Società delle Fucine (SdF), founded in 1884, is located in Terni, Italy and produces large forgings for rolling mills, energy and heavy industry applications. The production of petrochemical and nuclear forgings is mainly focused on shells, tubesheets and heads for safety-related components of modern NPPs.
FORGINGS FOR NUCLEAR AND PETROCHEMICAL

MANUFACTURING CYCLE

STEEL QUALITY

Final product quality is first of all based on raw material quality and processing. Selected scraps, modern steel refining, improvements in vacuum performance (VOD equipment working at 0,67mbar pressure) allow to minimize residuals content: typically sulfur and phosphorus content is lower than 0,01% and Hydrogen less than 1ppm.

MANUFACTURING CYCLE

SdF has developed over the years experiences in manufacturing components for chemical, petrochemical and NPP’s, these last since the early stage of Italian Nuclear Program in 80’s (At the right a picture of Nozzle Head of Trino Vercellese Nuclear Plant). Shells, tubesheets either for chemical, petrochemical or nuclear applications and flasks for nuclear spent fuel are examples of SdF manufacturing.

Nuclear experience of SdF currently peaks in 2000’s with production of components suitable to 3rd Generation NPP in according to ASME and RCC-M codes. As a further growth step SdF obtained in 2010 ASME Accreditations as Material Organization. General improvements in organization performance make SdF a reliable partner for safety related components.

SPECIAL COMPONENTS FOR NPP’S

One of the main global challenges for large forgings suppliers is the fabrication of nuclear special components such as channel heads and conical shells. SdF is investing great resources in terms of technicians, equipments and instruments to win this challenge. Currently SdF is able to supply almost the 100% of forgings for modern 3rd generation NPP’s such as EPR 1600, AP 1000, CPR 1000.

INNOVATION BY CONTINUOUS R&D APPROACH

A deep experience in big steel forging led SdF to optimize cycles in terms of heats number and duration with a direct positive influence on forging properties as metallurgical structures, porosities, grain size.

HEAT TREATMENT

Heat treatment, normally consisting in quenching in stirred water and tempering, allows to melt the whole combination of steel resistance, toughness and hardness.

MACHINING

SdF is equipped with a wide range of machineries for either horizontal or vertical machining shared between rough and final machinings. Renovate handling systems allow to minimize lead times and to avoid any damage risk.

At the side the new 350 t capacity Tilter for shells overturning.

INVESTMENT IN CAPABILITY ENHANCEMENT

One of the main research investments is represented by hollow ingot technique. Conventional ingot presents several technical issues as micro and macro segregation of alloyed elements, porosity and top shrinkage during solidification. Hollow ingot technique allows to overcome these quality limits, especially for the wider range of production forgings. Currently SdF reached the 225 tons ingot weight, technology is available for the final target of 425 tons.

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Carbon segregation of a 530 t solid ingot

INVESTMENT IN CAPABILITY ENHANCEMENT

Last significant investments to increase SdF capabilities are the solid ingot 530 tons and the 250 tons manipulator. The first one allowed SdF to expand heavy forgings market, the second to improve product quality for more efficient handling and quicker forging operation.

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