High Energy Digital Radiography

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High energy radiography is applied traditionally for flaw detection in large bulky components. It is also used for inspection of the integrity of components in civil and military applications. The performance of the application of imaging plates was evaluated in the European project HEDRad (High Energy Digital Radiography). Special cassette designs were developed and parallel exposure of IPs was explored. Results of the investigations were considered in the new standard ISO 17636-2:2013. Different new X-ray sources from 600 kV to 10 MV will be discussed. High energy Radiography is applied for flaw detection and the test of component integrity as well as internal corrosion. Computed tomography applications (CT) are additionally applicable for dimensional measurements of internal and external structures. In field applications with Betatrons are used for concrete inspection and for inspection of large components of steel. The radiation protection has to be considered carefully and an example for a mobile inspection in a power station is presented. The combination of high energy sources with digital detector arrays and digital line arrays enables the inspection in shorter time than film or with higher contrast sensitivity. The new universal manipulation system in the High Energy X-raY Laboratory (HEXY Lab) of BAM enables additionally to the computed tomography setup different high energy applications, such as RT with different scan modi, dual energy radiography, laminography and back scatter techniques. The equipment is applicable for special projects which require programmable scan trajectories. Images and experiments will be presented.