PRECISION
ICEBLAST
CORPORATION

SERVICE PROPOSAL

801 Maple Street Peshtigo, Wisconsin 54157 Phone 906-864-2421 Fax 906-864-2425

COMPANY INFORMATION	
COMPANY NAME	City of Santa Clara
COMPANY ADDRESS	850 Duane Avenue Santa Clara, CA 95054
CONTACT NAME	Bill Hammond
CONTACT PHONE/ CELL	Phone: 408 615 6557
CONTACT EMAIL	bhammond@svpower.com
PROJECT ADDRESS	850 Duane Avenue Santa Clara, CA 95054

PROJECT DATES	
FIRST DAY SITE IS AVAILABLE	April 7, 2018
LAST DAY SITE IS AVAILABLE	April 30, 2018
PROPOSED START DATE	April 11, 2018
PROPOSED END DATE	April 23, 2018

PROJECT SCOPE

Precision Iceblast Corporation agrees to furnish trained labor, materials, consumables, diesel, transportation, safety equipment, tube spreading calculations, tube spreading tools and blasting equipment to clean **two** horizontal gas flow ATS Express Heat Recovery Steam Generators located at your Santa Clara, California facility. Precision Iceblast will remove dirt, iron oxides, ammonia salts, and mineral deposits from the outer surface of **two** spiral fin tube modules. Each module contains an upstream and downstream face. Therefore, a total of **four** faces will be cleaned in each unit with each face being approximately 47 feet x 10 feet.

Precision Iceblast Corporation will supply and access areas via Tube and Clamp Scaffolding as well as a dust collector to reduce any contaminants from leaving the unit. Upon completion of work, debris from the HRSG Unit will be removed via barrel vacuums. Debris will be placed in drums or dumpsters supplied by the City of Santa Clara. The City of Santa Clara will be responsible for disposal of all materials and loading & unloading PIC's equipment.

Work will take place in April of 2018 and April of 2020. Work is estimated to take **six** to **seven** 12-hour shifts per unit for a total of **twelve to fourteen** days. Work will be performed in single 12-hour shifts. Price will include travel, per diems, site specific safety training, set up, clean up, blasting, confined space equipment, compressor, generator, scaffold, a dust collector, tube spreading calculations, tube spreading tools, dry ice, and diesel. Workers will be paid according to the California prevailing wage scale.

METHODOLOGY

Our system uses two high-pressure blasting guns (PIC 56XD's), one high-pressure compressor, and **five** laborers **(one supervisor, one ice attendant, one hole watch and two blasters)** per shift. Workers will be secured with safety harnesses and lanyards. Blasters are equipped with breathing apparatuses.

Each open space on the upstream and downstream side of the two modules will be scaffolded using tube scaffolding or a suspended cable scaffold. The scaffolding will be moved into the units through the outside access doors adjacent to each space. Floor jacks will be placed on bottom of the casing Scaffolding will be erected upward approximately 24 inches wide and will extend the height of the HRSG. Platforms will be placed every six feet for best working access for the boiler cleaners. Once each side is scaffold, PIC will commence cleaning efforts.

Our system is completely self-contained and our machines operate under ultra high-pressure (350 psi or 24 bars). We don't use any of your utilities and won't bother your company for any support once we get started. Our company is the ONLY ice blasting contracting company that manufactures their own equipment. We are very specialized and understand what it takes to get the best results when cleaning HRSGs and our results can only be achieved with our specialized equipment. The dry ice will do a tremendous job cleaning the fouling from the tubes. The chemical reaction from the sublimation of the dry ice creates a thermal expansion which physically removes the deposits. The ultra-high pressure air coupled with an enormous amount of air volume will force the deposits from the tubes. We also blast the tubes from top down and repeat the process two to three times in order to make sure that all the debris is removed from the tubes. The personnel are INSIDE the unit so we can physically see the areas that need special cleaning attention.

For the best results possible, we will perform our Deep Cleaning process. Individual Deep Cleaning Alignment Equipment and specialized wands are engineered specifically for your HRSG. The proper engineering ensures that all sides of the tubes can be properly cleaned without causing any damage. Once our conventional blasting is finished, this equipment is placed between the rows of tubes allowing us to access all the tubes throughout the entire module. The lengths of the alignment equipment are long enough to provide overlap from each direction to further ensure that the inner most tubes are thoroughly cleaned. Then our blasting process is repeated a second time which removes any remaining build up in the modules. Our Deep Cleaning process is the **only** process that cleans the tubes from the inside of the module instead of cleaning from the outside of the module trying to blow the debris all the way through. This system will provide you the cleanest tubes possible and the greatest efficiency gains regardless of the size of the module (up to 30 rows of tubes).

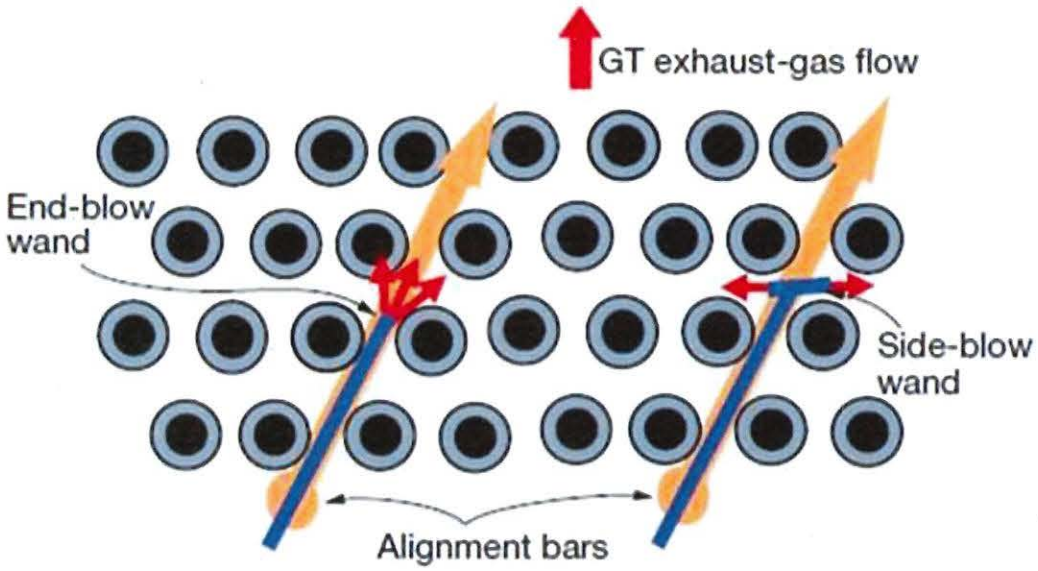
For very hard to remove deposits, Precision Iceblast Corporation has developed a proprietary chemical solution to help break down the deposits. This solution is applied very lightly across the deposits with a low pressure sprayer. After letting the solution break down the deposits (approximately 15 minutes) the tubes are then ultra-high pressure ice blasted to remove any of the loosened material. This proprietary solution has been tested thoroughly and is very effective and completely safe on the tubes. If all of these processes still haven't removed the fouling from the tubes, PIC will add a crushed glass media to the dry ice to creative an aggressive enough process to remove the fouling.

Collectively all of these different processes and approaches will ensure that your HRSG will be cleaned properly. Regardless of what type of build up / fouling is found on the boiler tubes, with the combination of 25 years of cleaning experience, ultra-high pressure dry ice blasting, our proprietary equipment, Deep Cleaning Alignment Equipment, HRSG solution, personnel, and experience of cleaning hundreds of boilers around the world, PIC will get each and every boiler clean. Most importantly, this process is SAFE. To ensure complete satisfaction, PIC will bring plant personnel into the unit and randomly borescope areas at all levels to make sure that no fouling remains on the tubes.

Upon completion of cleaning, PIC will use ultra-high pressure air (350 psi) to blow down the loose debris. The blow down starts from the top of the casing and all the debris is blown down to the bottom casing. The debris is bulked out of the basement and access lanes using shovels and pals. After the majority of the debris is removed, PIC will use air wands to blow out around the bottom headers. This debris is then removed and the process is repeated until all of the debris is removed from the unit. If any debris remains trapped between the lower headers, PIC will use our spreading equipment to open up the lower headers from the basement area to allow the trapped debris to fall to the floor. After final clean up, the scaffold is removed from the unit and turned back over to the plant.

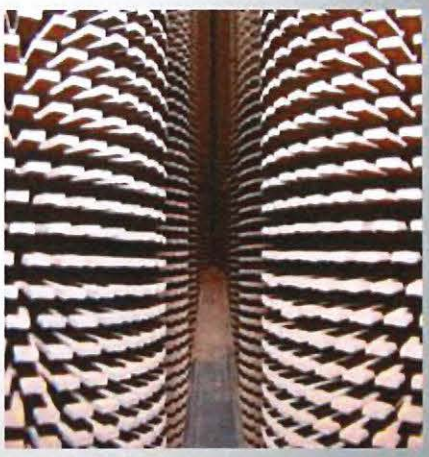
BEFORE & AFTER PICTURES

See below before and after pictures to see what can be expected from the cleaning as well as the penetration into the tubes.

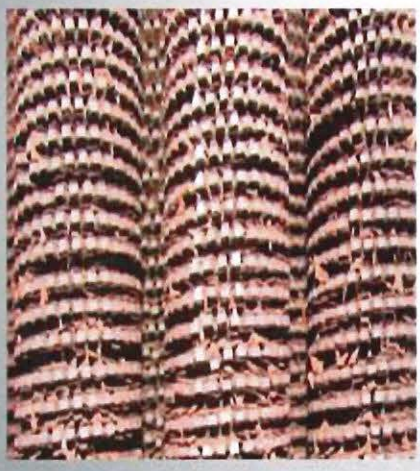


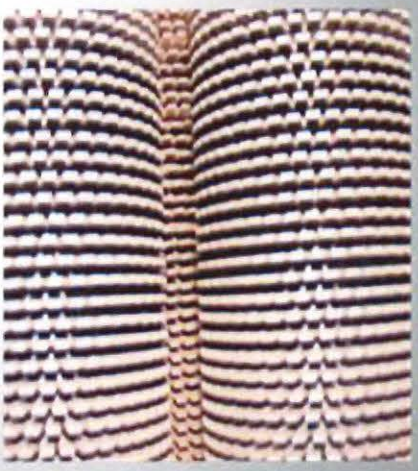
3. Alignment bars open tube lanes and permit relatively easy access by both end- and side-blow wands for most of the tube length between tube ties

PENETRATION INTO BANKS



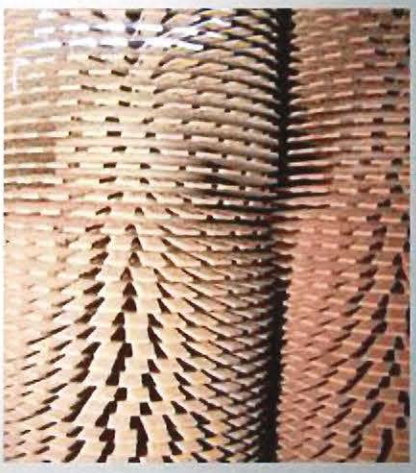
BEFORE AFTER





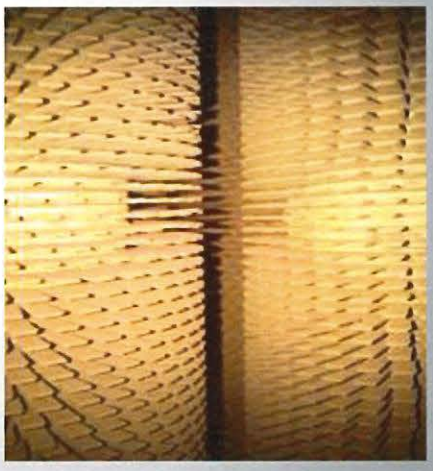
BEFORE AFTER

BEFORE AFTER



BEFORE AFTER

BEFORE AFTER



COST	
Price for above stated work (April 2018):	**$ 189,560.00**
Price for above stated work (April 2020):	**$ 199,990.00**

TERMS
Terms are net 15 days of completion of work. A 2% penalty will occur after the initial 15 days and then every 30 days thereafter. Extra costs will occur if Precision Iceblast Corporation's work is delayed as a result of the customer's actions or reasons beyond Precision Iceblast Corporation's control. If for any reason work is terminated early, Precision Iceblast Corporation will receive a mobilization charge plus be compensated for work that has already been performed and material costs for work that was not performed. A change order will need to be signed for any change from the original scope of work. **"This non-binding quote is provided for informational purposes only, and neither Customer nor PIC will have any obligation to the other (contractual or otherwise) with respect to the work described herein. If Customer and PIC wish to proceed, PIC will provide Customer a separate definitive written agreement to be signed by the parties that sets forth their respective rights and obligations."**

PREPARED BY:	
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Date	2/16/2018