

WORKING IN PARTNERSHIP

 **CALGAVIN**

 **process**  
integration limited

DELIVERING  
SOLUTIONS FROM  
STUDY TO REVAMP

SURVEY. STUDY. DESIGN. IMPLEMENTATION.



RESEARCH. EVALUATION. INNOVATION. SOLUTION.

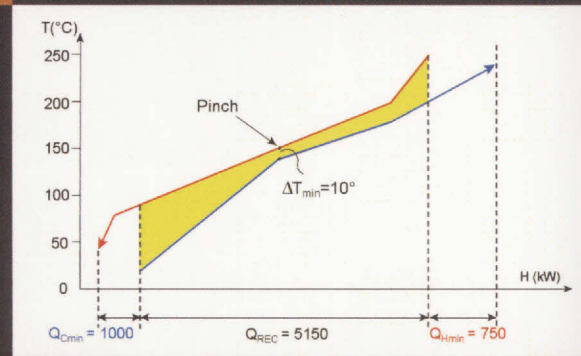
[CALGAVIN.COM](http://CALGAVIN.COM)

THIS UNIQUE PARTNERSHIP SPECIALISES IN OPTIMISING PERFORMANCE OF EXISTING AND NEW HEAT EXCHANGER NETWORKS, SAVING ENERGY AND IMPROVING YIELDS



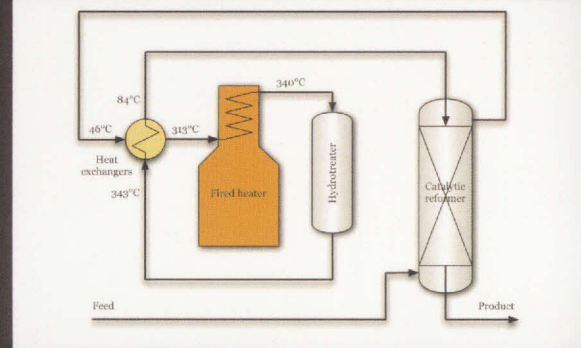
## STUDY & SURVEY

- Determine client aim and expectations
- Extract process stream data
- Determine heat recovery potential for current operation
- Simulate and validate existing network against plant operation
- Optimise network, considering plant and process constraints
- Identify cost effective exchanger enhancement opportunities



## DESIGN

- Review/model existing equipment thermal and mechanical
- Examine flow field for opportunities to mitigate fouling, maldistribution
- Develop detailed engineering plan for revamp
- Integrate conceptual design with reality of flow sheet



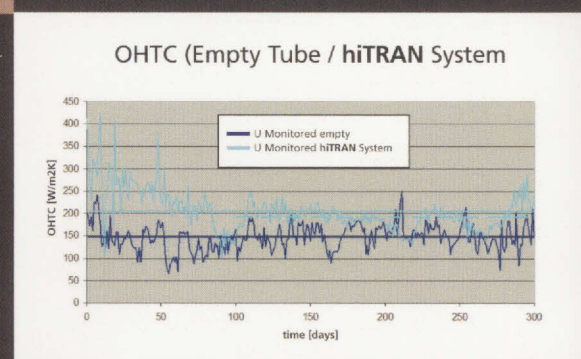
## IMPLEMENT

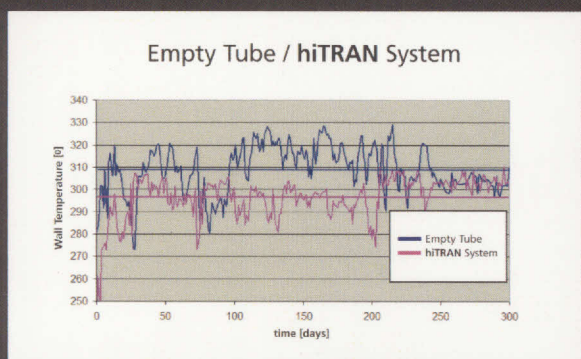
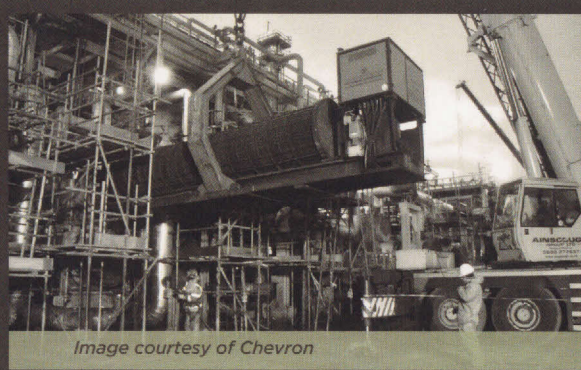
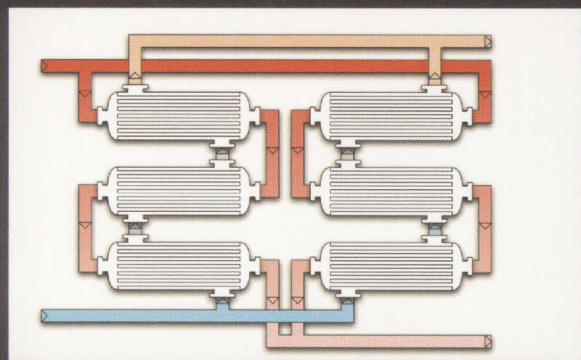
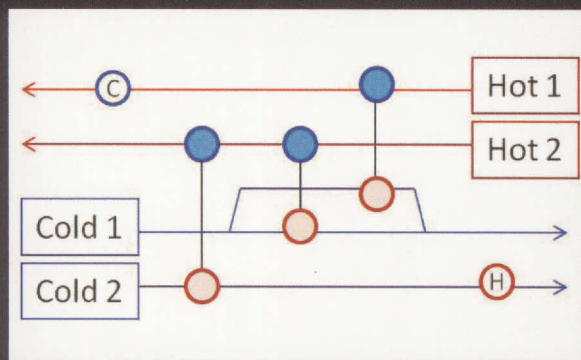
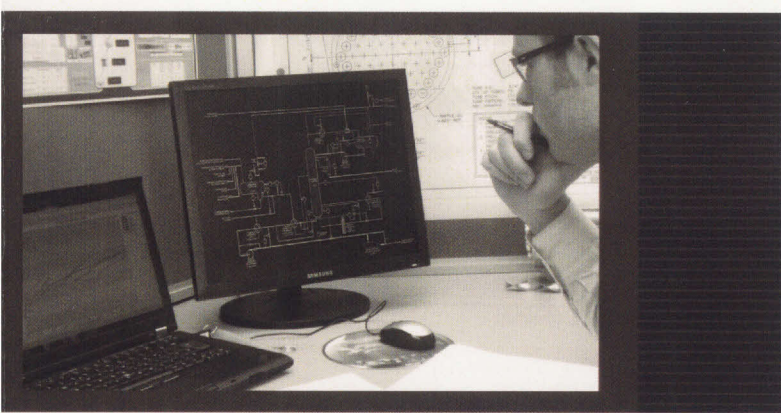
- Prepare detailed report for client including requested modifications
- Prepare implementation plan to meet client investment criteria
- Provide supervision of specialist equipment for installation



## EVALUATE

- Review new plant operation
- Collect data and provide comparative information on new and former plant performance
- Evaluate and prove benefits - provide report
- Prepare summary report for client dissemination





## A PARTNERSHIP DELIVERING SOLUTIONS



CALGAVIN and PROCESS INTEGRATION LIMITED are working together to deliver tailor-made process design solutions for the process industries. This partnership brings together state-of-the-art process improvement technology and heat integration/enhancement hardware knowledge. We specialise in optimising the performance of existing or new heat exchanger networks, saving energy and improving yields. For our customers this means practical projects designed, optimised and implemented with the level of confidence gained from many years of proven benefit.



## PROCESS INTEGRATION LIMITED

Process Integration Limited (PIL) provides state-of-the-art process improvement technologies for the oil, gas, petrochemical and chemical industries by identifying innovative improvements in operation and design. The company's technology and know-how can be leveraged to; increase energy efficiency, decrease emissions, improve yields and increase capacity. This allows costs to be lowered, energy consumption reduced and profitability maximised.

This combination of specialist technical skills and highly advanced process integration software ensures that PIL's clients benefit from the best possible engineering solutions and practises.



## CALGAVIN LTD

For over 30 years CALGAVIN has built up an unrivalled expertise in the thermal analysis of process plants. Our engineers have extensive knowledge of thermodynamics, heat transfer and fluid flow phenomenon. This gives CALGAVIN the technical insight to debottleneck exchangers and networks in critical and often complex services.

CALGAVIN design, manufacturing and supply heat transfer enhancement products - hiTRAN Matrix Elements, which substantially increase tubeside heat transfer by changing fluid dynamics. Our software hiTRAN.SP is designed to simulate tubular heat exchangers equipped with hiTRAN Matrix Elements. This allows engineers to fully optimise size, pass arrangements and performance for both air coolers and shell and tube heat exchangers by interfacing with industry standard programs. CALGAVIN continue to invest in Research and Development to support our engineering consultancy services, products and exchanger design software hiTRAN.SP



## OPTIMISATION AND PERFORMANCE

- OPTIMISED PLANT OPERATION - INCREASED PRODUCTION
- REDUCED ENERGY USE - INCREASED PROCESS EFFICIENCY
- CLEANER PROCESS - REDUCED CARBON EMISSIONS
- INCREASED PLANT OPERABILITY - MORE FLEXIBLE PROCESSING
- FAST PAYBACK ON INVESTMENT - GREATER PROFIT



## BETWEEN US, CALGAVIN AND PROCESS INTEGRATION LIMITED HAVE A LONG LIST OF SATISFIED CLIENTS INCLUDING:

BASF, BP AMERICAS, EXXONMOBIL, GASCO, LUKOIL, PEMEX, SAUDI ARAMCO, SABIC, SHELL GLOBAL SOLUTIONS, TIEXIONG, SINOCEM, GS ENGINEERING, HANJU, MITSUBISHI CHEMICAL CO, SINOPEC, PETROBRAS, TOTAL, WS ATKINS, JOHNSON MATTHEY...

Working in partnership





# RESEARCH

*'The key to knowledge and the cornerstone to success'*

**With over 30 years of experience, the combined capability of Process Integration Limited and CALGAVIN can bring you tangible and sustainable process improvement benefits. Both companies fund and actively support state-of-the-art research both in-house and at Universities and research establishments worldwide. Each company can provide reference to a long list of research activities, technical papers, publications and case-studies. This valuable information allows our clients to gain a high level of confidence when making decisions for change.**

**Research provides vital data to solve the inevitable problems found in the deficiency of complex thermal processes. Non optimised systems, often found where plants have been added to or modified, can be a significant cost to industry and have a considerable detrimental effect on the environment. It is a strong belief of both companies that valuable savings can be made to existing equipment before new plant has to be considered. This is the lowest cost strategy that a plant can make for a rapid return on investment.**

\_ UK

CALGAVIN LIMITED, MINERVA MILL  
STATION ROAD, ALCESTER  
WARWICKSHIRE, B49 5ET

\_ TEL +44 (0) 1789 400401  
\_ FAX +44 (0) 1789 400411  
\_ EMAIL [INFO@CALGAVIN.COM](mailto:INFO@CALGAVIN.COM)



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