In Croatia power utility company HEP's production mix, hydropower plants represent the majority, so the initiated cycle of revitalization and reconstruction of these plants is of great importance for the Croatian energy system. The goal is to extend the life cycle of existing plants, and to reduce their maintenance and operation costs.
The revitalization of facilities in HPP Zakučac, HPP Dubrovnik, HPP Čakovec and HPP Gojak is in progress, while the documentation for the revitalization of other large hydropower plants is in different stages of preparation. Among small hydropower plants, with power up to 10 MW, the process of revitalization is in progress in HPP Fužine, HPP Zeleni Vir, HPP Ozalj 1, as well as the revitalization of the aggregate C in HPP Varaždin and HPP Čakovec. In this category, the construction of MHPP Prančevići is in progress, as well as the preparations for the construction of MHPP Peruća. All works are being performed by Croatian companies.
In hydropower plant Zakučac is planned to increase its power by 52 MW and its annual production by 50 GWh. The works on revitalization, modernization and capacity increase in HPP Zakučac began in 2012 with replacement of the first out of four production units. The plan is to replace one production unit every year, and to simultaneously revitalize all other facilities. Completion of the overall revitalization of the plant is expected in 2016, and the estimated value of the investment in the largest hydro power plant in the Croatian power system is approximately 130 million Euros. In addition to power increase and electricity production increase, the goal of reconstruction of the facilities of HPP Zakučac is also the replacement of old equipment with the technologically most advanced new equipment, thus achieving 30 to 50 years of the amortization period.
In HPP Dubrovnik the work is being done in order to increase its power by 20 MW and annual production by 96 GWh. The Aggregate B, with 108 MW of power, was renovated in 2012 and 2013. The existing turbine was replaced with the new one with improved features, and works on the generator included the replacement of the stator and rotor windings and poles, while other parts of the generator were retained and renewed. Such a procedure increases the aggregate's power up to 140 MVA as was provisioned by the contract. Similar reconstruction works are planned for Unit A, with 108 MW of power. The beginning of its renovation, in order to utilize the favorable hydrological conditions in the basin of river Trebišnjica, was rescheduled for 2015, with anticipated completion of works on the aggregate in 2016, and completion of the overall revitalization in 2017. Planned investment in equipment replacement and reconstruction of HPP Dubrovnik is approximately 42 million.
In HPP Čakovec the plan is to increase its annual production by 3 GWh by replacement of turbines. The modality of complete replacement of turbines was selected based on the revised project on the modalities of revitalization. For this operation it is needed app. 1.6 million of investment.
By 2020 it is planned to revitalize the plant HPP Senj, with 216 MW of power, which has

been in operation since 1965. The fundamental objective of that investment is the replacement and renovation of used-up electric and mechanical equipment, with near the end or already expired lifetime. The investment includes the replacement of large machines (generators and block transformers), medium voltage facility, the replacement of connecting lines and high voltage cables and other works on systems such as USZMR and ancillary facilities. The planned investment is around 37 million of Euros.
In HPP Gojak the plan is to increase its annual production by 16 GWh, by performing the recovery of the tunnel and revitalization of the generator. Three turbines of HPP Gojak which have been in operation since 1959, were revitalized in 2005 and 2006. In this accumulation-flow hydropower plant with dams on rivers Ogulinska Dobra and Zagorska Mrežnica, with 48 MW of power, currently is in progress the recovery of the tunnel which is planned to be completed by 2016. So far one third of the work is completed and with around 3,1 million Euros of investment, it is anticipated the increase of annual production by 8 GWh. The plan is to complete the revitalization of the generator by 2019, for what the conceptual project drafting in progress. With an investment of around 9,4 million, these and previous interventions will increase the power of HPP Gojak by 9 MW and annual production by 8 GWh.
In HPP Rijeka (37 MW of power), which has been in operation since 1968, the revitalization of the plant will increase the power by 6, 2 MW and annual production by 4, 5 GWh. The conceptual project of revitalization is finished and planned investment is app. 10, 1 million Euros. The completion of the project is planned for 2021.
Providing of additional 16 MW of power and production increase of 15 GWh per year is envisaged for the oldest multi-purpose hydropower plant of Drava’s basin, HPP Varaždin. Revitalization of the plant will provide additional 16 MW of power and increased production of 15 GWh per year. The conceptual design of electric equipment is already agreed upon, and a preparation for a public tender for a conceptual design for the revitalization of buildings is in progress. With an investment of around 48 million, it is planned for the project to be completed until 2021.
In addition to the revitalization of large hydropower plants, aiming to increase their power, HEP Proizvodnja is planning the reconstruction and revitalization of existing hydropower plants with up to 10 MW of power, as well as construction of new ones. A total of 23 aggregates / production units marked out as small hydropower plants have been installed, and HEP Proizvodnja is continuously maintaining and improving them. They are either part of large hydro power plants or autonomous power plants, with up to 10 MW of power.