



## Introduction

West Side Federation for Senior and Supportive Housing (WSFSSH) was founded in 1976 by a coalition of social service agencies religious institutions, and community organizations. WSFSSH was developed to provide for the diverse needs of older people and persons living with special needs.

The first building, the Marseilles, opened in 1980 with 134 independent apartments. Over time, this expanded in order to provide housing to over 1,800 people throughout 24 buildings located on the Upper West Side of NYC.

In the summer of 1995, the WSFSSH had chosen two **PK - Thermific N900** units to provide heat to their building. In 1997, another one of their buildings installed a **PK - Thermific D1900-2**. After 25 years of continued operation, the original heat exchangers, burners, gas valves and blowers were still operational in all three units.

## Challenges

In early 2020, the **N900**'s started to experience ignition/flame failures. Accardi Companies technicians determined the boilers were igniting reliably and combustion was tuned properly, but the original flame rod monitoring system on the steel core burner was not reliably monitoring and reporting back to the flame signal.

During the same time, there was concern with the **D1900-2** unit due to the staff reporting water leaking onto the floor. It was thought the heat exchanger may have been compromised. Upon further testing, it was discovered that the copper finned-tube heat exchanger was intact, but had been subject to heavy condensing. This was shown by green/white colored corrosion on the heat exchanger.

# Patterson-Kelley Solution

While both **N900** units and the **D1900-2 Thermific** still were in operational shape due to timely and routine preventative maintenance done by WSFSSH, minor upgrades were made to improve unit operation, bringing the appliance into the 21st century.

The **PK Thermific** N900's flame rod monitoring system on the steel core burner were replaced. In order to improve the reliability of the flame strength and simultaneously reduce CO and NOx emissions, stainless steel mesh style burners were installed in both boilers, along with an external pilot assembly complete with UV flame monitoring. After installation, there was an immediate improvement in the flame signal strength at solid 5.0V. With these replacements, both Patterson-Kelley units were able to achieve 84.8% and 83.4% efficiency 25 years later.

The water seen on the floor under the **D1900-2 Thermific** was not the domestic water leaking out of the heat exchanger, but liquid condensate

forming from the combustion process, due to the low operating temperatures. After adjusting the operating temperature set point, above condensing operation, the condensate issue was resolved.

In addition, the decision was also made to upgrade the **D1900-2 Thermific** from the flame rod monitoring system to UV flame monitoring technology. When this water heater left the **Patterson-Kelley** factory in 1997, its operating efficiency was 85%. 23 years later, this water heater is able to achieve 85.6% efficiency. Thanks to the expert assistance from Accardi Companies and Patterson-Kelley's industry trusted solutions, these units are able to operate for many more years to come.

For a more in-depth study on these two buildings, [download the WSFSSH Whitepaper](#)

For more information on Accardi Companies, visit: <http://www.accardicompanies.com/>



*For more information about Patterson-Kelley, please visit [pattersonkelley.com](http://pattersonkelley.com).*

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