

**ROYAL SCIENTIFIC SOCIETY**  
MECHANICAL DESIGN AND TECHNOLOGY CENTER

Corrosion Engineering Division  
P.O. Box 1438 Jubaiha 11941, Amman - Jordan, Telex:21276  
Fax : (962)6-5344806, Phone : (962)6-5344701-9

SUMMARY OF  
TEST REPORT NO 351/07/4

Designation No.: 3/07/331      Our Ref. & Date: (3)148/55/1/ 12783 Date 27/9/2007  
Test :      Method of Sampling:  
Date of Test:

The **Royal Scientific Society** was requested by **Jordan House for Modern Technologies & Jordan Steel Factory** to conduct & supervise a joint project in Jordan Steel factory. This Project was based on installing physical treatment devices manufactured by **Hydropath Holding Ltd** to prevent scale and reduce corrosion rate in the cooling system and pipelines of the Jordan Steel Factory. This study was designed to test the **Hydropath Technology** physical treatment devices and demonstrate that there is no need for any chemical treatment when using Hydropath Technology. This case study took place over a one-year period between 2006 and 2007.

**Jordan House for Modern Technologies** has distributed and installed the Hydropath Technology Devices as follows:

Item	Description	Pipe Dia.	Hydropath Device
1	To protect the (Thermix)	16"	Hydroflow (HF) Custom 16"
2	To protect the (Furnace)	4"	HF C120
3	To protect the oil cooling heat exchangers and the indirect cooling tower	6"	AquaKlear (AK) Custom 6"
4	To improve the efficiency of the sand filters	16"	AK Custom 16"
5	To protect the direct cooling towers	16"	AK Custom 16"
6	To protect the rolling cooling	10"	HF Custom 10"
7	To protect the coagulation tank	16"	AK Custom 16"
8	To protect the pipe line from the rolling to the filters	10"	HF Custom 10"

The Royal Scientific Society installed fourteen (14) scale & corrosion coupons in random places throughout the Jordan Steel Factory. The coupons were removed after one year in order to compare the results with the chemical treatment coupons installed on an earlier test. The results were as follows:

**Sulphate Reducing Bacteria (SRB) results:** Before starting the study SRB was equal to (10.8 and 19 cfu / ml). After one-year installation of Hydropath Technology, the count was reduced to (7.92 and 7.08 cfu / ml). This reduction in count of SRB is directly due to the performance of Hydropath Technology.

**Corrosion coupons results:** After one year of installation of the corrosion coupons in presence of Hydropath Technology, the corrosion rate was varied between (4.915 to 6.9 mpy), while the corrosion rate varied between (12.2 to 15 mpy ) with the chemical treatment .

**Scaling coupons results:** After one year of installing Hydropath Technology the deposit layers were very thin to the extent they could be considered negligible. On testing, this was found to comprise of a mixture of not only pure scale (CaCO<sub>3</sub>), but also dirt, iron oxide, grease, etc.

**Case Study Conclusion:** Hydropath Technology can be recommended to be used as a clean method to protect the cooling network against corrosion & scale. The Hydropath Technology can be recommended as a replacement of chemical treatment for corrosion & scale protection in cooling network;.

Corrosion Consultant: Dr. Farqad F.M. Saeed

*f. f. M. Saeed*

Head of Division: Dr. Azzam A. Odeh

