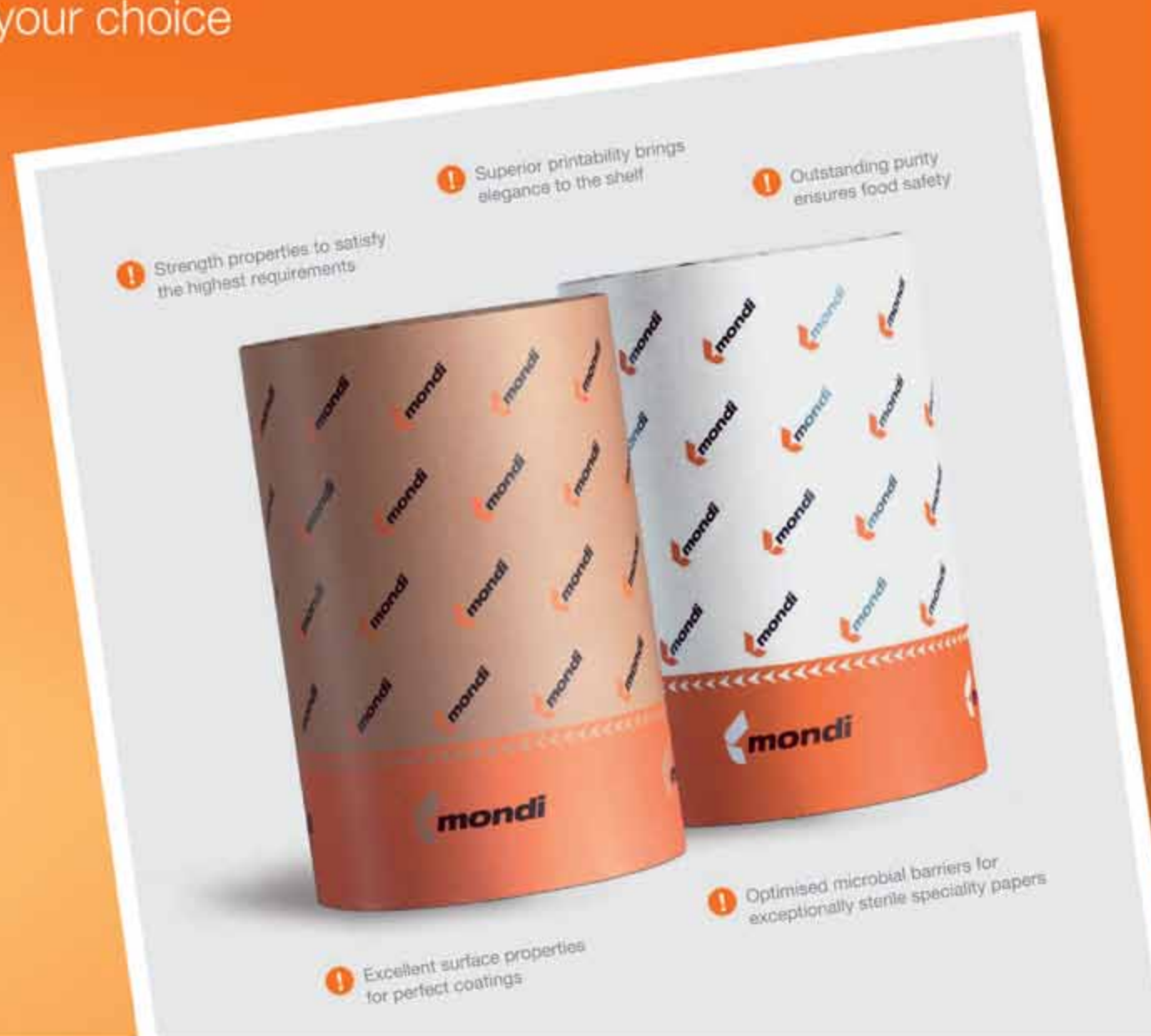


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PILOTNA BIOLOŠKA VODO-ČISTILNA NAPRAVA

PILOT BIOLOGICAL EFFLUENT TREATMENT PLANT



Some novel water treatment techniques are currently being tested at the Pulp and Paper Institute. Within the European ERAnet project (CORNET – ALBAQUA) a research is running on utilisation of alternative biological water treatment using algae. Conventional aerobic treatment may be thus upgraded by using symbiotic algae-bacterial biomass. Due to specific properties of micro-algae and efficient combination with bacteria improved economical and ecological results of effluent treatment are expected. Oxygen produced by micro-algae during photosynthesis may be used by heterotrophic bacteria in order to oxidise organic impurities by which carbon dioxide is produced. The latter is needed for algae growth. Thus, with the same cleaning effect a significant reduction of operation costs is expected. A pilot bioreactor with capacity of 500 l was constructed at the Paper mill Goričane in collaboration with ALBAQUA project partners. During its operation differently loaded effluents have been treated and optimal technological conditions determined as for example light intensity, temperature, pH, conductivity and dissolved oxygen. Cleaning efficiency dependant on all relevant parameters has been constantly monitored. According to the results of the pilot tests it will become clear whether this novel technique is similarly or more efficient than conventional biological treatment.

Na ICP Ljubljana potekajo raziskave alternativnih tehnik čiščenja papirniških odpadnih vod. V okviru projekta evropskega projekta CORNET (ERAnet projekti) – Albaqua raziskujemo alternativno tehniko biološkega čiščenja papirniške odpadne vode z uporabo alg. Gre za nadgradnjo konvencionalnega aerobnega čiščenja s simbiotsko alno-bakterijsko biomaso. Zaradi specifičnih karakteristik mikroalg in učinkovite kombinacije z bakterijami pričakujemo boljši ekonomski in ekološki efekt čiščenja. Kisik, ki ga pri svojem metabolizmu proizvajajo mikroalge, uporabljajo heterotrofne bakterije za oksidacijo organskih nečistoč, pri čemer pa nastaja CO₂, ki ga potrebujejo alge za svojo rast. Zaradi omenjenih procesov lahko ob enakem efektu čiščenja vode pričakujemo znatno znižanje energetskih stroškov.

V Papirnici Goričane smo v sodelovanju s partnerji iz projekta Albaqua postavili pilotni bioreaktor s kapaciteto 500 litrov. V poskusih čiščenja različno obremenjenih papirniških odpadnih vod poskušamo določiti optimalne tehnološke pogoje delovanja, na primer osvetljenost, temperaturo, pH, prevodnost in raztopljeni kisik, ter opredeliti efekt čiščenja. Pilotni poskus bo pokazal, ali je omenjena tehnika primerljiva ali učinkovitejša od konvencionalnih načinov biološke obdelave.



Pilotna naprava Pilot plant



Algo-bakterijska biomasa Algae-bacterial biomass

dr. Janja Zule