

# ACC Cleaning System



**KARAJET®**

Since 1995

**COMMITTED TO THE HIGHEST EFFICIENCY**

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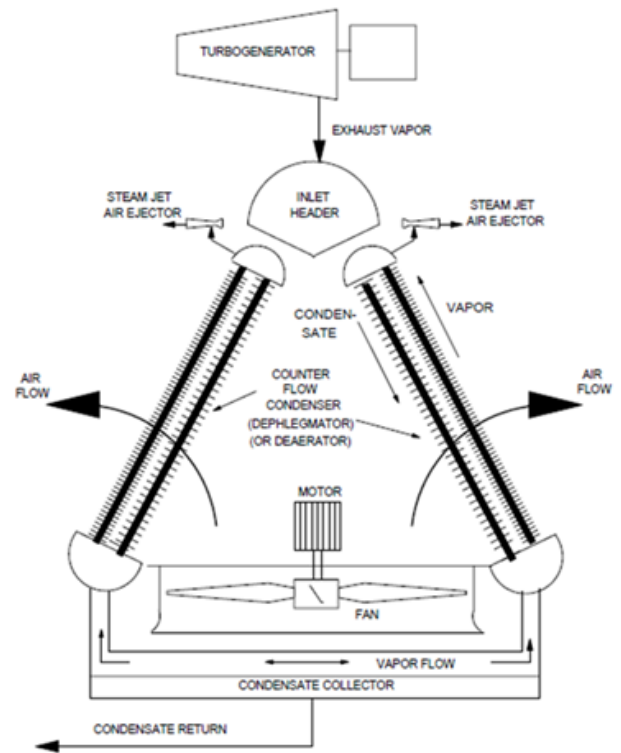
## AIR COOLED CONDENSER CLEANING SYSTEM

One of the important features of the Rankine cycle, on which all fossil, nuclear and combined cycle power plants are based, is the condensation of the vapor exhausted from the LP turbine stage, the condensate being recycled back through the system. Not only does this reduce the amount of makeup water that has to be supplied and treated but the heat contained in the condensate is also recovered.

Environmental pollution ranging from industrial soot to leaves to bird feathers and droppings can adversely affect the airflow around the tubes, reducing the unit's efficiency.

Keeping the finned tube surfaces of your air cooled condenser or fin fan unit clean is imperative to maintaining optimal performance and reliability.

We offer cleaning services for finned tubes heat exchangers, and also design full cleaning package for clients, from the cleaning trolley, ladders, spooling devices, to high-pressure pumps units.



Using our cleaning systems will cause to significant improvement in unit performance:

- Fan speed reductions by up to 50%
- Steam throughput per hour increased by 30%
- Pressure drop across unit by 30%



### Our range of services comprises:

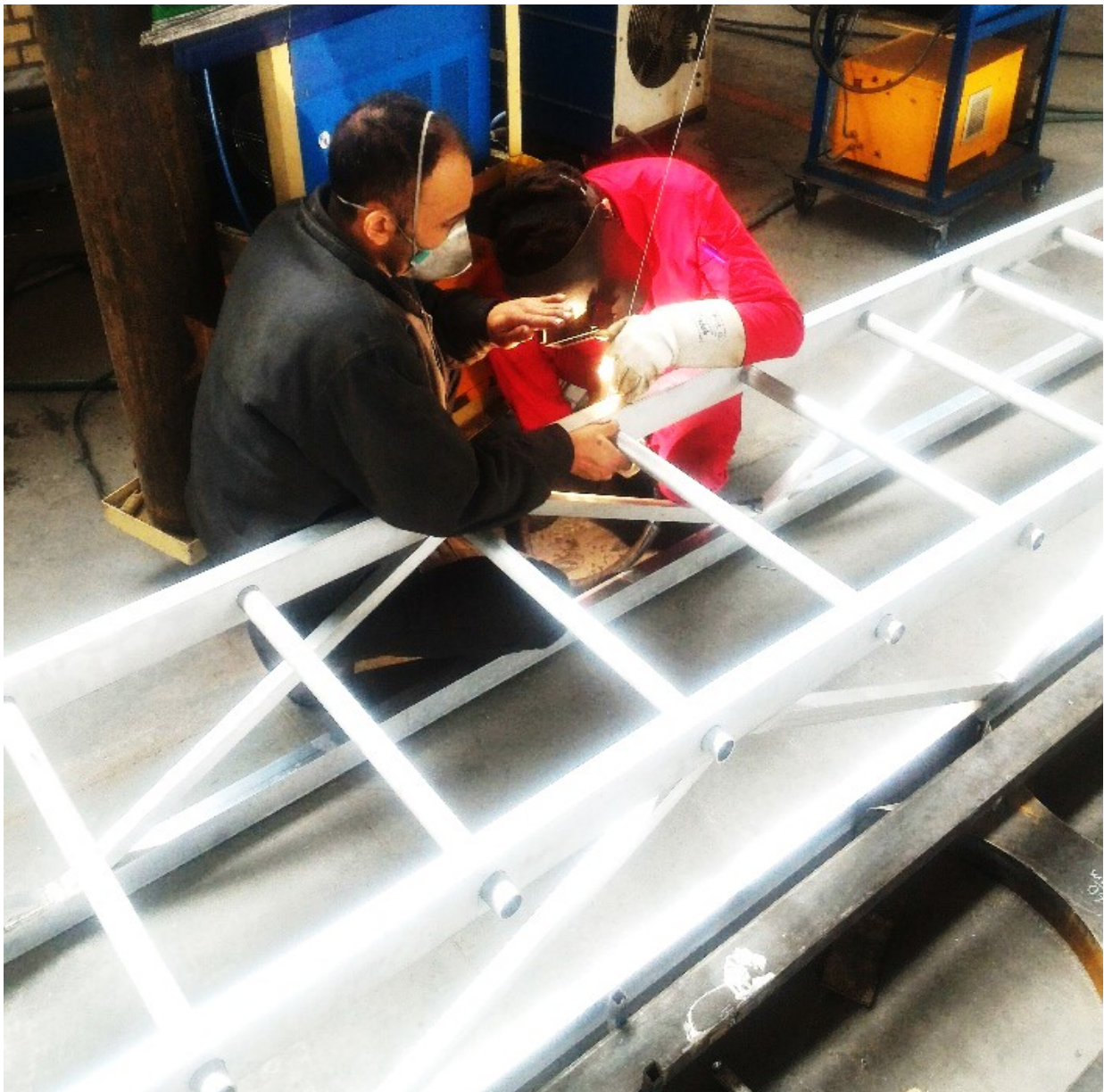
- Our range of services comprises:
- Basic and detail engineering
- Production in our own workshop
- Function test of the cleaning system in our workshop
- Delivery
- Training of the operating staff on site
- Spare parts supply
- Long lifetime

On every roof side of the heat exchanger a cleaning chassis is installed for cleaning with high pressure water, which is equipped with several fixed nozzle holder.

The horizontal movement of the complete system is carried out manually by the operator. For this purpose the cleaning system is mounted on rails of the flatbed cooler.

The cleaning chassis is made of aluminum and can be delivered as walkable and not walkable execution.

Walkable chassis enables and access to the cooler surface for maintenance or manual cleaning of the cooler. The other components of the cleaning system are made of stainless steel and/or in temperature and corrosion resistant materials.



Our system uses a significant volume of water; but at a pressure that, while allowing for effective surface cleaning, avoids damaging galvanized surfaces and fins. The water contains no additives. The nozzle beam is optimally matched to the tube bundle geometry, with a constant jet angle. Optimizing the geometry of the nozzle beam involves determining the proper nozzle distance to the surface, the jet energy and the selection of the appropriate nozzle design. The constant jet angle also ensures that there is no damage to or snapping off of tube fins, regardless of the material from which they are fabricated. Furthermore, the carriage on which the nozzle beam is mounted moves at a constant speed and so allows the fouling to be removed effectively and uniformly across the heat exchange elements of the condenser. Because the fouling material is removed, air flow is no longer obstructed. An important advantage of the automated cleaning method is that cleaning can be performed during operation while the unit is still on-line.

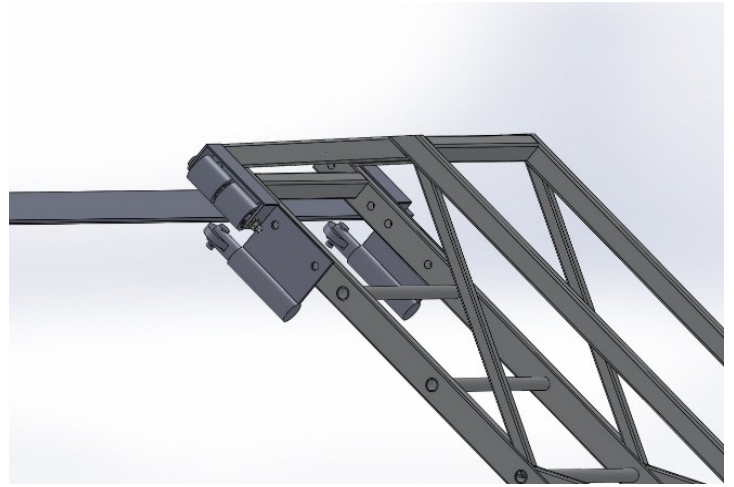
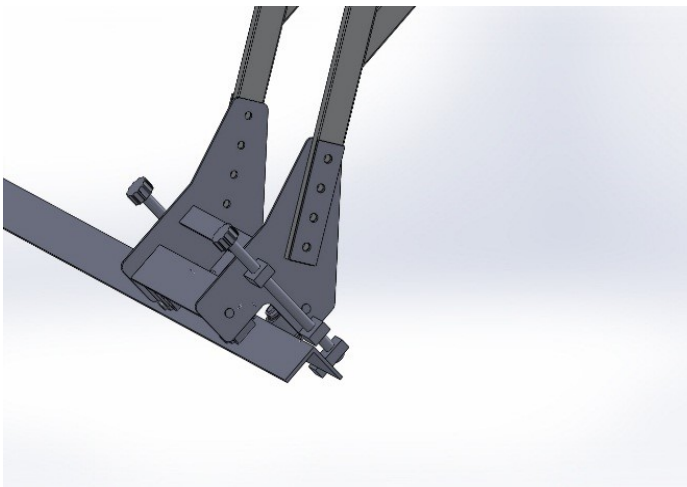
The system can be delivered as complete cleaning system including control, high-pressure pumps, high-pressure hoses, cables, rails and holders.



KARAJET R&D department started developing cleaning systems in 2015. The company proceed to systematic and accurate design in order to avoid typical defects in existing systems. Here we will illustrate some of main achievements:

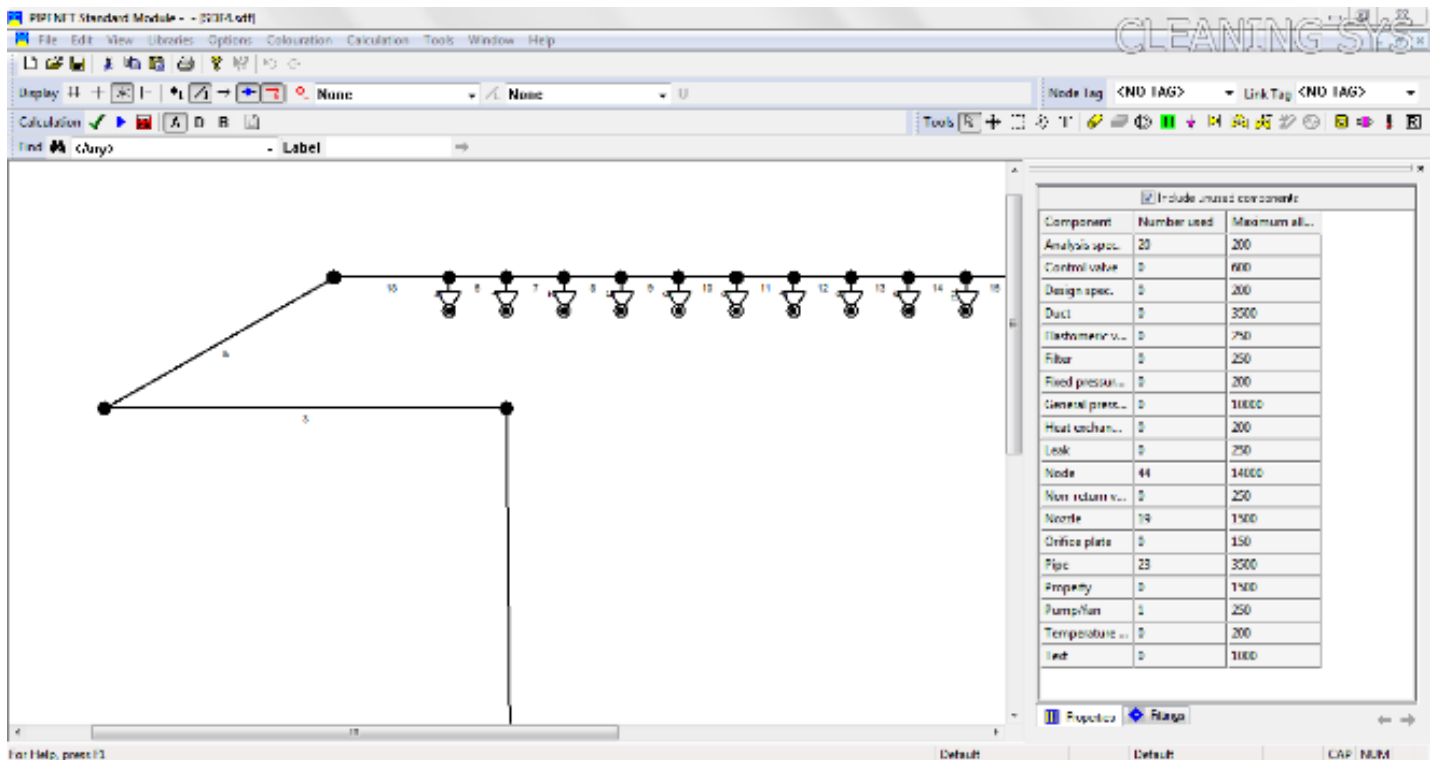
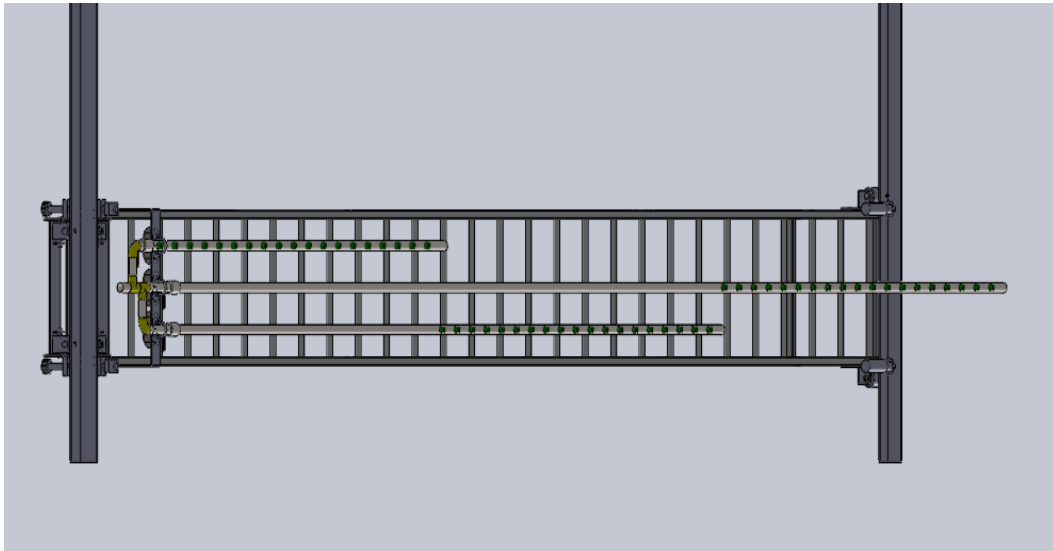
## 1. Design and optimization of wheels complex:

Ease of mobility of ladders is a main feature of cleaning systems. Our wheels complex is designed based on location and different loading conditions of each wheel. This ensures smooth movement of ladders along the rails. The wheel complex also prevents ladders from leaving the tracks.



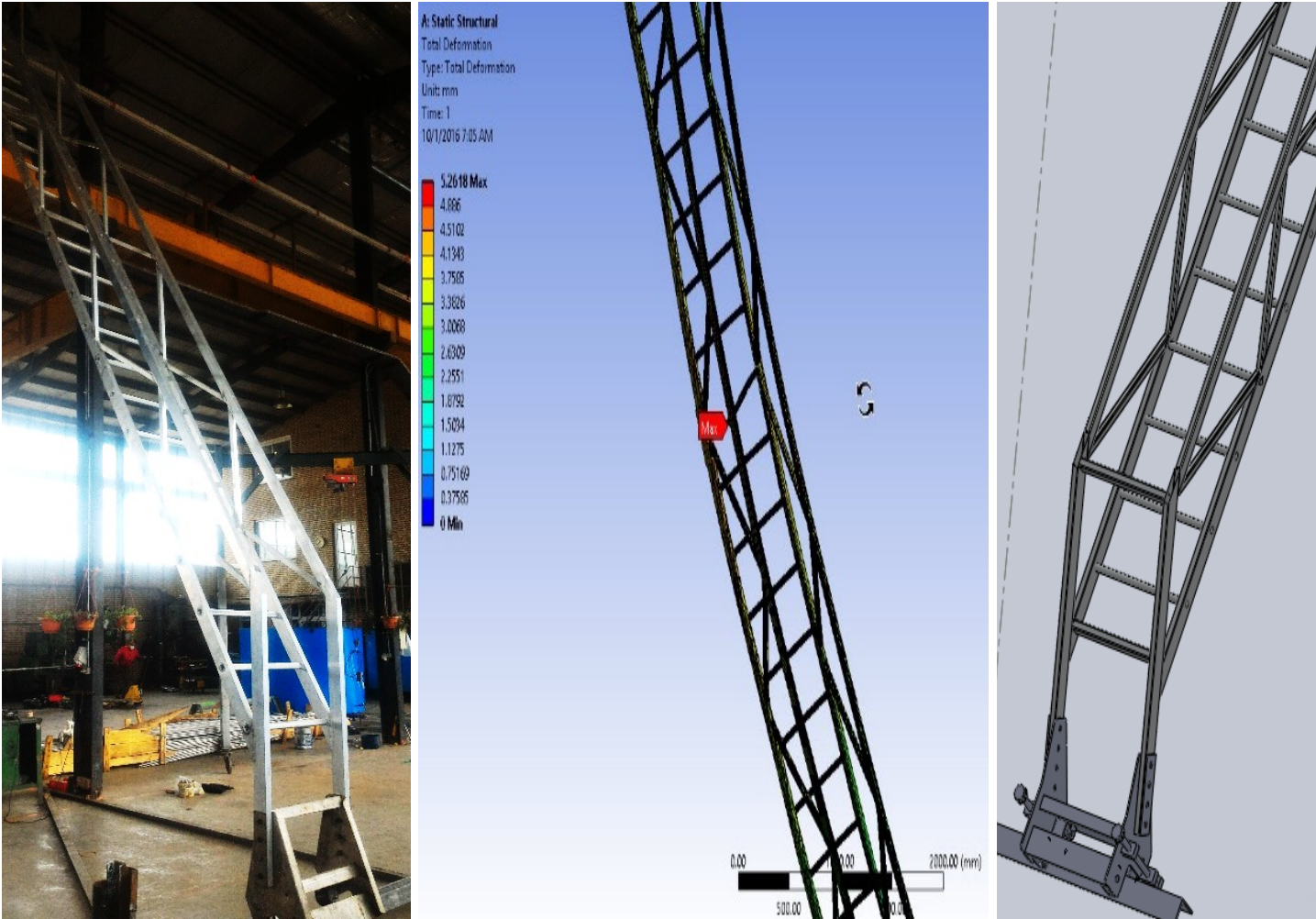
## 2. Nozzle Design:

As the name suggests, main task of the system is cleaning! And it is done by nozzles. KARAJET relying on its experience on manufacturing nozzles has developed special nozzles for this purpose according to design conditions of system. The performance of the nozzles has been verified by experiment.



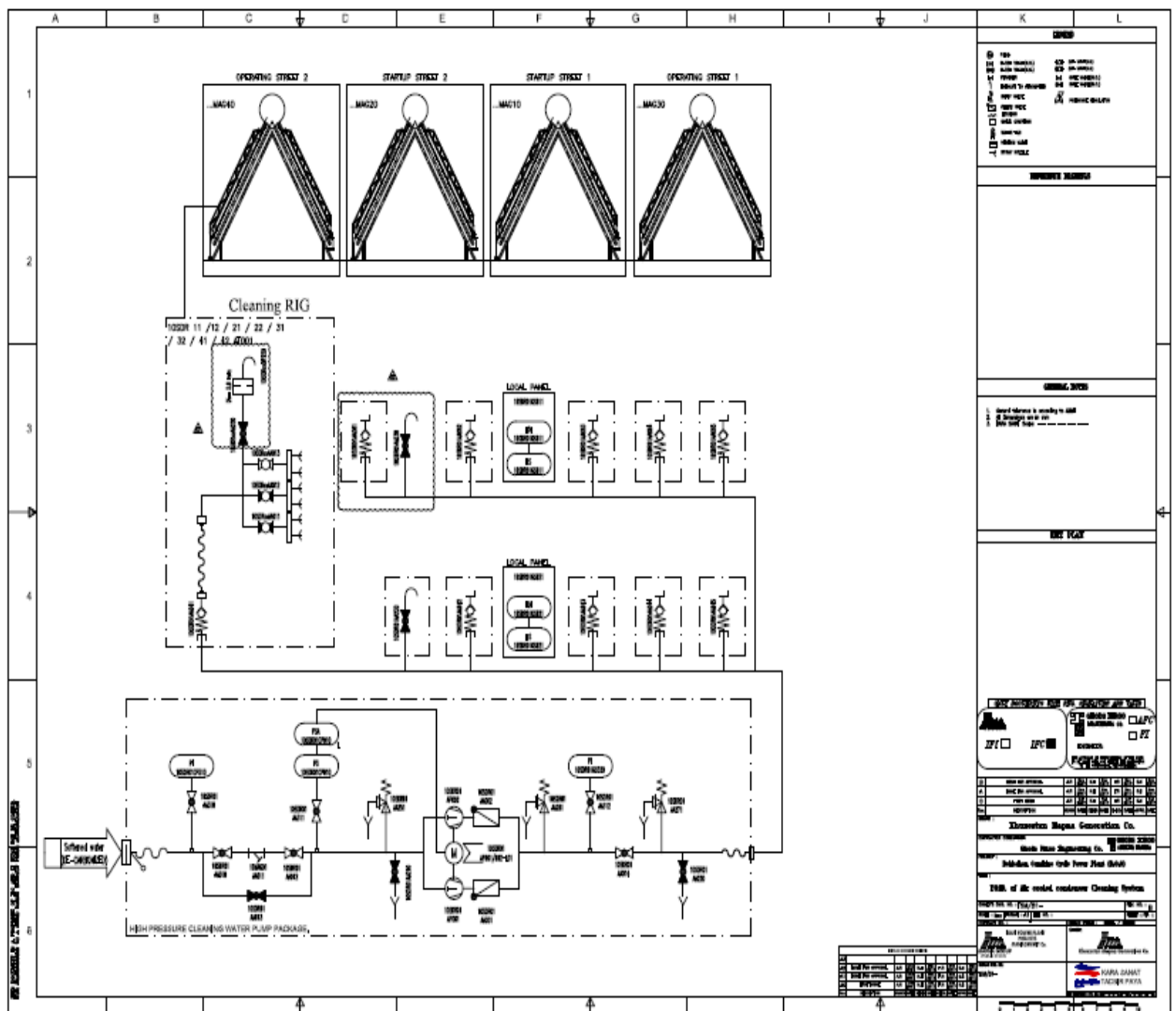
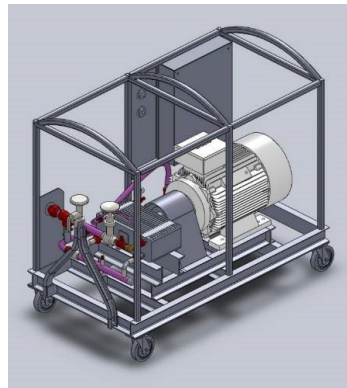
**3. Design of ladders structure:**

Different loading conditions are applied to structure of the ladders during service. As the structure must bear these loadings, it should be as light as possible to move easily. Proper material selection and structure optimization are important factors that we considered in design of the ladders.



**4. Pump Skid:**

The heart of the system which supplies required water for nozzles is a complex of motors, pumps, valves, instruments and piping. Our design not only guarantees the best performance but also safety, maintenance and control issues.





# WORLDWIDE SERVICE & SUPPORT

Other KARAJET products you might be interested in:

- Ejector
- Multi stage vacuum system
- Steam Trap
- Silencer
- Static Mixer
- De-superheater
- Pipe support (Spring Hanger & etc)
- Separator
- Scrubber
- Steam Jet Chiller
- Filter
- Degasifying systems (Deaerators)
- Condenser
- Heat Exchanger

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