

STEAM

EFFICIENT & EFFECTIVE INDUSTRIAL ENERGY

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Energy

Domesticated

Electricity & Gas, controlled and measured
supplied, costed and regulated.

Free range

Steam & Compressed Air

Generated in House, **seldom** measured or
monitored, **outdated** control systems,
generally **neglected** and **poor** maintained.



- STEAM -

INDUSTRIES PREFERRED

EFFECTIVE - RELIABLE

ENERGY MEDIUM

Steam Link[®]



Who is Steam Link?

We are a dedicated team of professionals actively assisting the various steam dependant industries with all facets of the effective use of their steam energy.

What do we do?

Since 1998 Steam Link, is providing **Queensland / Australian Industries** with **Knowledge, Products** and **Service** to optimise industrial steam energy systems.

How do we do it?

Assisting Industry to create & maintain efficient steam energy systems. Installation of new process steam/hot water/gas systems, as well as maintaining gas/oil burners and steam boilers. With our vast experience, **Steam Link® & Vinke Enterprises P/L** is able to provide the right solution to suit your process application.





EFFICIENT STEAM SYSTEMS

DELIVER

EFFECTIVE STEAM ENERGY

Common Short Comings in Steam Systems

1. Incorrect installation of pipes
2. Incorrect pipe sizes
3. Bare pipes
4. Incorrect Condensate drainage
5. Steam leaks



Condensate - reduces energy transfer -Steam Traps required to remove and we advise to recover it.

Poor House Keeping Steam Energy Wasted

10 Meters of 50mm unlagged pipe at 10bar
wasting 10kg of steam/hr = **5 kW**

2mm hole in the steam pipe at 10bar
wasting 20kg of steam/hr = **10 kW**



Based on normal plant operation

10 hours a day
5 days a week
50 weeks a year

Total losses adding up to

37,500 kW





It adds up

As we have seen on the previous slide this small insignificant loss is adding up, plus

1. Cost of the energy to generate wasted steam
2. Excessive greenhouse gas, sulphur, NOX emission
3. Condensate build up, possible pressure loss
4. Multiply by the number of all steam plants (laundry, food-processing, hospitals, etc.)



Plant problems

Water hammer in steam pipes

Slow plant warm up

Excessive gasket failure

Increased maintenance

Extra cost \$\$\$\$\$\$

Production Losses

Inconsistent Product Quality

Unscheduled Production Stops

- Dry saturated steam delivers up to 98% effective energy
- Excessive condensate build up in the steam pipes (distribution system) reduces the steam temperature by up to 10%.

10 Bar saturated dry steam = 184 degC

10 Bar “wet steam” = 166 degC

STEAM TABLES

Gauge Pressure	Temperature	Enthalpy of Water (M)	Enthalpy of Evaporation (hfg)	Enthalpy of Steam (hg)	Specific Volume
kPa 'G'	deg C	kJ/kg	kJ/kg	kJ/kg	m3/kg
0	100.0	419.0	2257.0	2676.0	1.673
10	102.7	430.2	2250.2	2680.4	1.533
20	150.1	440.8	2243.4	2684.2	1.415
30	107.4	450.4	2237.2	2687.6	1.312
40	109.6	459.7	2231.3	2691.0	1.225
50	111.6	468.3	2250.6	2693.9	1.149

Uncontrolled Energy Destroys everything



Environmental Impact

Creating Synergy

• *RENEWABLE ENERGY SOURCE*

+

• *EFFICIENT STEAM SYSTEMS*

=

• *SUSTAINABLE PROCESS ENERGY*



Steam energy / USA

65% of all fuel burned

**by U.S. Industry
is consumed to generate steam**

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US Department of Energy

Website information to reduce energy waste

“Best Practices in Steam System Management”

Steam Link

Improving STEAM ENERGY efficiency



www.steamlink.com.au