY	SUC. PRESS.	DISCHARGE PRESS.
	3.87	LBS/HR.EAL	(TORR)	(TORR)
1	3.87	0	6	254
2	3.87	32	12	254
3	3.87	64	20	254
4	3.87	96	32	254
5	3.87	128	48	254
6	3.87	133	50	254
6	3.87	160	70	254
6	3.87	192	100	254



Main discharge header has three connections for testing ejectors on different diameter lines.

Silencer under test for a start-up ejector to ensure operation at minimum noise level in accordance with OSHA mandated noise exposure limits.

Equipments that MAZDA LTD. can supply for your Captive Power Plant



LIST OF EQUIPMENTS THAT MAZDA CAN SUPPLY

1. STEAM SURFACE CONDENSERS
2. STEAM JET AIR EJECTORS (SJAE)
3. GLAND STEAM CONDENSERS (GSC)
4. LP HEATERS
5. HP HEATERS
6. DEARATORS

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