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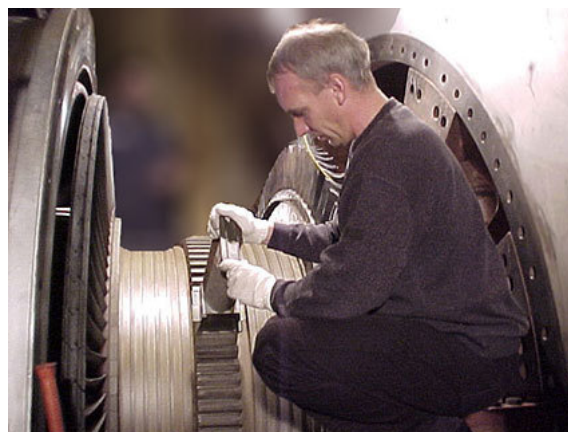


## About Hans van Esch

With Senior Level technical expertise in Turbomachinery Refurbishment, Hans van Esch is a metallurgical authority. His career at Hickham Industries, USA and Elbar, Netherlands (both now a part of Sulzer Turbo Services), and Chromalloy have enhanced his long career in process development for gas turbine repairs. His specialty repair process knowledge includes heat treatment, HIPing, chemical cleaning and stripping, inspection, welding, high temperature brazing, and coating:

- International Turbomachinery R&D Repair Projects
- Complete Gas Turbine overhaul and repair expertise including Component repair
- Metallurgical Inspection, Evaluation and Failure Analysis
- Trouble shooting and repair development
- Engineering and Production Staff Training
- Engineering Division Management
- Turbine Repair Production, Production Control and ISO 9001 Quality Implementation
- Sales, Marketing and Business development including creating business plans and SWOT

Hans is a member of ASM, ASME, and AWS, and has been active as session chair, member of several sub-commissions, as well as writing and presenting papers and training sessions. Hans is active in supporting EPRI with creating repair guidelines for conventional and advanced engines and components including fuel nozzles, technical reports (high temperature brazing and flow testing), international workshops (F-class and Frame 9FA), and component assessments (Frame 7FA component life extension). Hans has been awarded many Turbine Component Manufacturing and Repair patents.



In 2002, Hans van Esch founded TEServices by taking over the vendor verification from Natole Turbine Enterprises, (NTE). Hans further developed the vendor verification with a 6 step program, see Combined Cycle Article. In early 2003, he added metallurgical evaluations, lifetime assessment and extension, failure analysis, and training to the TEServices program. Hans presents on a yearly basis to GTUS, CTOTF, and other end-users' groups (see Publications).

## TEServices, Houston 2002 - current



### Hickham Industries (Sulzer Turbo Services Houston) 1994 - 2002

As Component Repair Division Manager, Hans led the ISO 9001 qualification team with component division certification within 6 months. He motivated the engineering group to improve repair processes and develop new repair scopes. Hans trained and educated Hickham engineers and hand-on staff, and established clear functional procedures. During this time, he increased sales and profit margins while expanding into new markets. While, starting the HICoat Coatings Division for Hickham. Furthermore, he developed MCrALY High Velocity Oxygen Fuel (HVOF) and smooth Thermal Barrier Coating (TBC) Air Plasma Sprayed (APS). His division introduced air-sprayed compressor applications. Hans, supported EPRI with creation of repair specifications for W501D and F and Frame 7EA and F components. Additionally, he led cross department projects, including complete overhaul of Alstom GT10 and provided domestic and international technical and commercial sales support.

### Turbine Support Europa (Chromalloy), the Netherlands 1990 - 1993

Hans repaired CF6-6/50/80, CFM 56, JT 8/9D and PW 4000 gas turbine components. Successfully introducing and integrating Laser Drilling, Low Pressure Plasma Spray, Robotic Thermal Spray and Electron Beam Welding Technology. He was responsible for engineering and metallurgical laboratory, investigated and resolved quality, process, and production problems. All while, supervising production teams of 150 members.

### Hickham - Elbar, Houston (Sulzer Turbo Services) 1986 - 1989

Hans technical transferred and performed quality control of the Hickham-Elbar joint venture which repaired industrial gas turbine components. During that time he also performed metallurgical evaluations of all hot section components, including turbine blade life assessment and heat treatment specifications. Hans introduced chemical stripping, vacuum and atmospheric heat treatment at Hickham-Elbar, developed repair scopes for all gas turbine components and was responsible

atmospheric heat treatment at Nixman-Elbar, developed repair scopes for all gas turbine components and was responsible for production, inspection, and engineering.

#### **Elbar (Sulzer) and Xycarb, Interturbine, the Netherlands 1982 - 1986**

Hans started up Chemical Vapor Deposition (CVD) coating processes for SiliconCarbide (SiC) application on graphite semiconductor products at Xycarb. At Elbar R&D, he performed engineering and metallurgical evaluations and developed new repair processes. Part of his responsibilities was to lead specialty processes such as Fluor cleaning (Daytone process), high temperature brazing processes, and developing of compressor coatings HICoat C4 and C7. He collaborated with Hispano Suiza (France) and H.I.P. (England) to improve HIP parameters for nickelbase-superalloys such as IN 738LC (Cost 501/NL6) and led the Cost 501/NL7 Project which improved diesel engine exhaust valves. He employed hardface plating, thermal spraying and cobalt or nickel-base superalloy welding techniques.

#### **EDUCATION**

- |                                |      |  |
|--------------------------------|------|--|
| • Financial Management         | 1992 | Hogeschool West-Brabant, Breda, Netherlands  |
| • Business Administration (BS) | 1991 | Hogeschool Eindhoven, Eindhoven, Netherlands |
| • Chemical Engineering (BS)    | 1982 | I.H.B.O. De Maere, Enschede, Netherlands     |

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