

Attachment A

Environmental Control With Serious Payback

John Zink Flare Gas Recovery units turn an environmental liability into positive cash flow with ROI rates that are very attractive in many facilities.

- **Reduced facility emissions**

As facilities are required to control their total emissions, flare gas recovery and re-use becomes a viable option to reduce emissions. Emissions credits can be used elsewhere in the facility, sold, or used to avoid purchasing additional credits.

- **Improved public relations**

A John Zink® flare gas recovery unit reduces flare operation to a minimum for a substantial reduction of visible flames, noise or odors. In addition, taking steps to reduce the environmental impact of your flare systems can result in substantial tangible and intangible benefits.

- **Reduced purchase gas requirements and/or increased salable gas**

Normal operation at refineries, chemical plants, and other industrial facilities generates a flare gas with substantial heating value. The John Zink system recovers the flare gas for use as fuel, feedstock, or product. In most situations, the value of the recovered product is more than the cost to recover it, and some very dramatic paybacks are achieved when volatile energy prices trend upward. Refer to our sample [payback-analysis diagram](#) to obtain approximate figures for your application, or contact Zink for an engineering assessment.

- **Zero impact on safety relief system**

When properly executed, flare gas recovery can be seamlessly integrated into existing flare systems without compromising performance or safety.

- **Extended flare-tip life**

Flare tips are exposed to extreme conditions, and therefore, have a limited lifespan. Life of a flare tip is related to the amount of usage, so a reduction in flare operation may extend the flare-tip life for years.

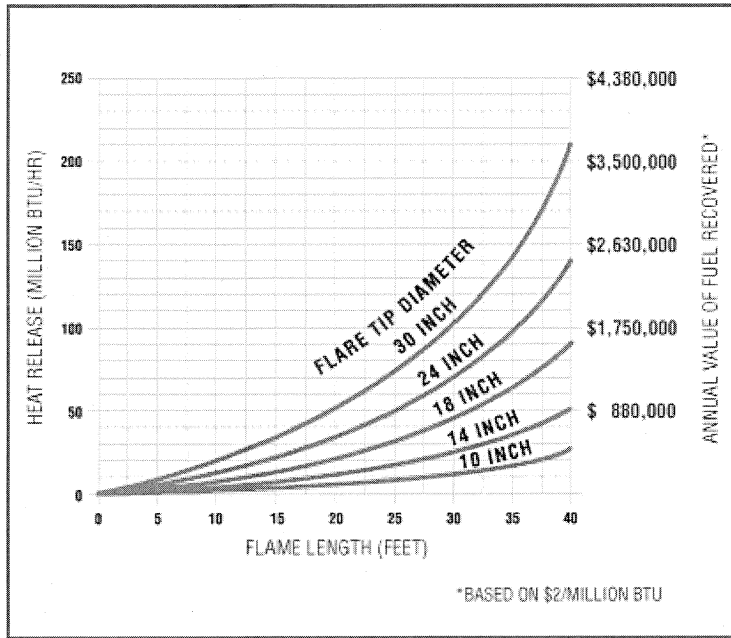
- **Reduced steam consumption**

Steam is frequently used to suppress smoke in flares. Recovering flare gas reduces the amount of flare gas for combustion and thus reduces the steam usage. A reduction in steam utility usually has an associated, measurable financial benefit.



View a [process diagram](#) describing the process flow of a John Zink Flare Gas Recovery Unit.

Payback Analysis Diagram



Contact a John Zink engineer to discuss your Flare Gas Recovery application or to schedule a study to evaluate the economics of a John Zink Flare Gas Recovery system.

Contact the Flare Gas Recovery group at izfgr@kochind.com.

John Zink Company, LLC
 11920 East Apache
 Tulsa, OK 74116
 United States of America
 +1-918-234-1800
 800-421-9242 (U.S. and Canada)
 email: info@johnzink.com