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**FLINK  
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## **Bo Flink Biography**

Bo started his career in November 1968 at **Airco Alloys AB** (renamed in 1979 to Vargön Alloys AB) with a training program alongside an old foreman. At that time, in April 1968, Airco Alloys and Carbide, USA had just acquired Wargöns Bruk AB in order to enter the European market and renamed the company to Airco Alloys AB. The company in those early days was producing various kinds of ferroalloys such as HC FeMn, LC and MC SiMn, LC and MC FeMn and FeSi 75% and 45% in eight different units having a capacity from 4 MW to 18 MW. The first thing that the Americans did was to increase the skills level in the production by hiring new engineers who replaced the old foremen that were retiring. Bo was one of these newcomers.

By middle of 1969, the old foreman retired and Bo took over as shift engineer. By middle of 1972, he was transferred to day shift as production/process engineer and responsible for three furnaces. In 1973, the company decided to start HC FeCr to enter the market with local produced material. With that occasion Bo became responsible for the HC FeCr production and along with a former retired Airco plant manager started and managed the Fe Cr operation. His colleague went back to USA within two years and he continued by himself managing the production.

In 1974, the company was approached by Outokumpu that was enquiring whether they could use their non-concentrated low-grade ore. Bo was appointed to make trials in one of the small tilting units. He was in charge of the total redesigning of that unit which includes relining and tapping facilities. An extensive test period took place and they had promising results.

In April 1977, the company took the decision to convert its biggest unit into HC FeCr/Charge Chrome production. The furnace was rebuilt and started with the new product using low grade Finish ore as chromium source. Bo was deeply involved in the production conversion.

Later, the company, in order to become even bigger in the chrome market, took a new decision to convert also the second largest furnace from FeSi 75 to HC FeCr production. Bo was also very involved in the rebuilding process and they were successful.

In January 1980, Bo started to work as a Production Manager for another company, **Gullfiber AB** that was producing glass wool as an insulation material for house building. A new process line was under construction and a new manager was needed. Bo was hired and his responsibility was to take care and operate the old plant consisting of three smaller production lines. It was a similar task, around the clock, but with a different process. In August of 1981, Bo was appointed Construction and Maintenance Manager and kept this post until May 1982.

In June 1982, he was hired by **SKF Steel Engineering AB** as Project Manager of Ferroalloys project. At that time SKF Steel AB had formed in Hofors Sweden, a company called SKF Steel Engineering AB around a newly developed technology named "The Plasma Process". The process used the newly developed plasma generators that produced the energy for the metallurgical processes. Since the process was aimed to be used for various applications, different departments were formed to take care of the potential applications. Bo was hired to manage the ferroalloy projects, a position he kept until December 1983.

When SKF Steel Engineering signed in late 1983, a contract to build a HC FeCr plant using the Plasma Chrome technology, Bo was deeply involved in the project design and in the process implementation as Process Manager of Swede Chrome Project, a position he kept until September 1985.

In October 1985, Bo was asked to come back to **Vargön Alloys AB**, the company where he started his career. The Technical/Process Manager was to retire in 1986 and they offered him the position.

In June 1986, he was appointed plant manager and kept this position for 20 years. He was responsible for the entire plant from raw material planning to finished goods in stock for delivery. In this period among many of Bo's activities, the following stood out:

- In September 1987, the company created an MBO where Bo became 25% owner. Before the MBO the company acted as a conversion unit and the raw materials were delivered to be converted at the plant. After the creation of the MBO, Bo became deeply involved in the procurement of all raw materials for the production. In the beginning it was a hectic task for him with a lot of business travels to all potential suppliers.
- In the late 1980s, Bo presented a paper entitled "Heat Recovery from SAF at Vargön Alloys" at an energy symposium held at a University in Sweden describing the successes in this domain. Vargön Alloys had started heat recovery from SAF as early as 1957. Back in those days not many people were looking into the opportunity to recover secondary energy from thermal processes to be used for heating purposes like district heating or for the paper and pulp industry as in the case of Vargön.
- Bo was responsible for the new processes using low grade ores. As there was a lot of ore fines generated during mining especially from friable ores, his first task when he went back to Vargön was to design and erect a briquetting plant. Numerous tests were performed before it was decided what kind of binder to be used. Many tests were done in South Africa using lime-molasses and cement-molasses. However, the problem was that these binders added too much CaO into the process. It was decided to use water glass even though it added a lot of alkali in the process that could potentially damage the lining in the furnaces. However, no effect on the lining was noticed and it became a normal practice to use up to 40% of briquettes in the ore charge. Another problem experienced was due to the abrasive nature of chromium ore, a severe wear on the equipment was noticed that turned out to be costly for the production. As a fairly high amount of CaO was coming from the Portland cement, a better binder was found after research in the market. This was the slag cement from milled blast furnace slag with roughly half the amount of CaO. The facility is still being run with a mixture of Portland cement and milled blast furnace slag.
- Bo managed a new agglomeration project that started for another process. In the market, a process was found producing pavement stones using Portland cement as a binder. They made tests in a pavement bricks unit in a contractor company and achieved good results even though the CaO content was on the high side. A new bricks plant was erected with a capacity of about 60,000 tons per year which was later extended to a capacity of 100,000 tons/year.

- Bo also led the setup of the process for slag separation. From the start-up of Vargön HC FeCr production, two types of slag have been generating: The Lean slag and Rich slag. The Rich slag contained a lot of metal pieces that had to be recovered. In the beginning it was tried magnetic separation with a poor recovery. While looking for better options it was found that some of the mines in Sweden were producing non-magnetic iron ores through a new hematite, a process invented called The Stripa Runner. That process is a kind of heavy media process that used iron ore concentrate as media. In the middle of Sweden, a closed down hematite ore mine was found with all the equipment intact. Some hundred tons were trucked up there to perform a trial with good results. The Rich slag from Vargön was crushed down to < 25 mm and separated in two fractions of 3-25 mm and 0-3 mm. The courser material was destined for the Stripa Runner and the material of < 3 mm was destined for ordinary shaking tables. Encouraged by good results, a contract was signed to rail the slag from Vargön to Stripa (also the name of the mine). The contract lasted many years but as the chromium production increased, the amount of slag had also increased and unfortunately, the freight cost also increased and other options needed to be looked at. Companies using jig equipment for the concentration raised interest. Some pilot tests were performed in Vargön with good results. In South Africa it was found among others, a company that had developed a jigging process that performed well. In the middle of 1999, a tolling agreement was signed with the South African company and a new plant was erected in Vargön in the beginning of the year 2000. The new plant started to operate in the middle of 2000. The plant is still in operation and is owned today by Vargön Alloys AB since the tolling agreement ended.

In early 2006, Bo decided to leave the direct responsibility of the plant manager to a younger person and assumed the position of a Technical Manager. A new plant manager was hired and he focused more on strategic matters.

From April 2008, when Vargön was acquired by Yildirim Group, Bo has been working as a Technical Director in Vargön and as Senior Adviser within the Yildirim Group regarding matters related to alloy production. He is also a board member of Vargön Alloys AB. He has been deeply involved in ETI Krom with various projects such as the start-up of a new furnace, the rebuilt of a big furnace, performance tests, and later in the heat recovery projects from those furnaces.